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AMERICAN MOTHS OF THE SUBFAMILY PHYCITINAE

By CARL HEINRICH

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The present work forms No. 207 of the *Bulletin* series.

REMINGTON KELLOGG,
Director, United States National Museum.

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Introduction

This paper completes a 25-year study of the New World moths of the subfamily Phycitinae. It is based chiefly on the collections in the United States National Museum and the Hulst collection, formerly at Rutgers University, supplemented by material from the Cornell and Canadian national collections and specimens—mostly tropical American—from the British Museum, the Janse collection, and the collections of several South American lepidopterists.

Recognized and included in the classification are 194 genera, 619 species, and 21 subspecies (local races). Of these, 60 genera, 81 species, and 8 races are described as new. The new species and races represent only a fraction of the undescribed material examined. The remainder consists mostly of females, chiefly from tropical America and without authentically associated males or host plants. Their description would have added nothing to our scientific knowledge and the additional names would have been only a nuisance to other workers. Already too many names have been given such material.

Acknowledgments

A work of this kind could not be carried through without generous assistance from other entomologists. To each of them I owe a debt of gratitude: To Carl Muesebeck, Chief of the Division of Insect Investigation of the U. S. Bureau of Entomology and Plant Quarantine, for his support and encouragement at all stages of the project; to B. B. Pepper, State Entomologist of New Jersey, and John B. Schmitt for permission to examine the genitalia of the Hulst types and for their courtesies to me at Rutgers University; to J. Bourgogne of the Muséum d'Histoire Naturelle, Paris, for the privilege of studying the genitalia of the Ragonot types of American species; to N. D. Riley and to W. H. T. Tams for the loan of unidentified tropical American Phycitinae from the British Museum (Natural History) and to Tams especially for photographs of many types and their genitalia; to Martin Herring of the Zoologisches Museum der Universitat, Berlin, for the loan of Ragonot types; to W. T. M. Forbes, Department of Entomology, Cornell University, for the loan of his extensive collections from Puerto Rico, the Virgin Islands, and Surinam; to J. McDunnough and T. N. Freeman, Canadian National Museum, Ottawa, for the loan of Canadian specimens; to A. J. T. Janse of the Transvaal Museum, Pretoria, South Africa, for the loan of South American Phycitinae from his collection and for much valuable information; to A. da Costa-Lima, Escola Nacional de Agronomia, Universidad Rural, Distrito Federal, Brazil, for the loan of Brazilian specimens; to Frank Morton Jones for a gift of Phycitinae collected at Martha's Vineyard, Mass.; to John A. Comstock for a loan of southern California specimens; to my colleagues at the U. S. National Museum—to J. F. Gates Clarke, for extensive notes on the phycitid types in the Museums of Paris, London, Oxford, and Berlin, and to Hahn Capps, for assistance in the tedious business of slide preparations.

My greatest debt is to the artists of the Bureau of Entomology and Plant Quarantine for the drawings accompanying this paper. Where genitalia are used in insect classification verbal descriptions are not enough. Figures must accompany and supplement them to give the reader a true picture of structural characters. The drawings in this paper were begun in 1930 by Eleanor A. Carlin and continued by her until October 30, 1940, when she retired from the Bureau. From that time the drawings were made by Sara H. De Bord, who has made the majority of the drawings here published. Her contribution was of especial value because she was not only a capable artist but a trained entomologist as well, and her interest in the paper and her devotion to her share in it was so complete that she worked well on into her last illness (she was retired on disability August 12, 1948, and died March 12, 1950). Since her death some drawings were made by Arthur Cushman and Addie Egbert, and the former did most of the assembling of the plates. The drawings were all made under my supervision and for any inaccuracies in them I am alone responsible.

The indices were prepared by Mrs. Marguerite W. Poole.

Abbreviation of references

To conserve space and eliminate useless repetition, titles to certain publications frequently cited are here abbreviated as follows:

The Ragonot "Monographie des Phycitidae et des Galleriidae," published as vol. 7 (1893) and vol. 8 (1901, completed by Hampson) of the Romanoff "Mémoires sur les Lépidoptères," is cited as "Monograph, pt. 1," or "Monograph, pt. 2."

Ragonot's "Diagnoses of North American Phycitidae and Galleriidae," 1887, is cited as "N. Amer. Phycitidae," and his "Nouveau Genera et Espèces de Phycitidae et Galleriidae," 1888, as "Nouv. Gen."

Walker's "List of the Specimens of Lepidopterous Insects in the Collections of the British Museum," 1854–66, is cited as "List."

Hulst's "The Phycitidae of North America," published in the Transactions of the American Entomologi-

cal Society, vol. 17, pp. 93–228, pls. 6–8, March–July 1890, is cited as "Phycitidae of N. Amer."

Barnes and McDunnough, "Contributions to the Natural History of the Lepidoptera of North America," vols. 2 (1913–1914) and 3 (1916–1917), is cited as "Contributions."

McDunnough's "Check List of the Lepidoptera of Canada and the United States of America, Part II, Microlepidoptera," published in the Memoirs of the Southern California Academy of Science, vol. 2, No. 1, 1939, is cited as "Check list."

Forbes's "Lepidoptera of New York and Neighboring States," Cornell University Agricultural Experiment Station Memoir 68, 1923, is cited as "Cornell Mem. 68."

The distributional records for species in this paper are obviously incomplete. They are based (with a few exceptions noted in the text) solely on specimens I have examined. This was the only safe procedure. So many misidentifications have been made in the past, even by lepidopterists of repute, that the records in literature can not be accepted merely on the authority of an author. Unless the specimens upon which his statements were based can be examined and the statements themselves verified, it is best to ignore them. By taking them simply on faith and repeating them we not only run the risk of perpetuating error, but do an injustice to past workers who did not have or could not use the evidence available to us.

This caution applies with even greater force to "accepted" generic and specific synonymy. I have been very fortunate in being able to examine the genitalia of so many holotypes and in having authentic specimens of most of the type species of described genera occurring in the New World. All unqualified synonymy in this paper is based upon genitalic examination of such material. From the synonymy of some species common to both the New and Old Worlds I have omitted some names—chiefly of Old World synonyms—because I could not examine their types and had no certainty as to correctness of their synonymizing. Such omissions are discussed in the text.

Classification and arrangement

A general revision has a twofold purpose, a taxonomic and a practical one: To define accurately, to delineate as nicely as possible, and to name categories which, as far as our knowledge permits, represent objective realities in nature; and to arrange these categories in an order that permits their ready identification. Both purposes must be served if the revision is to have any value as a contribution to knowledge or to be of practical use to other workers.

To satisfy both requirements I have adopted in this paper a dual classification: a definition and division into named categories of races, species, genera and subfamilies; and an artificial, unnamed division, between genus and subfamily, into groups of genera or, in a few instances within a single genus, into groups of species.

The named categories themselves are more or less tentative. They are not adequate expressions of the truth. They are only approximations to it. As we learn more we shall have to amend or replace our definitions and the categories will come a little closer to the realities they represent. The names (except for homonyms) will always be available; but the concepts will change. There are several indications that taxonomic groupings between genus and subfamily may eventually be possible; and that when we have a clearer picture of host relations and larval characters, and more extensive collections from unexplored regions, we may be able to establish tribes on a legitimate taxonomic basis; but at present this is impossible. What few definite derivations we can trace from genus to genus show that tribal groupings would cut across the lines of any artificial system we might be able to use.

The artificial system here adopted (based on venational characters) is proposed merely for key purposes. The keys themselves, except for the one separating the subfamilies, are in no true sense a part of the taxonomic system. They are keys, and keys only. They are intended merely to open a ready way to the descriptions of the genera and have been constructed on the assumption that they must work for all normal specimens. I hope so, for a key that will unlock a door only 75 (or even 90) percent of the time is a tool of little worth. Here, a word of caution. No possible key will work for abnormal specimens. The worker in Phycitidae must be always on the alert for them, for the family contains an unusual number of freaks (chiefly venational abnormalities). Any one wishing to identify phycitids must resign himself to the tedium of dissection and slide making. Here, as in all the serious business of science, there is no easy way, no short cut to knowledge.

The groupings of genera and species, prefaced by brief summaries of their common characters, which I have interposed within the text, are intended only to assist the reader and are not to be understood, in any sense, as definitions of taxonomic (tribal or subgeneric) groups. In a few instances they may be; but they are, in intent, only divisions of convenience.

The only portion of the keys offered as a description of taxonomic units is that separating the subfamilies Anerastiinae and Phycitinae. This long-established division of the family Phycitidae seems to be a sound one, and in the main the subfamilies themselves appear to be natural entities, although their definition leaves much to be desired. Probably when the Anerastiinae are thoroughly studied we may find other features more constant than the reduced and concealed tongue. There may even be some shifting of genera across the subfamily lines. However, this is only hopeful anticipation for the future and will remain so until the Old World genera and species of the family are thoroughly revised. For the present we shall have to content ourselves with an imperfect definition.

The chart opposite this page shows my interpretation of the genera in their relation to each other and to the system based on venational characters.

GENERA OF AMERICAN PHYCITINAE GROUPED ACCORDING TO GENITALIA AND VENATION

Relationships on genitalic characters shown in horizontal arrangement. Venational groupings are vertical

Group I – H. W. vein 4 present				Group II – H. W. vein 4 absent						Group III
Div. A H.W. 3 before angle of cell	Div. B H.W. 3 approx. to or at angle 7-8 approx. or weakly anast.	Div. C H.W. 3 as in B. 7-8 strongly anast.	Div. D H.W. 3 nearly as long as 2. Cell always short 7-8 as in B	Div. A F.W. 11 veins 2 from cell	Div. B F.W. 11, 10 or 9 veins 2-3 ∠ or —	Div. C F.W. 10 veins 4-5 ∠ 6-9 — 2 from cell 3 from cell or 4	Div. D F.W. 10 or 11 veins 4-5 — 6-9 ∠ 2 & 3 from cell	Div. E F.W. 9 veins 4-5 — 8-9 — 2 & 3 from cell	Div. F F.W. 9 veins 4-5 — 8-9 — 3-5 ∠ 2 from cell	H. W. veins 3 & 4 absent
Cryptoblabes		Diatonocera		Entnemacornis						
	Acrobasis Rhodophaea Trachycera Anabasis Hildrixia Sematoneura Hyalopyla Hemiptilocera Crocidomera Cunliberta Heras Adasnarsa Birimus Bertella Hypargyria Chararica	Pseudocadra Protomoerbes Pseudodivona Paramyelois Ectomyelois Apomyelois Anypsipyla Myelopsis	Hyalospila	Salga Cayennia Rioja Moerbes Moodnopsis Edulica Euzophera Exuperius Eulogia Volatica Vezina Lascelina	Farnobia Gennadius Micromescinia	Ephestiodes Azamora Moodna Vitula Manhatta Verina Vagobanta Moodnella	Prosoeuzophera Metaphestia	Ephestia Anagasta Nicetiodes Plodia Ribua Bethulla Sosipatra Microphestia Caudellia	Erelleva Eurythmia Varneria	Cabnia Microphycita Rabiria
	Fundella Difundella Coptarthria Promylea Anadelosemia Dasypyga (Rampylia ♀) Scorylus Gabinius Ceracanthia Hagarthria Drescoma Monoptilota	Atheloca	Davara Sarasota Plesmopoda Praedonula Peadus (Rampylia ♂) Fulrada Zamagiria Anegcephalesis Hagiriopsis Ancylostomia	Illatila Drescomopsis Cactobrosis Ozamia Amalafrida Sigelgaita Parolyca Salambona Eremberga Tucumania Yosemitia Rumatha Cahela Cactoblastis Nanala Alberada Olyca Olycella Melitara Zophodia Rhagea Baphala Laetilia	Strephomescinia	Homoeosoma Patagonia Rotruda	Cacozophera	Unadilla Bema Conotia		
	Caristanius Etiella Glyptocera Pima Interjectio Ambesa Catastia Immyria Oreana Olybria Salebriacus Salebriaria Quasisalebria Orthotelpis Polopeustis			Cassiana Anderida Aptunga	Phestinia Nonia Mescinia					
	Heroptera Nephopteryx	Homoeographa	Dioryctria Oryctometopia	Paconius Patriciola Psorosina						
	Tlascala Tulsa Telethusia Phobus Actrix Stylopalpia Pyla									
	Sarata Philodema Lipographis Adelphia Tota Ufa Elasmopalpus Aeroncosa			Canarsia Cabotia Oncolabis Honorinus Honora Hulstia Staudingeria Heterographis	Eurythmasis Eurythmidia Wunderia	Harnocha	Palatka Diviana			
	Passadena Ulophora Chorrera Tacoma			Adelperga Protasia Valdivia Ocala Macrorrhinia Eunysia			Stylopasis Oedothmia Divitiaca			

The sequence of genera and of species within the genus here offered is an attempt to bring together in linear arrangement the forms showing affinities in structure and development. It is only an attempt and I shall quarrel with no one who objects to it.

When I began this study I had hoped to write a monographic treatise and explore the phylogeny of the family, but I now find that I know so much less than I thought I did and that the accumulated knowledge of others is so meager that any attempt along these lines would be a vain and futile performance.

We don't know what a primitive phycitid was like. We don't know which forms evolved from which, or how. We weren't there. We may surmise; but the guess of one ignoramus is as good as that of another, and there is nothing to be gained from either. I have had to be content with a mere revision. Would that it were more worthy.

CARL HEINRICH

Carl Heinrich (1880–1955)

This monograph was written by Carl Heinrich in the months following his retirement from Government service in 1949. Upon it he focused the extensive knowledge gained during his 36 years as entomologist with the U. S. Department of Agriculture. Its publication, toward which the Department of Agriculture has contributed substantially, was undertaken in 1954, and the author had completed his review of the galley proofs at the time of his death, age 75, on May 31, 1955.

A biographical memoir of Carl Heinrich and a bibliography of his scientific writings appeared in the Proceedings of the Entomological Society of Washington for October 1955 (vol. 57, No. 5, pp. 249–255). In addition to the present bulletin, the U. S. National Museum has published a number of his papers, of which several, as noted, are now out of print:

1921. On some forest Lepidoptera with descriptions of new species, larvae, and pupae. Proc. U. S. Nat. Mus. No. 2305, vol. 57, pp. 53–96, 13 pls., June 17, 1920. (Out of print.)

1923. Revision of the North American moths of the subfamily Eucosminae of the family Olethreutidae. U. S. Nat. Mus. Bull. 123, iv+298 pp., 1 fig., 59 pls., Apr. 12, 1923. (Out of print.)

1926. Revision of the North American moths of the subfamilies Laspeyresiinae and Olethreutinae. U. S. Nat. Mus. Bull. 132, iv+216 pp., 2 figs., 76 pls., Feb. 2, 1926. (Out of print.)

1927. The American moths of the genus *Diatraea* allies. Proc. U. S. Nat. Mus. No. 2691, vol. 71, Art. 19, 48, pp., 20 pls., Aug. 23, 1927. Joint authorship with H. G. Dyar. (Out of print.)

1929. Notes on some North American moths of the subfamily Eucosminae. Proc. U. S. Nat. Mus. No. 2779, vol. 75, Art. 8, 23 pp., 5 pls., Apr. 5, 1929.

1932. Notes on and descriptions of some American moths. Proc. U. S. Nat. Mus. No. 2879, vol. 79, Art. 13, 16 pp., 1 fig., 7 pls., Aug. 10, 1931.

1938. Moths of the genus *Rupela* (Pyralididae. Schoenobiinae). Proc. U. S. Nat. Mus. No. 3019, vol. 84, pp. 355–388. 12 pls., July 3, 1937.

1940. The cactus-feeding Phycitinae: A contribution toward a revision of the American pyralidoid moths of the family Phycitidae. Proc. U. S. Nat. Mus. No. 3053, vol. 86, pp. 331–413, 29 pls., Mar. 16, 1939.

1945. The genus *Fundella* Zeller: A contribution toward a revision of the American Pyralidoid moths of the family Phycitidae. Proc. U. S. Nat. Mus. No. 3190, vol. 96, pp. 105–114. 3 pls., May 18, 1945.

American Moths of the Subfamily Phycitinae

Family Phycitidae

Moth: Labial palpus well developed. Maxillary palpus present, variously developed, rarely vestigial. Tongue well developed or reduced, rarely absent; when distinguishable, basal portion scaled. Forewing entire (not divided); 11 veins or less; vein 7 always absent; 8 and 9 stalked or united; 1c absent (represented only by a fold or crease in the wing membrane); no areole. Hind wing with 8 veins or less; vein 8 closely approximate or contiguous to or anastomosing or completely fused with 7 beyond cell; 1c always present; a fringe of pecten on lower median vein at base; frenulum of female simple (a single strong spine).

Larva: With primary setae only; two setae on prespiracular shield of prothorax; setae IV and V approximate and under the spiracle on abdominal segments 1 to 8; normally a sclerotized, pigmented ring encircling or partially encircling the tubercle of seta IIb on mesothorax and a similar ring encircling the tubercle of seta III on eighth abdominal segment (this character absent from the following genera of the American Phycitinae; *Etiella*, *Oryctometopia*, *Ulophora*, *Rotruda*, *Rhagea*, and *Unadilla*). Prolegs normal; crochets in a complete circle.

The subfamilies of Phycitidae are separated by the following key:

Tongue normally well developed; if sometimes reduced, not concealed between the labial palpi (except in *Cactoblastis* [1]); ocelli always present . . **Phycitinae**

Tongue reduced or vestigial; when merely reduced, concealed between the labial palpi; if sometimes exposed between the palpi (*Bandera*), then ocelli absent . . . . . **Anerastiinae**

[1] In *Cactoblastis* the aborted tongue is completely concealed by the broadly scaled basal segments of the labial palpi. However, the genitalia, habitus and larval affinities show that *Cactoblastis* is a true phycitine and must be placed with the other closely related genera of the cactus-feeding Phycitinae.

Subfamily Phycitinae

The larger groups of the subfamily Phycitinae are separated by the following key:

Key to the larger groups of Phycitinae

Hind wing with veins 3 and 4 both present . . . . . **Group I**
Hind wing with vein 3 present, 4 absent . . . . . **Group II**
Hind wing with veins 3 and 4 both absent . . . . . **Group III**

Group I

[Hind wing with veins 3 and 4 both present]

Keys to the Venational Divisions and Genera of Group I

Hind wing with vein 3 appreciably before the outer angle of cell; cell less than one-half the wing length . . . . . **Venational division A Cryptoblabes** (p. 10)

Hind wing with vein 3 closely approximate to or from the angle of the cell (rarely shortly stalked with 4–5); 7 and 8 approximate, contiguous, or shortly and weakly anastomosed beyond cell; cell at lower angle nearly half as long as wing; if shorter, then vein 3 of moderate length and the free (divergent) part of 3 decidedly shorter than vein 2. If vein 3 sometimes appreciably before outer angle of cell (*Acrobasis*), then cell one-half the wing length . . . . . **Venational division B** (key, p. 2)

Hind wing with vein 3 closely approximate to or from the angle of cell; veins 7–8 solidly anastomosed beyond cell for at least three-fourths of their lengths. **Venational division C** (key, p. 7)

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Hind wing with vein 3 closely approximate to or from the angle of cell; veins 7–8 approximate or very weakly and shortly anastomosed beyond cell; 2 and 3 both long, the divergent element of 3 nearly as long as 2; cell distinctly less than half the length of wing . . . . . Venational division D (key, p. 8)

Venational division B

1. Hind wing with discocellular vein oblique 2
   Hind wing with discocellular vein curved 3
2. Forewing with subbasal ridge of raised scales; hind wing with cell somewhat less than one-third the length of the wing; eighth abdominal segment of male with midventral hair tuft . . . . . Mildrixia (p. 26)
   Forewing smooth; hind wing with cell one-fifth the length of the wing; eighth abdominal segment of male with sternite developed as a sclerotized, digitate pocket. Drescoma (p. 88)
3. Hind wing with vein 3 from before, but near, lower outer angle of cell 4
   Hind wing with vein 3 from the angle or the stalk of veins 4–5 8
4. Hind wing with veins 4–5 connate; vein 6 of forewing always straight 5
   Hind wing with veins 4–5 approximate, contiguous, anastomosed or stalked for a short distance from cell, if sometimes connate (on individuals of *Hypsipyla*) vein 6 of forewing slightly bent towards base 6
5. Basal segment of male antenna triangulate . . . . . Acrobasis (p. 11)
   Basal segment of male antenna simple (cylindrical) . . . . . Rhodophaea[2] (p. 24)
6. Forewing with subbasal ridge of raised scales; antenna of male pubescent (cilia distinctly shorter than width of shaft) . . . . . Anabasis (p. 25)
   Forewing smooth; antenna of male ciliate (cilia distinctly longer than width of shaft) . 7
7. Forewing with vein 6 straight, remote from veins 8–9 at base . . Sematoneura (p. 27)
   Forewing with vein 6 bent, shortly separated from 8–9 at base . . . Hypsipyla (p. 27)
8. Vestiture of head, thorax, labial palpi, and femora a mixture of scales and hairs; male with harpe short (stubby), clasper absent, apical process of gnathos an inverted heart-shaped lobe with short, slender spine; female with ventral surface of genitalia sclerotized throughout its length, ductus seminalis from near junction of bursa and ductus bursae . . . . . Polopeustis (p. 120)
   Vestiture entirely of scales; or, if occasionally mixed with hair (*Sarata atrella*), male with harpe elongate, clasper present, knoblike, apical process an elongate, stout hook; female with ductus bursae unsclerotized, ductus seminalis from bursa remote from junction of bursa and ductus bursae 9
9. Forewing with subbasal ridge of raised scales 10
   Forewing smooth 16
10. Hind wing with vein 3 from the stalk of veins 4–5 . . . . . Passadena (p. 175)
    Hind wing with vein 3 approximate to but not from the stalk of veins 4–5 11
11. Labial palpus porrect, beaklike . . . . . Etiella (p. 98)
    Labial palpus oblique or upturned 12
12. Forewing with vein 6 from the upper angle of the cell, bent towards base . . . . . Hypargyria (p. 37)
    Forewing with vein 6 from well below the angle of cell, straight 13
13. Forewing with veins 4 and 5 slightly separated at base and approximate for a short distance beyond 14
    Forewing with veins 4 and 5 connate or stalked; if sometimes shortly separated at base not approximate beyond 15

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[2] The genus *Trachycera* is omitted from our key as the male is unknown except from Ragonot's description. The female before me has the venation of *Rhodophaea*. It is distinguished from other females of Division B in having two scobinate, cuplike signa similar to those of *Davara* in division D. (See p. 25.)

14. Hind wing with veins 7–8 anastomosed beyond cell; maxillary palpus of male in the form of an aigrette . . . . . **Immyrla** (p. 111)
Hind wing with veins 7–8 approximate beyond cell; maxillary palpus of male squamous. **Ulophora** (p. 176)
15. Labial palpus oblique, second segment on male grooved; male with eighth abdominal segment simple; female with genital opening simple . . . . . **Ortholepis** (p. 119)
Labial palpus upturned, second segment on male not grooved; eighth abdominal segment of male with compound tufts; female with strongly sclerotized plate at genital opening attached to supplemental eighth-segment collar . . . . . **Tlascala** (p. 133)
16. Labial palpus porrect, beaklike; male with aedeagus flanged and strongly spined; female with ductus seminalis from bursa 17
Labial palpus oblique or upturned; if sometimes appearing porrect (*Stylopalpia*) due to long, deflected third segment, male with aedeagus simple; female with ductus seminalis from ductus bursae 21
17. Forewing with veins 4–5 approximate for a short distance from cell 18
Forewing with veins 4–5 stalked 19
18. Labial palpi extending at least twice the length of head beyond it; harpe of male elongate; female with ductus bursae much longer than bursa . . . . . **Pima** (p. 101)
Labial palpi extending little more than the length of head beyond it; harpe of male short; female with ductus bursae little, if any, longer than bursa . . **Interjectio** (p. 106)
19. Male with second segment of labial palpus grooved on inner side; female with ductus seminalis from bursa remote from junction of bursa and ductus bursae . **Sarata** (p. 159)
Male with second segment of labial palpus not grooved; female with ductus seminalis from bursa near junction of bursa and ductus bursae 20
20. Female with a strongly sclerotized plate behind genital opening . . **Philodemia** (p. 165)
Female without sclerotization at genital opening . . . . . **Lipographis** (p. 166)
21. Hind wing with vein 3 from the stalk of 4–5 or closely approximate to it for some distance from lower outer angle of cell; vein 2 always rather near the angle 22
Hind wing with vein 3 connate with the stalk of veins 4–5 or connected with it at base by a very short spur; if sometimes approximate to the stalk of 4–5 (*Megarthria, Acroncosa*), vein 2 always from well before lower outer angle of cell; or, if vein 3 sometimes shortly fused with the stalk of veins 4–5 (*Actrix*), male with apical process of gnathos developed as a square or inverted heart-shaped plate and female with caudal half of bursa copulatrix densely spinose 28
22. Hind wing of male with anal angle folded into a pocket; female with strong sclerotizations behind or surrounding genital opening of genitalia 23
Hind wing of male without folded pocket at anal angle; genital opening of female simple 24
23. Male genitalia with uncus hammer-clawed (long, curved, constricted at middle and broadly divided at apex); female with bursa containing strongly sclerotized folds or stoutly spined bands . . . . . **Fundella** (p. 59)
Male genitalia with uncus otherwise (sometimes broadly divided at apex but the divided elements small and spinelike and the middle of uncus not appreciably constricted); bursa sometimes with a small granulate patch but otherwise membranous and unarmed . . . . . **Difundella** (p. 62)
24. Hind wing with vein 3 approximate to the stalk of veins 4–5 for some distance from outer angle of cell . . . . . **Scorylus** (p. 72)
Hind wing with vein 3 from the stalk of veins 4–5 25
25. Male genitalia with transtilla a sinuate, sclerotized scobinate band involved with gnathos and with a long free spine involved with anellus; female with ductus seminalis from ductus bursae 26
Male genitalia with transtilla incomplete or absent; female with ductus seminalis from bursa 27
26. Maxillary palpus of male filiform . . . . . **Coptarthria** (p. 64)
Maxillary palpus of male squamous . . . . . **Anadelosemia** (p. 67)

27. Male genitalia with divided element of incomplete transtilla strongly sclerotized, gnathos absent; female with ductus bursae partially sclerotized . . . . . Gabinius (p. 84)
Male genitalia with transtilla absent, gnathos well developed and with apical process a strong hook; female with ductus bursae membranous throughout. Ceracanthia (p. 85)

28. Male genitalia with transtilla a sinuate sclerotized band involved with gnathos; female with bursa small, membranous and ductus bursae much longer than bursa, signum (if present) a small granulate patch or small plate with single minute thorn, genital opening narrow (the ductus bursae never expanded into a widened opening); if bursa sometimes large and ductus bursae proportionally shorter (*Rampylla*), collar of eighth segment modified 29
Male genitalia without transtilla or, if present, otherwise; female genitalia never as above in all details 31

29. Forewing with veins 4–5 approximate for a short distance from cell; hind wing with vein 2 from well before lower outer angle of cell. 30
Forewing with veins 4–5 stalked; hind wing with vein 2 from near outer angle of cell. Dasypyga (p. 69)

30. Female with ductus seminalis from ductus bursae. . . . . Promylea (p. 65)
Female with ductus seminalis from bursa copulatrix . . . . . .Rampylla (p. 70)
(males: venation group D, couplet 8)

31. Male with transtilla of genitalia complete and strongly sclerotized; or, if incomplete, the elements enlarged, strongly sclerotized and modified; when complete not in the form of a squarish plate. Female with a single signum developed as a small, scobinate or granulate cup or patch or (*Adanarsa*) as a single short, stout thorn; genital opening always broad 32
Male genitalia with transtilla incomplete or absent. Female with signa or signum, if present, otherwise developed. If transtilla complete then weakly sclerotized or developed as a square plate; and if signum of female a small scobinate patch (*Megarthria alpha*) genital opening narrow 39

32. Forewing with vein 6 bent towards base 33
Forewing with vein 6 straight 36

33. Transtilla of male complete, strongly arched and with median area forked 34
Transtilla of male complete, but not arched nor with median area forked 35

34. Antenna of male with shaft unipectinate. Ductus bursae of female very short, less than one-half as long as bursa, scobinate-granulate and more or less sclerotized but not transversely wrinkled . . . . . Hemiptilocera (p. 30)
Antenna of male with shaft pubescent. Ductus bursae of female longer, about half as long as bursa and with strong, sclerotized wrinkling before genital opening. Crocidomera (p.32)

35. Maxillary palpus squamous. Forewing of male with costal fold and a fovea in cell slightly beyond base. Eighth abdominal segment with sternite developed as a sclerotized pocket. . . . . Heras (p.34)
(male only, female unknown)
Maxillary palpus filiform. Forewing of male without costal fold or fovea. Eighth abdominal segment simple . . . . . Birinus (p. 36)
(male only, female unknown)

36. Male antenna with shaft unipectinate; transtilla incomplete, its elements long, stout with their apices broadly and irregularly developed and hooked. Female with a large semicircular sclerotized and scobinate plate on membrane behind genital opening. Bertelia (p. 36)
Male antenna with shaft pubescent; transtilla complete. Sclerotized plate on membrane behind genital opening of female, if present, not semicircular 37

37. Hind wing with veins 7–8 anastomosed for a short distance beyond cell. Male with transtilla strongly arced but with its median area bearing a smooth narrow crosspiece, not forked. Female with signum a single, short, stout, hooked thorn . Adanarsa (p. 35)

Hind wing with veins 7–8 approximate for a short distance from cell. Male transtilla otherwise. Female with signum a single, small, scobinate or granulate, cup-shaped patch 38

38. Male with apical process of gnathos a stout hook. Female with ductus bursae appreciably longer than bursa; ductus seminalis from ductus bursae . . **Cuniberta** (p. 34)

Male without projecting apical process, the lateral arms supporting a thinly sclerotized subanal plate. Female with ductus bursae much shorter than bursa; ductus seminalis from lobe of bursa near junction of bursa and ductus bursae . **Chararica** (p. 38)

39. Male with sternite of eighth abdominal segment developed as a sclerotized pocket. Female with signum a small, depressed, granulate-scobinate patch; or, if signum absent, ductus bursae narrow throughout and sclerotized for about one-third of its length from shortly beyond its junction with bursa, the sclerotized portion sharply bent over itself . . . . . **Megarthria** (p. 86)

Male with eighth abdominal sternite not developed as a sclerotized pocket. Female with signum (or signa) developed as sclerotized and strongly spined plates or bands, or entirely absent. If signa absent, ductus bursae not as above. If sometimes (*Olybria*) a single more or less strongly sclerotized band in bursa at junction of bursa and ductus bursae, the band finely serrate or edged with short spines 40

40. Antenna of male with shaft unipectinate. Female bursa with a single strongly spined signum . . . . . **Monoptilota** (p. 89)

Antenna of male with shaft pubescent. Female bursa with two signa or none 41

41. Male genitalia with a pair of long, strong, sclerotized arms from the ventrolateral angles of uncus; gnathos absent. Female with two signa consisting of stoutly and coarsely spined bands; ductus bursae strongly sclerotized, fattened (ribbonlike). **Caristanius** (p. 97)

Male genitalia with uncus otherwise; gnathos present and well developed. Female without signa; or, when present, consisting of two strongly spined bands or plates; when signa are present, ductus bursae not as above, if partially flattened and ribbonlike then very narrow 42

42. Male genitalia with aedeagus expanding to lateral, flanged projections before apex, the flanges each bearing a cluster of strong spines. Female with ductus seminalis from ductus bursae . . . . . **Stylopalpia** (p. 140)

Male genitalia with aedeagus otherwise, if sometimes spined (*Pyla*), not flanged before apex. Female with ductus seminalis from bursa copulatrix 43

43. Maxillary palpus vestigial 44

Maxillary palpus squamous, or filiform, or (on some males) in the form of an aigrette .45

44. Penis of male unarmed except for a small cluster of very weak, short, slender spines. Female with ovipositor strongly sclerotized . . . . . **Telethusia** (p. 136)

Penis of male armed with a single, strong cornutus. Female with ovipositor normal (not strongly sclerotized) . . . . . **Phobus** (p. 138)

45. Forewing with some rough (raised) scaling in median area beyond outer border of antemedian line, but without subbasal ridge of raised scales . . . . . **Tulsa** (p. 134)

Forewing smooth 46

46. Fore tibia with a long inner and a short outer claw . . . . . **Acroncosa** (p. 174)

Fore tibia otherwise 47

47. Hind wing with veins 7–8 distinctly anastomosed for about half their lengths (more than the free length of vein 8). Male with apical process of gnathos a broad shield without central terminal spine . . . . . **Actrix** (p. 139)

Hind wing with veins 7 and 8 approximate; if sometimes contiguous or anastomosed beyond cell, then weakly and very shortly so. Male with apical process of gnathos otherwise 48

48. Male genitalia with a pair of straight, strongly sclerotized arms [not to be confused with similar projections from vinculum in *Nephopteryx crassifasciella*] projecting backward from lower, posterior angles of tegumen. Female with ductus bursae of genitalia flattened (ribbonlike), waved (twice bent) and sclerotized throughout, the

sclerotization developed at genital opening into a stout, squarish ventral plate . . . . . Olybria (p. 113)

Male genitalia without projecting arms from tegumen. Ductus bursae of female otherwise 49

49. Harpe of male genitalia with a long hair brush from inner surface, along lower edge of basal half of sclerotized costa. Bursa copulatrix of female with the lobe giving off ductus seminalis strongly sclerotized; or most of dorsal area of bursa strongly and smoothly sclerotized; or bursa with conspicuous, round or oval, strongly pigmented and sclerotized, densely granulate patches [absent in *Nephopteryx subcaesiella* (fig. 826)], the bursa otherwise spinose over its membranous areas 50

Harpe of male without such hair brush. Bursa of female not as above 53

50. Male with sacculus of harpe strongly produced at apex. Female with most of dorsal surface of bursa strongly and smoothly sclerotized. . . . . Glyptocera (p. 100)

Male with sacculus of harpe simple (not produced at apex). Female with only the lobe giving off ductus seminalis sclerotized: or bursa with granulate sclerotized patches 51

51. Penis of male armed with numerous strong, slender spines. Female with lobe of bursa giving off ductus seminalis strongly sclerotized. . . . . Orcana (p. 112)

Penis of male armed with two stout spines or (very rarely) one spine. Bursa of female with granulate patches, the lobe giving off ductus seminalis not sclerotized . . . 52

52. Harpe of male genitalia with an appressed, stout, thorny or serrate clasper. Female with ductus bursae unsclerotized adjacent to bursa, but with strong sclerotization at genital opening . . . . . Meroptera (p. 121)

Harpe of male with clasper digitate, slender, simple (without spining). Female with ductus bursae sclerotized along ventral surface from junction with bursa, the sclerotization terminating before genital opening, the latter simple (unsclerotized). Nephopteryx (p. 123)

53. Forewing with veins 4–5 stalked for nearly half their lengths . . . . . Tacoma (p. 178)

Forewing with veins 4–5 not stalked (slightly separated or closely approximate at cell). 54

54. Male genitalia with transtilla complete but very weakly sclerotized (a narrow angulate band); aedeagus slender, elongate, not spined or divided. Female genitalia with bursa entirely membranous and smooth; ductus bursae rather narrow, tubular and sclerotized throughout, nowhere appreciably widened; genital opening narrow (no wider than narrowest part of ductus bursae) . . . . . Tota (p. 170)

Male genitalia with transtilla incomplete or absent; aedeagus moderately broad to stout, if sometimes slender and elongate then spined or partially divided or (*Chorrera*) vinculum with produced lateral lobes from terminal margin. Female with or without signa in bursa; if without signa, bursa spinose or with same sclerotizations adjacent to ductus bursae; if bursa entirely membranous and smooth, genital opening decidedly broadened 55

55. Male with aedeagus of genitalia spined or partially divided; if sometimes simple, then a strong knoblike and spinose projection from harpe at base of costa. Female without signa in bursa, the latter usually simple (unsclerotized and smooth), but sometimes with sclerotized, convolute, longitudinal bands near junction of bursa and extending into the ductus, the bursa never spinose . . . . . Pyla (p. 142)

Male with aedeagus neither spined nor divided; if harpe sometimes with projection from base of costa, the latter neither knoblike nor spinose. Female with or without signa in bursa; if without signa, the bursa spinose (at lease partially so) or sclerotized at junction of bursa and ductus bursae, but such sclerotization not in the form of convolute, longitudinal bands 56

56. Male with maxillary palpus squamous or filiform. Female without signa; a serrate or minutely spined sclerotization at junction of bursa and ductus bursae, the latter broad and strongly sclerotized or with a pair of elongate sclerotized plates behind

genital opening; if signa present, the ductus bursae very narrow and expanded into a membranous globe shortly before genital opening 57

Male with maxillary palpus in the form of an aigrette. Female with or without signa; bursa and ductus bursae not as above 59

57. Male genitalia with aedeagus stout; penis armed with a single, long stout spine. Bursa of female genitalia without signa 58

Male genitalia with aedeagus very slender; penis unarmed. Bursa of female containing two signa developed as opposed, longitudinal bands bearing a row of short stout spines . . . . . Chorrera (p. 177)

58. Maxillary palpus of male minute, filiform. Female without sclerotized plate or plates behind genital opening . . . . . Ambesa (p. 108)

Maxillary palpus of male squamous (broadly scaled). Female with a pair of elongate sclerotized plates on inner dorsal surface of ductus bursae behind genital opening . . . . . Catastia (p. 110)

59. Male with sacculus of harpe slightly produced at apex. Female with ductus bursae of genitalia cylindrical; narrow except at genital opening; appreciably longer than length of bursa; sclerotized for half its length from junction with bursa, the sclerotization longitudinally ribbed . . . . . Elasmopalpus (p. 172)

Male with sacculus of harpe not produced at apex. Ductus bursae of female otherwise 60

60. Hind wing with vein 2 from before but rather near outer angle of cell 61

Hind wing with vein 2 from well before outer angle of cell 62

61. Male with penis armed with a single stout spine. Female with ductus brusae of genitalia sclerotized (at least towards genital opening). Forewing with veins 8–9 stalked for less than two-thirds of their lengths. Hind wing with veins 4–5 stalked for approximately one-half their lengths . . . . . Salebriaria (p. 115)

Male with penis unarmed. Female with ductus bursae cartilagenous, except at its junction with bursa. Forewing with veins 8–9 stalked for over two-thirds of their lengths. Hind wing with veins 4–5 stalked for over three-fourths of their lengths . . . . . Quasisalebria (p. 118)

62. Male genitalia with a strong, straight or curved arm from base of costa of harpe; penis unarmed. Female genitalia with ductus seminalis from bursa adjacent to junction of bursa and ductus bursae (signa present) . . . . . Adelphia (p. 168)

Male genitalia without projecting arm from base of costa of harpe; penis armed with a single strong spine. Female with ductus seminalis from bursa remote from junction of bursa and ductus bursae (signa present or absent) 63

63. Male with cornutus on penis a long straight spine, over half as long as aedeagus. Female with bursa densely spinose, signa absent; ductus seminalis from near anterior end of bursa . . . . . Salebriacus (p. 114)

Male with cornutus on penis a short, curved spine, somewhat less than one-third as long as aedeagus. Female with bursa smooth except for strongly spined signa (and in one species a strongly spined collar at middle of bursa); ductus seminalis from bursa adjacent to one of the signa . . . . . Ufa (p. 170)

Venational division C

1. Hind wing with discocellular vein straight, vertical . . . . . Homoeographa (p. 135)

Hind wing with discocellular vein straight, oblique . . . . . Atheloca (p. 81)

Hind wing with discocellular vein curved 2

2. Male with uncus of genitalia more or less spoon-shaped (the lateral margins deeply concave at middle). Female with signa present, consisting of 2 or more sclerotized disks or series of contiguous, blunt thorns 3

Male with uncus triangulate or subtriangulate. Female with or without signa; if present not as above 4

3. Male with costal fold on forewing; shaft of antenna notched at base . Diatomocera (p. 50)
   Male without costal fold on forewing; antennal shaft not notched . Pseudocabima (p. 53)
4. Hind wing with vein 3 from the stalk of veins 4–5 . . . . . Anypsipyla (p. 42)
   Hind wing with vein 3 from the angle of the cell; if sometimes approximate to the stalk of veins 4–5 for a short distance, never actually from it 5
5. Maxillary palpi of both sexes filiform. Male with complete transtilla 6
   Maxillary palpi squamous. Transtilla of male incomplete 8
6. Male with antennal shaft pubescent. Female with ductus seminalis from near middle or towards anterior (closed) end of bursa 7
   Male with antennal shaft shortly ciliate (cilia as long as width of shaft). Female with ductus seminalis from bursa near junction of bursa and ductus bursae. Ectomyelois (p. 43)
7. Forewing with vein 2 from near outer angle of cell. Male with transtilla weakly sclerotized (a thin band or sub-triangulate plate); apical process of gnathos broadly U-shaped . . . . . Myelopsis (p. 40)
   Forewing with vein 2 from well before the angle. Male with transtilla strongly sclerotized and arched; apical process of gnathos a simple, stout hook . . Apomyelois (p. 42)
8. Hind wing with cell moderately long (from a little over to slightly less than one-half the length of the wing). 9
   Hind wing with cell short (not over one-third the length of wing). . Protomoerbes (p. 49)
9. Forewing with vein 2 from near lower outer angle of cell; vein 10 from the cell. Male with eighth abdominal segment simple. Female with signum in bursa (a cluster of coarse scobinations); a sclerotized plate behind genital opening (on inner dorsal surface of ductus bursae) . . . . . Paramyelois (p. 46)
   Forewing with vein 2 from well before the angle; vein 10 from the stalk of veins 8–9. Male with a pair of ventrolateral hair tufts on eighth abdominal segment. Female with bursa and ductus bursae simple (membranous throughout, with neither signum in bursa nor plate behind genital opening) . . . . . Pseudodivona (p. 48)

Venational division D

1. Normal dark discal spots on forewing at end of cell replaced by a conspicuous white spot or line (obscured only on *clarioralis*) on discocellular vein. [Male genitalia with costal area of harpe broadly sclerotized and produced at apex; clasper present, erect; penis armed with numerous, straight spines. Female with signa developed as 2 or 3 clusters of strong, slender spines; ductus bursae flattened, strongly sclerotized over most of its length, the sclerotization terminating just before simple genital opening] . . . . . Dioryctria (p. 149)
   No such white spot on discocellular vein 2
2. Forewing with ridge of raised scales preceding antemedial line 3
   Forewing smooth; if sometimes with a few roughened scales, no such subbasal ridge. . 4
3. Forewing with veins 4-5 closely approximate for a short distance from cell. Hind wing with cell less than one-fourth the length of wing. Maxillary palpus of male in the form of an aigrette . . . . . Zamagiria (p. 90)
   Forewing with veins 4–5 connate or very shortly stalked. Hind wing with cell slightly less than one-third the length of wing. Maxillary palpus of male subsquamous. Anegcephalesis (p. 93)
4. Male genitalia with uncus and tegumen greatly reduced; uncus a narrow, weakly sclerotized, angulate band. Female with a single signum in bursa, consisting of a small, sclerotized plate supporting a very short thornlike spine. . . . . Peadus (p. 83)
   Male genitalia with uncus and tegumen well developed. Female with signum or signa (if present) otherwise 5

5. Male genitalia with transtilla complete, developed as a narrow, slightly arched band, attached to harpes only by membrane. Female with signum a cluster of bluntly pointed thorns, more or less surrounded by fine scobinations or strongly pigmented granulations . . . . . Hyalospila (p. 56)

Male genitalia incomplete or absent; if complete (*Magiriopsis*) not a narrow band. Female with signum or signa (if present) otherwise 6

6. Hind wing with discocellular vein incomplete . . . . . Fulrada (p. 71)
(based on male; female unknown)

Hind wing with discocellular vein complete. 7

7. Hind wing with cell very short (about one-fifth the length of wing). Male genitalia with lateral arms of gnathos broad, expanded and curled at their extremities.
Praedonula (p. 82)

Hind wing with cell longer (from one-fourth to one-third the length of wing). Gnathos of male otherwise 8

8. Hind wing of male with anal area (involving vein 1a) thickened and folded, forming a produced pocket; underside of wing with roughened scale or hair tufts on some of the veins . . . . . Rampylla (p. 70)
(females: Venation Group B, couplet 30)

Hind wing of male without such modification. 9

9. Male with uncus of genitalia bifid. Female with one or two small signa developed as granulate depressions in bursa; if signa sometimes absent (some species of *Piesmopoda*), bursa membranous 10

Uncus of male undivided (triangulate or pentagonal). Signa of female developed as strongly, spined bands or plates; if sometimes absent (*Ancylostomia*), bursa weakly but extensively sclerotized 12

10. Gnathos complete, a thin, weakly sclerotized, transverse band. Female with two signa in bursa 11

Gnathos incomplete, the lateral arms strong, broad; between their separated apices a well sclerotized anal plate. Female with one signum or none . . Piesmopoda (p. 77)

11. Forewing with vein 6 from below upper angle of cell, separated at base from the stalk of veins 8–9. Male genitalia with a stout free spine associated with anellus.
Davara (p. 73)

Forewing with vein 6 from upper angle of cell, connate with the stalk of veins 8–9. Male genitalia without free spine associated with anellus . . . . Sarasota (p. 76)

12. Male antenna unipectinate for basal half of shaft, shortly ciliate beyond. Female with two signa developed as strongly spined plates . . . . . Magiriopsis (p. 94)

Male antenna with shaft pubescent. Female with one signum or none 13

13. Male with maxillary palpus in the form of an aigrette; eighth abdominal segment with compound ventral scale and hair tufts. Female genitalia without signum; the bursa copulatrix weakly sclerotized throughout . . . . . Ancylostomia (p. 95)

Male with maxillary palpus squamous; eighth abdominal segment with paired ventrolateral hair tufts. Female with signum, consisting of a single round, curved plate, densely armed with long stiff spines; bursa otherwise membranous.
Oryctometopia (p. 158)

Genus 1: *Cryptoblabes*

[Venational division A. Hind wing with vein 3 distinctly before lower outer angle of cell; 7 and 8 approximate, or weakly and shortly anastomosed beyond cell. Forewing with vein 6 bent towards base; 10 from the cell. Male genitalia with transtilla complete; uncus bilobed.]

1. Genus Cryptoblabes Zeller

Cryptoblabes Zeller, Isis von Oken, 1848, p. 644.—Ragonot, Monograph, pt. 1, pp. xliv, 12, 1893.—Staudinger and Rebel, Catalog der Lepidopteren des palaearctischen Faunengebietes, vol. 2, p. 42, 1901.—Mayrick, Revised handbook of British Lepidoptera, p. 397, 1928.—Bisset, *in* Pierce and Metcalfe, Genitalia of the British Pyrales, p. 57, 1938.—Janse, Journ. Ent. Soc. South Africa, vol. 14, p. 143, 1941. (Type of genus: *Cryptoblabes rutilella* Zeller, a synonym of *bistriga* (Haworth); figs. 2, 131, 638.)

Tongue well developed. Antenna pubescent; shaft of male notched at base and with curved, horny hook protruding from the notch. Labial palpus upturned, slender, reaching a little above vertex; third segment about two-thirds the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from well before the lower outer angle of cell (from lower median vein of cell at about three-fourths); vein 3 also before the angle (from lower median at about five-sixths); 4 and 5 closely approximate at base, rarely (in individual specimens) connate; 6 bent towards base, from upper angle or from very close to upper angle of cell; 10 from the cell, separated from stalk of 8–9 at base; male without costal fold. Hind wing with vein 2 from middle or just beyond middle of lower median vein of cell; 3 from before and more or less removed from the outer angle of cell; 4 and 5 from the angle, closely approximate at base, thence diverging, 7 and 8 closely approximate, contiguous or weakly anastomosing for a short distance beyond cell; cell less than one-half the length of wing, but not "very short" as stated by Ragonot in his generic key (Monograph, p. xliv); discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos a small, simple hook. Transtilla complete; developed as a narrowly banded bridge with more or less elongate central projection. Uncus broad, with apical margin broadly rounded and invaginate, giving the uncus a bilobed appearance. Harpe (in European species) with strong hair tufts arising from articulated plates in intersegmental area between base of sacculus and terminal margin of eighth abdominal segment, or with long hair tuft from sacculus near its base (*rutilella*). Anellus with elongate, narrow, lateral lobes. Aedeagus simple; penis with or without cornutus, latter, when present, a single, long, spine. Vinculum broad and with broad terminal margin more or less concave.

Female genitalia with ductus bursae membranous, finely scobinate towards junction with bursa; genital opening simple except for a narrow, sclerotized band behind and above the opening; bursa membranous more or less finely scobinate; signum present, developed as a stout, blunt, flattened thorn (*rutilella*) or a patch of dense granulations (*gnidiella*); ductus seminalis from bursa.

The foregoing description was drawn from European species which are obviously congeneric. Numerous other species have been described in the genus from India, Formosa, Japan, Australia and the islands of the Pacific. Whether these are all congeneric I do not know. Two unidentified species before me from the Philippines have genitalia similar in habitus to those of the genotype (*rutilella*) except that the dorsal, intersegmental tufts at base of harpe are lacking. Their unci have the same characteristic bilobed appearance. The venational character which has been generally accepted as defining the genus (i. e., the position of vein 3 of hind wing in relation to the lower outer angle of cell) is variable and illusive, being closer to the angle in *gnidiella* (fig. 1) than in *rutilella* (fig. 2) and still closer in the Philippine species. Indeed, in American examples of *Acrobasis* (=*Mineola*) vein 3 is often as far from the angle as it is in *gnidiella*. The shorter cell of *Cryptoblabes*, coupled with the position of vein 3, will, however, suffice to maintain the group separation made between the two genera in our key.

Cryptoblabes is a distinctly Old World genus with no indigenous New World species. It is represented in the Western Hemisphere by only one introduced European species (*gnidiella*).

1. Cryptoblabes gnidiella (Millière)

FIGURES 1, 132, 639

Ephestia gnidiella Millière, Iconographie et description de chenilles et Lépidoptères inedits, vol. 2, p. 308, 1864.
Cryptoblabes gniediella (Millière) Ragonot, Monograph, pt. 1, p. 16, 1893.—Dyar, Ins. Insc. Menstr., vol. 3, p. 88, 1915.

Forewing pale brownish fuscous with a faint rosy overcast due to more or less diffused longitudinal streaks of reddish scales (in fresh and well marked specimens especially along the fold, on the veins in outer area, and below costa from base); some whitish dusting along costa and in the cell, most pronounced as a pale shade between the dark discal spots at end of cell; transverse lines obscure and not sharply outlined, but distinguishable, whitish ocherous; the antemedial line oblique and curved, set well out towards middle of wing; subterminal nearly straight, parallel with termen; discal dots separate, blackish fuscous. Hind wing whitish, translucent, the veins darkened, a narrow dark shade along costa and a narrower dark line along terminal margin. Alar expanse, 11–16 mm.

Male genitalia with heavy hair tufts from plates articulating with base of sacculus of harpe; penis armed with spinelike cornutus about two-thirds as long as aedeagus. Female genitalia with signum developed as a dense scobinate-granulate patch; ductus seminalis from bursa near attachment of ductus bursae.

TYPE LOCALITY: France (type in Paris Mus.).

FOOD PLANTS: Fruits of *Chaenomeles japonica*, pomegranates, oranges, citron, grapes, raisins, etc. (often fallen and desiccated fruit), onion seeds, leaves and flowers of *Daphne gnidium*, flowers of *Ricinus communis*, green corn stalks (reared moth, in USNM, from Hawaii),

young stems of *Tamarix* and the stems, leaves, and flowers of *Lythrum*. Apparently has a various larval habit and a wide variety of hosts. A moth (in USNM) from Muar Johore, Malaya (Clausen), was reported as reared from a larval predator on *Aleurocanthus*.

DISTRIBUTION: Mediterranean countries of Europe, Africa, and Asia. Presumably widely distributed in the east and among the Pacific islands; but some of the published records may apply to other species. New World distribution: BERMUDA (Jan., Feb., Apr., May). VENEZUELA: El Valle (Aug.). BRAZIL: São Paulo (Feb.).

Genera 2–17: *Acrobasis* to *Chararica*

[Venational division B. Hind wing with vein 3 from the lower outer angle of the cell or (if from before the angle) close to it; 7 and 8 approximate beyond cell, rarely shortly and weakly anastomosed. Male genitalia with transtilla complete or, where incomplete (*Bertelia*, *Hypargyria*), the elements strongly developed and with expanded apices. Uncus triangulate, or hoodlike with rounded apical margin, or spatulate (*Birinus*).]

2. Genus Acrobasis Zeller

Acrobasis Zeller, Isis von Oken, 1839, p. 176; 1848, p. 606.—Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa, vol. 4, p. 99, 1849.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, vol. 1, pt. 2, p. 175, 1865.—Hulst, Phycitidae of N. Amer., p. 120, 1890; U. S. Nat. Mus. Bull. 52, p. 418, 1902.—Ragonot, Monograph, pt. 1, p. 85, 1893.—Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 41, 1908.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 214, 1910.—Barnes and McDunnough, Contributions, vol. 2, p. 221, 1914.—Forbes, Cornell Mem. 68, p. 614, 1923.—Meyrick, Revised handbook of British Lepidoptera, p. 397, 1928.—Pierce and Metcalfe, Genitalia of the British Pyrales, p. 10, 1938.—Bisset, *in* Pierce and Metcalfe, op. cit., p. 55, 1938.—Janse, Journ. Ent. Soc. South Africa, vol. 4, p. 148, 1941. (Type of genus: *Phycis tumidella* Zincken (= *Acrobasis zelleri* Ragonot); figs. 133, 640.)

Mineola Hulst, Phycitidae of N. Amer., p. 126, 1890; U. S. Nat. Mus. Bull. 52, p. 419, 1902.—Forbes, Cornell Mem. 68, p. 618, 1923. (Type of genus: *Myelois indigenella* Zeller.)

Seneca Hulst, Phycitidae of N. Amer., p. 177, 1890. (Type of genus: *Cateremna tumidulella* Ragonot. New synonymy.)

Acrocaula Hulst, Canadian Ent., vol. 32, p. 170, 1900. (Type of genus: *Acrocaula comacornella* Hulst. New synonymy.)

Tongue well developed. Antenna pubescent; on male, basal segment enlarged and angulate, the shaft with a slight sinus at base. Labial palpus upturned, reaching to or a trifle above vertex; third segment slightly more than half the length of second, acuminate. Maxillary palpus filiform. Forewing smooth or with transverse antemedian ridge of raised scales; 11 veins; vein 2 from well before the angle of the cell; 3 rather well separated from 4, but somewhat nearer to 4 than to 2; 4 and 5 closely approximate at base or connate (rarely, in individual specimens, shortly stalked); 6 from below upper angle of cell, straight; 10 from the cell, usually (except in individual specimens) separated from stalk of 8–9 at base; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell (from outer two-thirds of lower median); 3 from before but near the angle; 4 and 5 from the angle, connate; 7 and 8 shortly anastomosed beyond cell; cell about half the wing length; discocellular vein curved. Eighth abdominal segment of male with midventral hair tuft.

Male genitalia with apical process of gnathos a simple, elongate hook, or an elongate trifurcate hook. Transtilla complete, sharply angulate and reaching as far back as base of apical process of gnathos; terminal margin narrow and indented. Uncus broadly triangulate. Harpe simple. Anellus a narrowly sclerotized U- or V-shaped plate. Aedeagus simple, rather stout; penis with numerous sclerotized wrinklings, otherwise unarmed. Vinculum stout, a trifle longer than broad, slightly tapering; terminal margin truncate and more or less concave.

Female genitalia with ductus bursae and bursa populatrix membranous except for a dorsal sclerotized plate in genital opening; ductus and bursa more or less scobinate; signum, if present, consisting of a granulate cup or a minute central spine surrounded by a dense cluster of scobinations; ductus seminalis from a lobe of bursa near junction of bursa and ductus bursae.

Acrobasis as here defined is something of a composite genus, dividing into two distinct groups on the development of the apical process of gnathos. Typical *Acrobasis*, comprising the European species with both smooth-winged forms (including the type, *tumidella*) and those with the raised-scale ridge on forewing, and all smooth-winged American species (formerly under *Mineola*), have the apical process of gnathos produced as a simple, elongate hook (fig. 133b). All our American species with the raised-scale ridge on forewing (except *minimella* Ragonot) have the apical process of gnathos trifurcate, that is, produced as an elongate hook with a lateral projection from each side before apex. This latter group is strictly North American, limited in distribution to the United States, and Canada east of the Rocky Mountains (except for *A. betulella* Hulst). As far as I know there are no Old World species with a similar gnathos. I had hoped to distinguish this distinctly American group as a separate genus under one of Hulst's available names (*Seneca* or *Acrocaula*) on the basis of the trifurcate projection of gnathos and the raised-scale ridge on the forewing; but *minimella* Ragonot prevents this, as it falls between the two groups, having the raised-scale ridge and the simple projection of gnathos. The females offer no characters that will serve to differentiate the groups. Their genitalia are so similar that they cannot be used, in many cases, even for specific separation, much less for group division.

The males of the typical American group with raised-scale ridge are somewhat more variable than the females, exhibiting slight differences in the shape of the transtilla and apical projection of gnathos. Figures of these structures are given, for what they are worth, for all the species represented by authentic males. The differences are comparative only, and I suspect that, when extended series of the several species are available, they

will prove to be more individual than specific in character.

The reasons for sinking *Seneca* and *Acrocaula* into the synonymy of *Acrobasis* are given in the discussion of their types (pp. 22 and 24).

Genus *Acrobasis*, Species 2–7: *A. indigenella* to *A. comptella*

[Male with apical process of gnathos a simple hook; forewing smooth.]

2. Acrobasis indigenella (Zeller)

FIGURES 3, 134, 641

Myelois indigenella Zeller, Isis von Oken, 1848, p. 867.—Riley, Fourth annual report on the noxious, beneficial and other insects, of the State of Missouri, p. 38, 1872.

Phycita nebulo Walsh, Prairie Farmer, p. 308, 1860; Proc. Boston Soc. Nat. Hist., vol. 9, p. 312, 1863.

Phycis indiginella (Zeller) Weed, *in* Forbes, Fifteenth report of the State Entomologist on the noxious and beneficial insects of the State of Illinois, p. 65, 1889.

Acrobasis indiginella (Zeller) Riley, Canadian Ent., vol. 16, p. 237, 1884.—Ragonot, Monograph, pt. 2, p. 118, 1893.—Forbes, Cornell Mem. 68, p. 619, 1923.

Phycita (*Acrobasis*) *nebulo* (Walsh) Riley, Fourth annual report on the noxious, beneficial and other insects, of the State of Missouri, p. 38, 1872.

Phycita (*Acrobasis*) *nebulo nebulella* Riley, Fourth annual report on the noxious, beneficial and other insects, of the State of Missouri, p. 42, 1872.

Myelois zelatella Hulst, Ent. Amer., vol. 3, p. 136, 1887.

Mineola indiginella (Zeller) Hulst, Phycitidae of N. Amer., p. 130, 1890.—Quaintance and Siegler, U. S. Dep. Agr. Farmers' Bull. 1270, p. 49, 1922.—Essig and Keifer, Monthly Bull. California Dep. Agr., vol. 22, p. 155, 1933.—McDonough, Check list, No. 6115, 1939.

Mineola indigenella nebulella (Riley) Hulst, Phycitidae of N. Amer., p. 131, 1890.

Forewing gray-brown densely dusted with white; the white dusting concentrated on the upper half of wing and somewhat between subterminal line and outer margin, forming two strongly contrasted white patches, one from costa in subbasal area, the other more or less triangular and extending from costa, between the transverse dark lines, into cell and including the blackish discal spots; the whitish terminal area is less sharply defined and on many specimens somewhat faint; transverse antemedial line curving obliquely from basal third of costa to middle of inner margin, indicated chiefly by its outer dark margin, which begins as a conspicuous black triangle on costa; from inner margin at one-third a blackish line curves upward to meet the antemedial line near costa; the area enclosed between them reddish ocherous; a similar, smaller spot of the same color on base of inner margin; extreme base of costa blackish; subterminal line sinuate, bordered inwardly and outwardly by dark lines which begin as blackish spots on costa; from the outer of these a dark band extends transversely across to the base of antemedial line at inner margin, somewhat obscured in the dark ground color on all but the palest and most contrastingly marked specimens; discal spots at end of cell black, more or less confluent, usually a black bar along discocellular vein; a more or less broken, black line along terminal margin. Hind wing subpellucid, pale smoky fuscous; the veins very faintly, if at all, darkened; a narrow, obscure, dark line along termen. Alar expanse, 15–20 mm. Male genitalia as given for the genus. Female genitalia without signum.

TYPE LOCALITIES: "Carolina" (*indigenella*, in BM); Illinois? (*nebulo*, lost); Missouri? (*nebulella*, lost); "New York and Canada," (*zelatella;* the supposed type, ♂, in AMNH, ex Rutgers, is labeled "Blanco County, Texas").

FOOD PLANTS: Apple, crabapple, plum, prune, cherry, quince, *Crataegus*, *Cotoneaster*, *Pyrocantha coccinea*. Larva feeding on leaves and forming serpentine resting and hibernating case of silk and frass.

DISTRIBUTION: UNITED STATES: *Maine*, Sebec Lake (July); *New Hampshire*, Hampton (July); *Vermont*, Clarendon; *Massachusetts*, Newton Highlands; *Connecticut*, East River (July); *New York*, Catskill Mts., Ilion; *New Jersey*, Rutherford; *Pennsylvania*, Chambersburg (June, July), Germantown (July), New Brighton (July), Pittsburgh (June); *Virginia*, Colonial Beach (July), Norfolk (May); *North Carolina*, Tryon (Aug.); *Georgia*, Savannah (Apr.); *Illinois*, Chicago, Decatur (May, June, July, Aug.); *Missouri*, Mossele (June, July), Norborne (Apr., June, July), St. Louis (Aug.); *Nebraska*, Wahoo (May); *Kansas*, Onaga, Wichita (June); *Mississippi*, "Agr. College" (May, June, July); *Arkansas*, Siloam Springs (June), Washington County (July); *Texas*, Abilene, Blanco County (Sept.), Fort Worth (Sept.), Houston (May, June, Aug.), Kerrville, Victoria (June); *California*, Lomita, Los Angeles County (Mar.) Orange County (June). (The California records all from plum.) CANADA: *Ontario*, Trenton (June, July); *Quebec*, Meach Lake (July).

Apparently generally distributed east of the Rocky Mountains and rather recently introduced into California.

This species has been considered of economic importance as a defoliator of fruit trees in the Middle States, and in the official list of common names approved by the American Association of Economic Entomologists is designated as the "leaf crumpler." However, it does not seem to be more than a minor pest of local and occasional concern. Several references are made to it in the economic literature but none of these adds anything of significance to our knowledge of the insect beyond what is given in the early papers by Walsh and Riley.

Riley's *nebulella* was described by him as a variety of *nebulo* and distinguished from the latter by the more diffused dark shading and the separation of the discal spots on forewing. In the series before me there is considerable variation in the extent and intensity of the dark coloring and the discal mark varies even more, being sometimes divided into two distinct spots or fused into a single bar on different sides of the same specimen, so the varietal designation is hardly worth maintaining. In 1908 (Proc. Ent. Soc. Washington, vol. 10, p. 45)

Dyar, on the evidence of a supposed type of *nebulella* in the National Collection, resurrected the name and applied it to the "pecan leaf casebearer." Barnes and McDunnough (Contributions, vol. 2, p. 222, 1914; vol. 3, p. 221, 1917) called attention to the spuriousness of the alleged "type" and gave the pecan casebearer its proper reference (*juglandis* LeBaron); but on the strength of Dyar's identification the name *nebulella* had already appeared, and continued to be used for some years in economic publications for the pecan leaf casebearer. In his 1939 Check List McDunnough applies the name in an entirely new sense, transferring it to *Meroptera* with the well-known *unicolorella* Hulst as a synonym. This was most unfortunate and altogether unnecessary. We know what *unicolorella* Hulst is, and its type is at hand for reference. The type of *nebulella* is nonexistent and McDunnough's new reference has nothing to back it but an entomologist's interpretation of Riley's description and very poor and over-inked figure of the forewing. I see nothing in either to rule out the original interpretation, so shall let the name sleep in synonymy.

3. Acrobasis grossbecki (Barnes and McDunnough), new combination

Mineola indigenella nebulella Grossbeck (not Riley), Bull. Amer. Mus. Nat. Hist., vol. 37, p. 129, 1917.—Barnes and McDunnough, Contributions, vol. 3, p. 220, 1917.

Mineola grossbecki Barnes and McDunnough, Contributions, vol. 3, p. 221, 1917.—McDunnough, Check list, No. 6116, 1939.

Forewing purplish brown, the dark ground color more extended than in *indigenella*, obscuring the pale antemedial line and completely obliterating the reddish ocherous subbasal patch on inner margin usually present in the genus; triangular black spot on costa, beginning the outer dark border of antemedial line, distinct and sharply contrasted as in *indigenella;* white areas restricted more than in *indigenella*, the subbasal one narrowly triangulate with its point on inner margin, midcostal one extending to and including the discal spots in its lower angle; whitish dusting in terminal area very faint; subterminal line obscure; discal spots at end of cell black, separated. Hind wing shiny, smoky fuscous. Alar expanse, 15–16 mm.

Genitalia as in *indigenella*.

TYPE LOCALITY: Lakeland, Fla. (type in USNM).

FOOD PLANT: *Crataegus* (larva feeding on the leaves).

DISTRIBUTION: Known only from the type locality. May be a Florida race of *indigenella*, but appears to be a distinct species despite the likeness of its genitalia to those of *indigenella*.

4. Acrobasis vaccinii Riley

FIGURE 642

Acrobasis vaccinii Riley, Canadian Ent., vol. 16, p. 237, 1884; *in* Rep. [U. S.] Comm. Agr. for 1884, p. 355, 1885.—Smith, *in* Rep. [U. S.] Comm. Agr. for 1884, p. 394, 1885.—Saunders, Insects injurious to fruits, p. 375, 1883 (as "The Cranberry Fruit-worm").—Ragonot, Monograph, pt. 1, p. 121, 1893.—Forbes, Cornell Mem. 68, p. 618, 1923.

Mineola vaccinii (Riley) Hulst, Phycitidae of N. Amer., p. 128, 1890.—Brown, Oregon Agr. Exp. Station Bull. 225, p. 19, 1927.—Crowley, Washington Agr. Exp. Station Bull. 230, p. 24, 1929.—McDunnough, Check list, No. 6114, 1939.—Beckwith, Journ. Econ. Ent., vol. 34, p. 169, 1941.

Averaging smaller than *indigenella;* dark ground color similar but more extended and without the contrasting black costal triangle; pale antemedial line obliterated by a transverse extension of the ground color, bordered inwardly by an almost vertical, rather narrow white band which expands narrowly on costa towards base (the remains of the much-reduced subbasal white area); midcostal white patch also much restricted, barely including at its lower angle the separated black discal spots; on fresh specimens some sprinkling of rufous scaling is distinguished under high magnification, but no reddish or other contrastingly colored, angulate, subbasal patch on inner margin (as in *indigenella* and *tricolorella*). Hind wing pale smoky fuscous. Alar expanse 14–18 mm.

Male genitalia differing in no significant detail from those of *indigenella*. Female genitalia with bursa more or less heart-shaped (less elongate than that of *indigenella* or *grossbecki*); signum present as a minute granulate cuplike patch.

TYPE LOCALITY: Massachusetts (type in USNM).

FOOD PLANT: Cranberry, blueberry (larva in the fruit).

DISTRIBUTION: *Massachusetts* (type series, no exact locality, June), Wareham (June, July); *Connecticut*, East River (July); *New Jersey*, Pemberton (May), Whitesbog (June); *Wisconsin; Michigan; Georgia; Mississippi*, Biloxi, Poplarville; *Washington*, Long Beach (June), Seaview (July).

Presumably generally distributed on the range of its food plants in the United States and Canada. The foregoing records are from reared and typical examples in the National Collection.

This species, popularly known as the "cranberry fruitworm," is of some importance, especially to cranberry growers, and has a rather extensive economic literature, mostly in annual reports, bulletins, and other publications of state entomologists and experiment stations. None of these adds anything of biological or taxonomic significance to the earlier records of Riley and Smith.

5. Acrobasis amplexella Ragonot

Acrobasis amplexella Ragonot, N. Amer. Phycitidae, p. 3, 1887; Monograph, pt. 1, p. 97, 1893.—Forbes, Cornell, Mem. 68, p. 618, 1923.

Mineola amplexella (Ragonot) Hulst, Phycitidae of N. Amer., p. 127, 1890.—McDunnough, Check list, No. 6112, 1939.

This is probably nothing but a color form of *vaccinii*. I can find no difference from the latter except in the greater extension of the basal dark area of forewing and the consequent further restriction of the subbasal white area which is a narrow band throughout, not expanding along costa towards base.

Rearing will have to settle the status of *amplexella*. In the material before me there are only collected

specimens. All reared examples we have from either cranberry or blueberry are typical *vaccinii*.

Alar expanse, 12–18 mm.

TYPE LOCALITY: North Carolina (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *Maine*, Monmouth (June), Sebec Lake (July); *New Hampshire* (June, July); *Massachusetts*, Cohasset (July), Framingham (June), Winchendon (July), Worcester (July); *Connecticut*, East River (July); *New York*, Liberty (June), Sullivan County (July); *Pennsylvania*, Hazleton (May); *North Carolina*, Tryon (July).

In the Barnes and old U. S. National Museum Collections these examples were about equally divided under the two names, *amplexella* and *vaccinii*.

6. Acrobasis tricolorella Grote

FIGURES 135, 643

Acrobasis tricolorella Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 694, 1878.—Ragonot, Monograph, pt. 1, p. 93, 1893.—Forbes, Cornell Mem. 68, p. 618, 1923.

Mineola tricolorella (Grote) Hulst, Phycitidae of N. Amer., p. 127, 1890.—McDunnough, Check list, No. 6111, 1939.

Mineola scitulella Hulst, Canadian Ent., vol. 32, p. 169, 1900.—Hungerford, Idaho Agr. Exp. Station Bull. 149, p. 29, 1927; Bull. 164, p. 29, 1929.—Pack and Dowdle, Journ. Econ. Ent., vol. 23, p. 321, 1930.—Haegele, Journ. Econ. Ent., vol. 25, p. 1073, 1932.—Essig and Kiefer, Monthly Bull. California Dep. Agr., vol. 22, p. 153, 1933.—McDunnough, Check list, No. 6110, 1939. (New synonymy.)

Forewing grayish fuscous more or less dusted with whitish scales, in some specimens well diffused over the middle of wing, giving it a pale slate ground color, but normally concentrated into a pale patch from costa before subterminal line, including the discal mark, and a pale terminal suffusion below apex; usual subbasal white area constricted into a narrow, sharply defined antemedial band, outwardly oblique from costa to top of cell, thence vertical to inner margin and bordered outwardly on its vertical portion by a more or less triangular, contrasted orange or reddish orange patch; bordering the white line and the orange patch outwardly, a black oblique angulate line extending to near middle of inner margin and beginning on costa in a more or less angulate and diffused blackish patch (similar to but not so sharply defined nor contrasted as the black costal patch on *indigenella*); subterminal line distinct, narrow, white, angled inwardly at vein 6 and lower fold and curved outwardly between, bordered inwardly by a narrow black line and outwardly by a black costal spot and a more or less pronounced orange or reddish orange band (well marked in many eastern and western specimens, but sometimes obscured by dark scaling); discal spots usually fused into a slightly curved, black bar along discocellular vein, rarely separated. Hind wing smoky white to pale smoky fuscous. Alar expanse, 18–22 mm.

Male genitalia with cucullus of harpe of more even width throughout and apex more evenly rounded than in other species of the genus. Eighth abdominal segment of male with a single central, ventral hair tuft (supplementary ventral hair tufts on the other species). Female genitalia with signum present as a small, granulate, cup-shaped patch.

TYPE LOCALITIES: Oldtown, Maine (*tricolorella*, in BM); Colorado (*scitulella*, in AMNH, ex Rutgers).

FOOD PLANTS: Apple, apricot, catalina cherry, plum, prune (larvae feeding in buds and fruits, probably also on leaves), also recorded from galls on chokecherry (Park and Dowdle).

DISTRIBUTION: UNITED STATES: *Maine*, Oldtown, Bar Harbor (July), Orono; *New Hampshire*, Hampton (July); *Massachusetts*, Amherst (Hatch Exper. Station, July); *New York*, Catskill Mts., Illion (July); *New Mexico*, Albuquerque (July); *Colorado*, Denver, Glenwood Springs (May, July, Aug., Sept.), Grand Junction (Aug.), Gunnison County (July); *Utah*, Bellevue (May), Dividend (Aug.), Eureka (Aug.), Logan (July), Park City (July), Provo (July); *Idaho*, Boise (Sept.), Emmett (July); *California*, Loma Linda (Aug.), Mount Lowe (May, July), San Diego (June, July), Santa Barbara (Aug.), Warner Mts. (Modoc County, July); *Oregon* Lake View (Aug), The Dalles (June); *Washington*, Prosser (June), Pullman (July), Walla Walla (Aug.), Wenatchee (Aug.). CANADA: *Ontario*, Ottawa (July); *Manitoba*, Cartwright; *British Columbia*, Arrowhead Lake (June).

The species seems to be abundant in our western states and relatively scarce in the east, to judge by examples in collections, and has attracted some attention as a fruit pest in Utah, Idaho, and California. There is nothing to distinguish western from eastern specimens and the one detail that Hulst relied upon for the separation of his *scitulella* (the presence of an orange outer border to the subterminal line) does not hold. It is present in eastern and western examples and equally variable in both. I am therefore sinking the name in the synonymy of *tricolorella*.

7. Acrobasis comptella Ragonot

FIGURE 646

Acrobasis comptella Ragonot, N. Amer. Phycitidae, p. 4, 1887.—Hulst, Ent. Amer., vol. 5, p. 156, 1889 (makes synonym of *caliginella* Hulst).

Forewing dark gray dusted with white, the white dusting concentrated on basal area, on costal median half of wing (forming a pale angulate patch which includes the discal spots), and in terminal area beyond subterminal line; in some specimens the white dusting is more extended, making most of the basal, median, and terminal areas pale ashy gray; outwardly bordering basal pale area a black line (narrowing from a shallow triangulate patch on costa) extends obliquely outward to top of cell thence vertically to inner margin, bordered outwardly on vertical part by a triangulate, tawny or reddish brown patch; subterminal line white, sinuate, bordered inwardly by a narrow, blackish line and outwardly, at costa, by a black smudge; discal spots at end of cell distinct, separate, black. Hind wing pellucid,

whitish or pale smoky fuscous. Alar expanse, 14–21 mm.

Male genitalia exhibiting no distinctive specific characters. Female genitalia with several short, parallel lines of fine scobinations in bursa; signum present as a small, granulate, cup-shaped patch.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Cisco (July), Colfax (July), Pasadena, San Diego (June), Santa Catalina Isl. (May), Warners (San Diego County, Aug.); *Arizona*, Gila County, Redington; *New Mexico*, Albuquerque (July), Las Vegas; *Utah*, Provo (July).

Hulst in 1889 made *comptella* a synonym of his *caliginella* and it has remained as such in our lists. However, the two are generically as well as specifically distinct, *caliginella* having the basal segment of the male antenna cylindrical (not triangularly expanded at apex as in *Acrobasis*). It is superficially similar in color and markings to *comptella;* but the black line bordering the whitish basal patch of forewing is distinctly broken, its vertical portion not reaching to inner margin. I am removing both *caliginella* and *Mineola supposita* Heinrich to *Rhodophaea*.

Genus *Acrobasis:* Species 8. *A. minimella*

[Male with apical process of gnathos a simple hook; forewing with raised-scale ridge.]

8. Acrobasis minimella Ragonot

FIGURE 140

Acrobasis minimella Ragonot, Ent. Amer., vol. 5, p. 113, 1889; Monograph, pt. 1, p. 105, 1893.—McDunnough, Check list, No. 6088, 1939.

Acrobasis nigrosignella Hulst, Phycitidae of N. Amer., p. 123, 1890.—Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 43, 1908.

Forewing grayish fuscous with a purplish suffusion; some whitish dusting on basal area and, very faintly, from costa before subterminal line to discal spots; antemedial line obscure except towards inner margin, where it is a narrow whitish line; a blackish triangular costal patch following the antemedial line and continued as thin black line on its outer border to inner margin; vertical scale ridge black; area between scale ridge and antemedial line ocherous or reddish; discal spots at end of cell small, obscure, separated. Hind wing smoky fuscous. Alar expanse, 13–16 mm.

Female genitalia exhibiting no specific difference to distinguish them from those of other species having the raised-scale ridge on forewing.

TYPE LOCALITY: Texas (*minimella*, ♀, in Paris Mus., and *nigrosignella*, in AMNH, ex Rutgers).

FOOD PLANT: Oak (this food plant record from specimen, in USNM, reared at Falls Church, Va., under Hopkins No. 9847, C. F. Johansen).

DISTRIBUTION: *Texas* (Apr.); *Mississippi*, Starkville (July); *Louisiana*, Winfield (June); *North Carolina*, Southern Pines (Apr., May, June, Aug.), Tryon (May); *Virginia*, Falls Church; *District of Columbia*, Washington (June); *New Jersey*, Lakehurst (July).

The species is easily recognized by its size, color, and male characters. The sex-scaling is present and consists of long broad black costal streaks on underside of fore and hind wings.

Genus *Acrobasis*, Species 9–22: *A. feltella* to *A. demotella*

[Male: Apical process of gnathos trifurcate; forewing with raised-scale ridge; black sex-scaling beneath.]

9. Acrobasis feltella Dyar

FIGURE 141

Acrobasis feltella Dyar, Proc. Ent. Soc. Washington, vol. 11, p. 214, 1910.—Ely, Ins. Insc. Menstr., vol. 1, p. 51, 1913.—McDunnough, Check list, No. 6080, 1939.

Head, basal segment of antenna, thorax, and basal area of forewing white; a faint rosy tint on the posterior of thorax and a more obvious rosy shading on lower half of pale basal area of forewing (more intense and extended on the female than on the male); remainder of wing dark gray-brown (in fresh specimens blackish brown) with a faint, pale grayish shading in terminal area and a whitish spot on inner margin near tornus (the lower end, and contrasted portion of the otherwise obscure subterminal line); black discal dots at end of cell distinguishable but somewhat obscured in the dark ground color, usually separate, but occasionally fused; antemedial scale ridge blackish. Hind wing of male white at base, shading to smoky fuscous outwardly; the veins in both sexes faintly darkened. Alar expanse, 14–18 mm.

Black sex-scaling consisting of a short patch at base of costa on forewing.

TYPE LOCALITY: Warner, N. Y. (type in USNM).

FOOD PLANT: Hickory (larva boring in petioles).

DISTRIBUTION: UNITED STATES: *New York*, Warner (July); *Connecticut*, East River (July); *Illinois*, Putnam County (June). CANADA: *Ontario*, Merivale (June).

This species, *palliolella* Ragonot, and *caryalbella* Ely are identical in color, maculation, and all superficial characters. They exhibit trifling differences in their male genitalia, especially in the shapes of their transtillae and the apical processes of their gnathi. These differences are probably no more than individual in character. We figure them for what they are worth. Ely (1913) noted differences in the larval cases of *feltella* and *caryalbella* which should be significant. He also saw, or thought he saw, a difference in the sex-scaling of Dyar's type and the type of *caryalbella*. In this he was in error; for the sex-scaling is identical in both types and on the males of *palliolella* and *juglandis* as well. I suspect that the three names (*feltella*, *palliolella*, and *caryalbella*) apply to a single species; but this cannot be determined until the biologies and larvae of the various hickory-feeding forms of the genus are more thoroughly studied. Until that is done it seems best to keep the names separated.

10. Acrobasis palliolella Ragonot

FIGURE 142

Acrobasis palliolella Ragonot, N. Amer. Phycitidae, p. 4, 1887; Monograph pt. 1, p. 92, 1893.—Hulst, Phycitidae of N. Amer., p. 121, 1890.

Acrobasis albocapitella Hulst, Ent. Amer., vol. 4, p. 116, 1888.

Not distinguishable superficially from *feltella*. Trifling differences in the male genitalia are shown in the figure. They are probably not significant.

TYPE LOCALITIES: North America (*palliolella*, in Paris Mus.); Canada (*albocapitella*, in AMNH, ex Rutgers).

FOOD PLANT: Presumably hickory. Life history not known.

DISTRIBUTION: UNITED STATES: *Illinois*, Chicago (July); *Pennsylvania*, New Brighton (July); *North Carolina*, Plymouth (May); *Connecticut*, East River (July). CANADA: *Ontario*, Ottawa (July).

The name *palliolella* has been variously misapplied and has appeared frequently in economic literature for the "pecan leaf casebearer" (*juglandis* LeBaron). In our latest checklist (McDunnough, 1939) it appears as a synonym of *juglandis* but I do not think this is correct.

A long series of *juglandis* before me shows considerable variation in color but at the same time consistent differences from *palliolella*, whose closest affinities are *feltella* Dyar and *caryalbella* Ely.

11. Acrobasis caryalbella Ely

FIGURE 143

Acrobasis caryalbella Ely, Ins. Insc. Menstr., vol. 1, p. 52, 1913.—McDunnough, Check list, No. 6081, 1939.

Acrobasis angusella Dyar (not Grote), Proc. Ent. Soc. Washington, vol. 10, p. 42, 1908.

Ely distinguishes his species from Dyar's *feltella* chiefly on the differences in their larval cases ("cocoons"). There is nothing else to separate them except some slight and probably not significant differences in their genitalia. These are shown in the figure.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: Hickory.

Known only from reared examples from the type locality and the female from hickory (June) without locality label, bearing Riley's No. 376 and referred by Dyar to *angusella* Grote. The sex-scaling on the male is the same as that on *feltella* and *palliolella*.

12. Acrobasis juglandis (LeBaron)

FIGURES 138, 644

Phycita juglandis LeBaron, Second annual report on the noxious insects of the State of Illinois, p. 23, 1872.

Acrobasis juglandis (LeBaron) Riley, Fourth annual report on the noxious, beneficial and other insects of the State of Missouri, p. 42.—Barnes and McDunnough, Contributions, vol. 3, p. 221, 1917.—McDunnough, Check list, No. 6082, 1939.—Moznette (and others), U. S. Dep. Agr. Farmers' Bull. 1829, p. 16, 1940.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 449, 1950.

Acrobasis nebulella Dyar (not Riley), Proc. Ent. Soc. Washington, vol. 10, p. 45, 1908.

Acrobasis palliolella Dyar (not Ragonot), Proc. Ent. Soc. Washington, vol. 10, p. 44, 1908.—Forbes (in part), Cornell Mem. 68, p. 617, 1923.

Similar to the three preceding species except: White basal area more or less shaded with ashy gray; without rosy tints on lower basal and outer areas; generally paler in outer area, mouse gray, with the white dusting from midcosta somewhat more intense; a distinct blackish costal triangle following the antemedial line. Hind wing smoky fuscous shading to rather dull white towards base on the male, darker and more uniformly colored on the female. Alar expanse, 14–17 mm.

TYPE LOCALITY: Illinois (type lost).

FOOD PLANTS: Hickory, pecan, walnut, butternut (larvae feeding on leaves, buds, and flowers).

DISTRIBUTION: *Illinois*, Chicago (July); *Missouri; Mississippi*, Wiggins (May); *Texas*, Black Springs, Brownsville (May), Cuero (June), Kerrville (May, June), Victoria (May, June); *Georgia*, Albany (July), Atlanta, Blackshear (May, June), Cairo (May, June); *Florida*, Monticello (May, June), Orlando (May), Palatka (May), Tallahassee (May); *South Carolina*, Mt. Pleasant (July); *North Carolina*, Edgecombe County (May), Plymouth (May); *District of Columbia*, Washington (June).

A large reared series in the National Museum is mostly from pecan. Also before me a series reared from walnut and butternut that appears to be a suffused, dark form of *juglandis*. Two specimens of the latter series are from Ontario, Canada.

In our Gulf States the species is of some importance as a defoliator of pecan, and is popularly known as the "pecan leaf casebearer." It has numerous references in economic literature. I have retained only one of these (Moznette, 1940), for it gives all the biological information available on the species under its correct specific name. Dyar's unfortunate identifications have greatly confused the nomenclature, with the result that most economic references previous to 1939 are under *nebulella* or *palliolella*. Hulst (Phycitidae of N. Amer., p. 131, 1890) and Ragonot (Monograph, pt. 1, p. 120, 1893) are also at fault in applying the name *juglandis*. Their descriptions apply to examples of *indigenella* and not to the "pecan leaf casebearer."

The sex-scaling of *juglandis* is like that on *feltella*.

13. Acrobasis sylviella Ely

FIGURE 144

Acrobasis sylviella Ely, Proc. Ent. Soc. Washington, vol. 10, p. 161, 1908.—McDunnough, Check list, No. 6094, 1939.

Forewing pale ashy gray; the basal area, thorax, and head but slightly paler, not contrastingly whitish; no triangular black spot on costa outside the antemedial line, the dark outer border of the antemedial line a narrow band or weak, diffused shade from costa. Hind wing pale smoky fuscous on male, slightly darker on female. Alar expanse, 19–21 mm.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: *Ostrya*.

DISTRIBUTION: UNITED STATES: *Connecticut*, East River (July); *Pennsylvania*, New Brighton (May). CANADA: *Ontario*, South March (June).

The Pennsylvania specimen was in the Barnes Collection as *cirroferella* Hulst. This is incorrect, however, as the male type of *cirroferella* is without sex-scaling. The Canadian specimens (one male and one female) were reared from *Ostrya* and are responsible for the food plant record. They were tentatively identified by McDunnough as *sylviella* and I think correctly. They are considerably darker than the type series of the Pennsylvania specimen; but the fact that they were reared, and probably under excess moisture, would easily account for the difference.

The black sex-scaling of *sylviella* is similar to that of *feltella* but slightly more extended, reaching slightly beyond basal fourth of costa on the underside of forewing.

14. Acrobasis kearfottella Dyar

FIGURE 145

Acrobasis kearfottella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 34, 1905.—Ely, Ins. Insc. Menstr., vol. 1, p. 53, 1913.—McDunnough, Check list, No. 6079, 1939.

The most distinct and strikingly marked of the American *Acrobasis* species; costal half or third of basal area of forewing snow white, this white area extending out along costa to subterminal line and broadening to include the blackish discal spots; midcostal margin narrowly black-edged; white area uncrossed at any place by dark lines; subterminal line faint, but distinct, dull white; remainder of forewing dark gray-brown. Hind wing of male white shading to fuscous at apex and terminal margin; hind wing of female pale glossy brown throughout. Thorax and head of male show white; of female concolorous with dark area of forewing. Alar expanse, 18–21 mm.

TYPE LOCALITY: Cleveland, Ohio (type in USNM).

FOOD PLANT: Hickory (larvae feeding on the leaves).

DISTRIBUTION: *Ohio*, Cleveland (June); *New York*, Ilion (July); *Connecticut*, East River (July); *Pennsylvania*, New Brighton (July); *North Carolina*, Black Mountain; *Illinois*, Oconee (Aug.).

Very little is known of the life history. Ely's paper describes the cocoon. The black sex-scaling on the male is similar to that of *juglandis* and the preceding hickory-feeding species.

15. Acrobasis caryae Grote

FIGURES 137, 146

Acrobasis caryae Grote, Papilio, vol. 1, p. 13, 1881; Bull. U. S. Geol. Geog. Surv. Terr., vol. 6, p. 591, 1882.—Hulst, Phycitidae of N. Amer., p. 122, 1890.—Ragonot, Monograph, pt. 1, p. 105, 1893.—Barnes and McDunnough, Contributions, vol. 2, p. 222, 1914.—Forbes, Cornell Mem. 68, p. 617, 1923.—McDunnough, Check list, No. 6100, 1939.—Moznette and others, U. S. Dep. Agr. Farmers' Bull. 1829, p. 2, 1940.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 449, 1950.

Acrobasis caryaevorella Dyar (not Ragonot), Proc. Ent. Soc. Washington, vol. 10, p. 44, 1908.

Acrobasis hebescella Dyar (not Hulst), Proc. Ent. Soc. Washington, vol. 10, p. 44, 1908.

Forewing glossy gray (in southern specimens from pecans pale and with little darker shading except narrowly along antemedial line); basal area concolorous with median area except in some of the darker specimens; northern specimens from hickory normally dark grayish fuscous; antemedial line whitish towards inner margin; raised-scale ridge black, preceded by some white scaling and followed by a narrow, more or less obscured, flesh-colored patch; subterminal line pale gray, obscure; discal dots distinct and separate but not strongly contrasted against ground color. Hind wings smoky fuscous. Alar expanse, 18–20 mm.

Genitalia exhibiting no distinguishing specific characters; figured from southern male reared from pecan nut. The scale tufting on the eighth abdominal segment of the male consists of a single, rather long, central ventral tuft like that shown in figure 137 and similar to that of the European type of the genus (*tumidella*).

TYPE LOCALITY: Illinois (type in BM).

FOOD PLANTS: Hickory, pecan (overwintering larvae feeding in early spring upon opening leaves and in the stems of new growth; later generations in the nuts. Larva does not make a case during feeding period).

DISTRIBUTION: UNITED STATES: *Florida*, Monticello (June, July, Aug.), Tallahassee (May); *Georgia*, Albany (July); *Mississippi*, Goodman (July), Ocean Springs (May, Sept.), Pascagoula (June), Wiggins (June, July); *Texas*, Boerne (June), Bosque (May), Brownwood (Apr., May, June, July, Aug., Sept.), Colorado River (Apr., May), Cuero (Aug., Sept.), Dallas (May), Fort McKevett (June), Pecan Bayou (July), Pioneer (Aug.), San Saba (May), Texas A. and M. College Station (June, July), Victoria (June, July, Sept.); *Illinois*, Chicago, (July), Decatur (June); *Pennsylvania*, New Brighton (July, Aug., Sept.); *North Carolina*, Mill Brook; *District of Columbia*, Washington (May, June); *Connecticut*, East River (July, Aug.). CANADA: *Ontario*, Merivale (June).

This is the "pecan nut casebearer" of economic literature. It has a rather extended literature but is of importance only as a pecan pest in the Gulf States. Most of the economic references before 1929 are to *hebescella* and *caryaevorella* as a result of Dyar's misidentification of those species. I cite only one economic reference here, as the Moznette (1940) paper gives all the biological information available on the species as a pecan insect. Its biology as a hickory insect in the north is imperfectly known.

The sex-scaling of the male is characteristic, consisting of a short black patch on base of costa of forewing (as in *feltella*) and a long black streak along the top of cell on the underside of forewing. This combination is peculiar to *caryae* and *evanescentella*.

16. Acrobasis evanescentella Dyar

FIGURE 147

Acrobasis evanescentella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 44, 1908.—McDunnough, Check list, No. 6086, 1939.

Doubtfully distinct from *caryae*. The dark areas of forewing beyond base have a purplish luster, and the pale (whitish dusting) is more distinct, forming a pale

grayish white spot on costa before subterminal line (and extended to include the discal spots); sex-scaling on underside of wing as in *caryae*, except that the streak along top of cell is somewhat obscured by an overlay of pale scales. Under these it is black (not "pale gray"as stated by Dyar) and no narrower than that of *caryae*.

The only authentic specimens I have seen are those of the original type series. They are in excellent condition. The other specimens which Dyar later associated with them are all typical *caryae*. The note with the type lot ("Chittenden 250") tells nothing about the larval habits, so we do not know whether there are any biological characters to distinguish *evanescentella* from *caryae*. We shall have to hold the name until the biology is thoroughly studied.

TYPE LOCALITY: Orlando, Fla. (May) (type in USNM).

FOOD PLANT: Pecan.

17. Acrobasis stigmella Dyar

FIGURE 148

Acrobasis stigmella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 43, 1908.—Forbes, Cornell Mem. 68, p. 616, 1923.—McDunnough, Check list, No. 6089, 1939.

Forewing purplish gray; the basal area very dark (darker than remainder of wing); scale ridge scarcely darker, its outer margin edged with dull red; discal dots obscure; subterminal line very faint. Hind wing of male pale smoky fuscous with a slight ocherous tint; of female darker and without the ocherous tint on upper surface.

On the male the upper surface of the head is yellowish white, the thorax, purplish gray. On the female the head and thorax are concolorous, purplish gray. Alar expanse, 17–21 mm.

TYPE LOCALITY: Fort Lee, N. J. (type lost).

FOOD PLANT: Hickory.

DISTRIBUTION: *New Jersey; Connecticut*, East River (Aug.); *District of Columbia*, Washington (May, June), *Virginia*, Falls Church (June); *Illinois*, Decatur (May), Putnam County (July).

In his description Dyar states that it is based upon two males and one female from "Fort Lee, N. J., May 1896 (H. G. Dyar)" and one female from "East River, Conn., Aug. 20, 1906 (Chas. R. Ely)." The female from East River is in the National Collection but there are no specimens from Fort Lee and none dated 1896. The specimen (a male in good condition) bearing Dyar's type label is one reared by him at Washington, D. C., June 19, 1900. This probably was overlooked by him at the time he prepared his description and not identified or labeled until later. It is unquestionably *stigmella* but, in the light of his published declaration, cannot be accepted as the type.

The species is quite distinct and easily identified—especially the males by their contrasting yellow-white heads against their dark thoraces. The sex-scaling on underside of the male and the contrasting dark basal patch of forewing distinguish it from everything else except *aurorella* Ely. The sex-scaling consists of a narrow black streak on forewing extending for about one-fourth of costa from base, a strongly contrasted and rather broad black midcostal streak on hind wing and some black scaling on the extreme base of the veins of cell of the hind wing. The underside of hind wing is otherwise a uniform ocherous white.

The life history is also characteristic. In early spring (Mar.) the young overwintering larva is found within the unopened leaf-bud, its presence indicated by a small round frass lid over the entrance hole. For a short time the larva feed within the bud, chiefly upon the bud sheath. When it opens the young leaves are partially eaten and then the larva enters the new shoot. Thereafter the entire feeding life and pupal period is spent within the new growth. The larva makes a larval case during this generation. The life history of later summer generations is not known.

18. Acrobasis aurorella Ely

FIGURE 149

Acrobasis aurorella Ely, Proc. Ent. Soc. Washington, vol. 12, p. 67, 1910.—Forbes, Cornell Mem. 68, p. 616, 1923.—McDunnough, Check list, No. 6090, 1939.

Close to and similar to *stigmella* but differing markedly in the ground color of the forewing. The sex-scaling is the same. The upper surface of the head on the male is also ocherous white but much duller and less contrasted against the dark gray thorax. Forewing with basal area blackish gray sharply contrasted against remainder of wing; median and outer areas of wing pale pinkish ocherous or pale gray with a pinkish overcast; subterminal line extremely faint; discal dots distinct but not strongly contrasted. Hind wings as in *stigmella*. Alar expanse, 19–22 mm.

TYPE LOCALITY: Washington, D. C. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Connecticut*, East River (Aug.); *New York*, Ilion (Aug.); *New Jersey*, Montclair (June); *Pennsylvania*, New Brighton (Sept.); *District of Columbia*, Washington (June). Also two specimens from the Fernald Collection, without locality and labeled "*demotella* Grt."

19. Acrobasis peplifera Dyar

FIGURE 150

Acrobasis peplifera Dyar, Ins. Insc. Menstr., vol. 13, p. 13, 1925.—McDunnough, Check list, No. 6106, 1939

Forewing dark gray with a vinous tint; basal area a dark wine red; scale ridge black, followed by a red line, then by a whitish line or triangle on inner margin, shading into black towards costa; discal dots obscured in the dark ground color, more or less confluent. Hind wings pale smoky fuscous, darker in the female than male; veins faintly outlined by dark scaling. Alar expanse, 13–17 mm.

The male sex-scaling on underside is as follows: On forewing a rather wide black stripe on basal fifth of costa; on hind wing a black streak from base along top of cell, widening out to costa at its middle and putting

out a thin black branch along lower vein of cell (this lower streak extending out as far as base of vein 2).

TYPE LOCALITY: Millbrook, N. C. (type in USNM).

FOOD PLANTS: Hickory, pecan.

DISTRIBUTION: *North Carolina*, Elizabeth City (Aug.), Millbrook (Aug.), New Bern (Aug.), Tryon (Aug.); *Illinois*, Putnam County (July); *Arkansas*, Washington County (Aug.); *Texas*, Cuero (July); *Georgia*, Albany (June); *Florida*, Monticello.

Doubtfully distinct from *exsulella*, but the names had better be kept separate until more is known about the biologies of the two color forms.

20. Acrobasis exsulella (Zeller), new combination

FIGURE 151

Myelois exsulella Zeller, Isis von Oken, 1848, p. 868.

Rhodophaea exsulella (Zeller) Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Monograph, pt. 1, p. 80, 1893.—Hulst, Phycitidae of N. Amer., p. 120, 1890.—McDunnough, Check list, No. 6076, 1939.

Acrobasis septentrionella Dyar, Ins. Insc. Menstr., vol. 13, p. 13, 1925.—McDunnough, Check list, No. 6107, 1939. (New synonymy.)

Similar to *peplifera* except: Averaging larger; basal area of forewing more decidedly and evenly reddish; outer area somewhat paler; scale ridge not blackish, red and concolorous with remainder of basal area, very weak. Alar expanse, 14–20 mm.

TYPE LOCALITIES: North America [Georgia?] (*exsulella*, in Zool. Mus. Univ. Berlin); Florida (*septentrionella*, in USNM).

FOOD PLANTS: Hickory, pecan.

DISTRIBUTION: *Florida* (type, no other locality, Apr.), Orlando (Apr.); *Texas*, Brownwood (Mar.); *North Carolina*, Raleigh (May); *Maryland*, Plummers Isl. (June).

The types of both *exsulella* and *septentrionella* are females. The former is supposed to be in Berlin. The figure of it given by Ragonot (Monograph, pl. 5, fig. 19) is a very good match for Dyar's species and I have no hesitation in synonymizing the latter. The scale ridge is present on forewing but could be easily overlooked, especially on a female that had been spread. Even on the unspread and unrubbed females in the National Collection it is not discernible except under considerable magnification. The structure is more prominent on the male.

Our Texas specimens were reared from larvae feeding on the expanding buds of pecan. Dyar's paratype from North Carolina was reared from hickory. We have no further information on the biology. The sex-scaling of the male is like that of *peplifera*, which will probably prove to be nothing more than a variety or color form of *exsulella*.

21. Acrobasis angusella Grote

FIGURE 152

Acrobasis angusella Grote, North Amer. Ent., vol. 1, p. 51, 1880; Papilio, vol. 1, p. 14, 1880; Bull. U. S. Geol. Geogr. Surv. Terr., vol. 6, p. 590, 1882.—Ragonot, Monograph, pt. 1, p. 104, 1893.—Barnes and McDunnough, Contributions, vol. 2, p. 221, 1914.—Forbes, Cornell Mem. 68, p. 615, 1923—McDunnough, Check list, No. 6091, 1939.

Acrobasis eliella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 43, 1908.

Head and thorax whitish clay color, more or less shaded with pinkish or reddish suffusion (darker on females than on males). Forewing with basal area reddish and with some dusting of black scales on darker specimens; scale ridge black or black with an intermixture of red scales, followed outwardly by a reddish or reddish ocherous patch narrowing towards costa; pale antemedial line chiefly indicated on lower half of wing, obscure, followed on costa by a dark fuscous triangulate shade; median area gray with a diffused pale shade surrounding discal spots and extending to costa; discal dots separate, distinct, but not strongly contrasted against ground color; subterminal line distinct, denticulate, preceded by a narrow dark border and followed in terminal area by a broad reddish or reddish ocherous suffusion. Hind wing pale smoky fuscous. Alar expanse, 17–22 mm.

TYPE LOCALITIES: West Farms, N. Y. (*angusella*, in BM); East River, Conn. (*eliella*, in USNM).

FOOD PLANT: Hickory (larvae boring in the leaf stems).

DISTRIBUTION: UNITED STATES: *Massachusetts*, North Adams (Aug.); *New York*, West Farms, Ilion (July, Aug.); *New Jersey* (June); *Pennsylvania*, New Brighton (May, Aug.); *Maryland*, Beltsville (May); *Connecticut*, East River (July, Aug., Sept.). CANADA: *Ontario*, Ottawa (July).

Barnes and McDunnough (1914) were correct in their criticism of Dyar's identification of *angusella* and in their reference of *eliella* to synonomy, but their description of the male sex-scaling is at fault. It is more correctly described by Ragonot in his monograph. It consists of a very short black patch on costa of forewing; a long black streak along the upper vein of cell, expanding almost to the costal edge at middle and terminating well beyond the end of the cell, and from the base of this streak a second short black streak along lower line of cell for about half its length. On some males there are also a few black scales on vein 1c shortly beyond its base.

22. Acrobasis demotella Grote

FIGURE 153

Acrobasis demotella Grote, Papilio, vol. 1, p. 14, 1881; Bull. U. S. Geol. Geogr. Surv. Terr., vol. 6, p. 590, 1882.—Hulst, Phycitidae of N. Amer., p. 122, 1890.—Ragonot, Monograph, pt. 1, p. 103, 1893.—Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 42, 1908.—Barnes and McDunnough, Contributions, vol. 2, p. 221, 1914.—Forbes, Cornell Mem. 68, p. 616, 1923.—McDunnough, Check list, No. 6092, 1939.

Color and markings in general similar to those of *angusella* except: Central area of forewing a uniformly suffused dark grayish fuscous; basal area a paler reddish shade without dark dusting except for some fuscous smudging of the scale ridge on inner margin; antemedial line more distinct, dull white and on most specimens completely indicated to costa; discal dots

and subterminal line much obscured, the latter not denticulate, and followed by a rather faint reddish shading, distinct only on dark unrubbed or unfaded specimens. Hind wing pale smoky fuscous. Alar expanse, 20-24 mm.

TYPE LOCALITY: West Farms, N. Y. (type in BM).

FOOD PLANT: Black walnut (larvae feeding in buds and stems).

DISTRIBUTION: *New Hampshire*, Durham; *New York*, West Farms, Long Island; *Pennsylvania*, New Brighton (June); *North Carolina*, Black Mountain (June), Tryon (May); *Illinois*, Chicago, Decatur (May), Putnam County (June); *Missouri*, St. Louis (June).

The sex-scaling of the male is of the same type as that of *angusella*, differing as follows: On forewing the black costal streak is longer, extending to basal fifth of costa; the upper streak on hind wing is somewhat shorter, narrow at base, swelling to an oblong patch at middle; the streak along lower vein of cell is broader and longer, extending to the lower outer angle of cell.

Hulst gives a description of the larva and life history as supplied him by Fernald. Nothing substantial has been added since then to our knowledge of the biology of the species.

Genus *Acrobasis*, Species 23–40: *A. latifasciella* to *A. tumidulella*

[Male: Apical process of gnathos trifurcate; forewing with raised-scale ridge; without sex scaling.]

23. Acrobasis latifasciella Dyar

FIGURE 139

Acrobasis latifasciella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 45, 1908.—Forbes, Cornell Mem. 68, p. 617, 1923.—McDunnough, Check list, No. 6096, 1939.

In color and maculation similar to *angusella* Grote; but without black sex-scaling on underside of male wings. Alar expanse, 18–21 mm.

TYPE LOCALITY: New Brighton, Pa. (type in USNM).

FOOD PLANTS: Hickory, walnut.

DISTRIBUTION: *New York*, Ilion (Sept.); *Pennsylvania*, New Brighton (Aug.); *District of Columbia*, Washington; *Maryland*, Plummers Isl. (Aug.); *Illinois*, Putnam County (June).

Nothing is known of the biology except the food plants.

24. Acrobasis irrubriella Ely

FIGURE 154

Acrobasis irrubriella Ely, Proc. Ent. Soc. Washington, vol. 10, p. 161, 1908.—Forbes, Cornell Mem. 68, p. 618, 1923.—McDunnough, Check list, No. 6095, 1939.

Color and maculation similar to those of *angusella* and *latifasciella* except: Thorax and basal area of forewing showing little or no trace of reddish scaling; reddish ocherous band on outer border of scale ridge narrower and fainter; no reddish shading in terminal area beyond subterminal line. Alar expanse, 19–21 mm.

Male genitalia with apex of uncus more rounded than that of *latifasciella*—at best, a character of doubtful specific value.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: Unknown, probably *Carya* (hickory or walnut).

DISTRIBUTION: *Connecticut*, East River (July); *Indiana*, Mineral Springs (Aug.).

25. Acrobasis normella Dyar

FIGURE 155

Acrobasis normella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 46, 1908.—Forbes, Cornell Mem. 68, p. 617, 1923.—McDunnough, Check list, No. 6097, 1939.

Similar to *irrubriella* except: Averages smaller; forewing of a more even glossy texture; more white dusting on basal area, giving it a more decidedly pale gray appearance; the white dusting from outer half of costa to and surrounding the discal dots also a trifle stronger. Alar expanse, 17–19 mm.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: Presumably hickory.

Represented in the National Collection by 15 specimens from the type locality. In addition, there are before me two smaller (15 mm.), darker, more suffused specimens (male and female) from the Barnes collection that McDunnough had identified as *irrubriella*. They were reared from hickory (June) and are, I believe, only a color form of *normella*. The male genitalia (fig. 155a) show a striking departure in the assymetrical and greatly reduced lateral elements of the trifurcate apical projection of gnathos, but apparently this is the result of a deformation of the organ in this particular specimen.

26. Acrobasis malipennella Dyar

FIGURE 156

Acrobasis malipennella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 47, 1908.—Forbes, Cornell Mem. 68, p. 618, 1923.—McDunnough, Check list, No. 6093, 1939.

Similar to the species following (*dyarella*) in color and markings except that the darker areas of forewing are dark fuscous and lack the intense red suffusion characteristic of the latter. The structural differences noted by Dyar (the broader, shorter forewing, its broader cell, the close approximation of veins 2 and 3, different on each forewing, and the connate condition of 4 and 5 and their remoteness from 3) are due to deformation. The male type never matured properly and the forewings are not fully developed. I believe the specimen is nothing but a color form of *dyarella* and a freak at that. The male genitalia are very close, differing only in the somewhat more broadly rounded apex of gnathos, a difference of no specific significance in this group. It is a pity Dyar ever described it and a still greater pity that we cannot ignore his name; for it will probably have to replace *dyarella* Ely which was based on normal specimens and is represented by types in good condition.

TYPE LOCALITY: East River, Conn. (Aug.; type in USNM).

FOOD PLANT: Unknown.

Known only from the unique type.

27. Acrobasis dyarella Ely

FIGURE 157

Acrobasis dyarella Ely, Proc. Ent. Soc. Washington, vol. 12, p. 67, 1910.—McDunnough, Check list, No. 6099, 1939.

Head yellow gray. Thorax much suffused with red scaling. Basal area of forewing red dusted with whitish towards costa; scale ridge black, followed outwardly by a broad red band which extends and diffuses outwardly towards costa, obscuring and partially obliterating the blackish costal triangle; red scaling generally scattered over lower median area of wing; some obscure whitish dusting on median costal area and about the small, separated discal spots; subterminal line faint, bordered inwardly and outwardly, except on costa, by reddish lines; terminal area and dark markings otherwise, dark gray. Hind wing glossy, pale smoky fuscous. Alar expanse, 19–20 mm.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: Unknown.

Represented only by the male type (Aug.) and female paratype (Sept.).

28. Acrobasis ostryella Ely

FIGURE 158

Acrobasis ostryella Ely, Ins. Insc. Menstr., vol. 1, p. 54, 1913.—McDunnough, Check list, No. 6084, 1939.

Similar to *dyarella* except: Reddish color more generally diffused over outer areas of forewing, not forming a strongly accented band following the scale ridge, and of a purplish red shade; the coastal triangle and scale ridge contrastingly black. Hind wing dark smoky fuscous. Alar expanse, 15–18 mm.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANTS: *Ostrya virginiana, Carpinus.*

DISTRIBUTION: UNITED STATES: *Connecticut,* East River (July). CANADA: *Ontario,* South March (June).

29. Acrobasis secundella Ely

FIGURE 159

Acrobasis secundella Ely, Ins. Insc. Menstr., vol. 1, p. 55, 1913.—McDunnough, Check list, No. 6083, 1939.

Doubtfully distinct from *ostryella.* The holotype and one other reared male from the type locality and two Canadian specimens before me are darker and a nearly uniformly suffused purplish, with a pale dusting on basal area of forewing, and about the discal spots a rather faint and pale gray rather than white. However, other reared specimens from hazel are a perfect match for the type of *ostryella.* Alar expanse, 15–18 mm.

The male genitalia show a trifling difference in the length of the lateral projections of the apical projection of gnathos. Ely states that the larval case of *secundella* is longer and more slender than that of *ostryella*; but the life history needs further investigation before any such difference can be evaluated.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: *Corylus.*

DISTRIBUTION: UNITED STATES: *Connecticut,* East River (July).

CANADA: *Ontario,* Merivale (June).

30. Acrobasis coryliella Dyar

FIGURE 160

Acrobasis coryliella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 47, 1908.—Ely, Ins. Insc. Menstr., vol. 1, p. 53, 1913.—Forbes, Cornell Mem. 68, p. 618, 1923.—McDunnough, Check list, No. 6098, 1939.

Forewing a dull, rather lusterless gray, paler in the central area and without any reddish or purplish shading; following scale ridge on inner margin a faintly ocherous patch obscured by gray scaling; the scale ridge and other dark markings blackish, but the usual black triangle on costa following antemedial line replaced by a narrow line; the usual transverse dark shade from inner upper edge of subterminal line to middle of lower margin; subterminal line bordered inwardly by a narrow blackish line; discal dots normally confluent, forming a curved line along discocellular vein of cell. Hind wing pale smoky fuscous; darker on female. Alar expanse, 17–20 mm.

TYPE LOCALITY: Unspecified [New York?] (type in USNM).

FOOD PLANT: *Corylus.*

DISTRIBUTION: *New York; Connecticut,* East River (July, Aug.); *Massachusetts,* Newton Highlands; *Illinois,* Decatur (June, July), Putnam County (June, July).

In addition to a long series reared from hazel at East River, Conn., there are three specimens from the Fernald and Brooklyn Museum Collections (one male and two females from Illinois) labeled "*Acrobasis hebescella,*" the two females labeled "type"; and one male from Decatur, Ill., which McDunnough had tentatively identified as *A. sylviella* Ely.

The species is easy to recognize from its rather uniform gray shade and strongly contrasted, short, black scale ridge.

31. Acrobasis hebescella Hulst

Acrobasis hebescella Hulst, Phycitidae of N. Amer., p. 126, 1890.—Ragonot, Monograph, pt. 1, p. 109, 1893.—Barnes and McDunnough, Contributions, vol. 3, p. 194, 1916.—McDunnough, Check list, No. 6085, 1939.

The only authentic representation of this species is the female type, which is in very poor condition but apparently does not, or did not originally, differ in any significant detail from *coryliella* Dyar except as to its host. It was reared from a cocoon found on oak. This may or may not be significant. The name is just another of those that must wait for clarification until someone shall make a careful and more thorough study of the life histories of the various *Acrobasis* species. Alar expanse, 16.5 mm.

TYPE LOCALITY: "Jersey pines, June" (type in AMNH, ex Rutgers).

FOOD PLANT: Oak.

32. Acrobasis cirroferella Hulst

Acrobasis cirroferella Hulst, Canadian Ent., vol. 24, p. 60, 1892.—McDunnough, Check list, No. 6109, 1939.

The type is a male without abdomen. There is no sex-scaling. Close to *coryliella,* but with dark areas of

forewing more brownish gray and the whitish areas more strongly contrasted; central costal area distinctly white; dark outer margin of antemedial line brown, narrow on costa; costa before it white, entire basal area having some white dusting; discal dots distinct, separate. Hind wing pale fuscous. Alar expanse, 18 mm.

TYPE LOCALITY: Austin, Tex. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

The above description is drawn from the type, which is worn and faded. I have seen nothing that exactly matches it.

33. Acrobasis cunulae Dyar and Heinrich

FIGURE 162

Acrobasis cunulae Dyar and Heinrich, Proc. Ent. Soc. Washington, vol. 31, p. 37, 1929.—McDunnough, Check list, No. 6102, 1939.

Forewing pale slate gray; basal area paler; midcostal area with some faint pale dusting, especially about the discal spots; scale ridge weak and little or not at all darker than the ground color of the wing; subterminal line distinct, with a narrow, dentate, dark inner border, neither the pale line itself nor its dark border strongly contrasted; discal dots blackish, separated and rather conspicuous. Hind wing smoky fuscous. Alar expanse, 20–24 mm.

The male genitalia have what appears to be a distinguishing specific character in the decidedly broadened lateral elements of the apical projection of gnathos.

TYPE LOCALITY: Mobile, Ala. (type in USNM).

FOOD PLANT: Pecan.

DISTRIBUTION: *Florida*, Monticello (May); *Georgia*, Cairo (May), DeWitt (May); *Alabama*, Auburn (May), Mobile (May); *Mississippi*, Wiggins (May).

Close to but apparently distinct from *caryivorella*.

34. Acrobasis caryivorella Ragonot

FIGURE 161

Acrobasis caryivorella Ragonot, N. Amer. Phycitidae, p. 4, 1887; Monograph, pt. 1, p. 108, 1893.—Hulst, U. S. Nat. Mus. Bull. 52, p. 419, 1903.—Hill, Florida Ent., vol. 21, p. 12, 1938.—McDunnough, Check list, No. 6087, 1939.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 450, 1950.

Acrobasis caryaevorella Hulst, Phycitidae of N. Amer., p. 121, 1890 (misspelling).

Acrobasis conjivorella Hulst, *in* J. B. Smith, List of the Lepidoptera of Boreal America, No. 4262, 1891 (misspelling).

Acrobasis caryae Dyar (not Grote), Proc. Ent. Soc. Washington, vol. 10, p. 46, 1908.

Forewing dark bluish gray, nearly black; basal area towards costa (above the scale ridge) and a small triangular area on costa adjacent to subterminal line powdered with grayish white; scale ridge black, on some specimens bordered outwardly by a faint ocherous red patch (especially on specimens reared from hickory); subterminal line pale gray, faint; discal dots distinct, separate or confluent. Hind wing smoky white to smoky fuscous, darker on female than on male. Alar expanse, 19–24 mm.

TYPE LOCALITY: Missouri (type in Paris Mus.).

FOOD PLANTS: Hickory, walnut, pecan. Larvae boring in the buds and new growth of the stems.

DISTRIBUTION: *Massachusetts*, Melrose (June, July); *Maryland*, Beltsville (May, July, Aug.), Hyattsville (June), Prince Georges County, (June); *North Carolina*, "N. Car. Dept. Agr."; *South Carolina*, Summerton (May); *Georgia*, Albany (May), Barnesville (May, June); *Florida*, Monticello (May, July), Orlando (Apr.); *Mississippi*, Biloxi (Aug.), State College; *Missouri; Texas*, Austin (Aug.), Brownwood (May, June), Menard (June), Victoria, Waco (Apr., May, June); *New Mexico*, Carlsbad (Aug.).

The species is of some importance in the Gulf States as an enemy of pecan and the name *caryivorella* has appeared several times in economic publications but nearly always wrongly applied to specimens of *caryae* Grote. Specimens of the true *caryivorella* have also been identified as *caryae* on the basis of Dyar's (1908) misapplication of the two names.

35. Acrobasis comacornella (Hulst), new combination

FIGURE 136

Acrocaula comacornella Hulst, Canadian Ent., vol. 32, p. 170, 1900.—McDunnough, Check list, No. 6078, 1939.

Forewing with dark areas glossy, purplish brown; extreme base of wing dark, followed by a rather narrow subbasal whitish area; median costal area narrowly whitish; outer area uniformly dark; subterminal line obscure, not bordered by darker lines; discal dots distinct, dark brown, the lower dot twice the size of the upper; a little red on the antemedial line towards costa. Hind wing whitish with a faint ocherous fuscous tint; rather glossy; veins very faintly darkened; a narrow dark line along termen. Alar expanse, 17 mm.

Detail of male genitalia figured from type.

TYPE LOCALITY: Blanco County, Tex. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

The male type is obviously an *Acrobasis* without sex-scaling. It resembles very much a specimen of *caryivorella* (in USNM) from Victoria, Tex., except that the hind wing is paler, the subterminal line less distinct, and the discal dots larger and more contrasted. I suspect that it is nothing more than a variety of *caryivorella*.

36. Acrobasis betulella Hulst

FIGURE 164

Acrobasis betulella Hulst, Phycitidae of N. Amer., p. 125, 1890.—Ragonot, Monograph, pt. 1, p. 107, 1893.—Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 47, 1908.—Forbes, Cornell Mem. 68, p. 618, 1923.—McDunnough, Check list, No. 6101, 1939.

Forewing dark gray faintly tinted with reddish violet and with white dusting on basal area and forming a triangulate patch from costa before subterminal line, the white dusting faint (less contrasted than on *caryivorella*); scale ridge black, without any red bordering patch or bar; discal dots at end of cell distinct, separate; antemedial line obscure, almost obsolete; subterminal

line faint. Hind wing smoky fuscous. Alar expanse, 20–24 mm.

Male genitalia figured from specimen from the original Hulst series in the National Collection (bearing a Hulst "type" label and presumably a paratype).

TYPE LOCALITY: New York (type, ♀, in AMNH, ex Rutgers).

FOOD PLANT: *Betula*.

DISTRIBUTION: UNITED STATES: *Maine* (no further locality, July), Sebec Lake (July); *New Hampshire*, Center Harbor (July), Hampton (June); *Massachusetts*, Amherst (June, July), Melrose; *Connecticut*, East River (July); *New York* (no further locality, July); *Colorado*, Platt Canon (July); *California*, Siskiyou County. CANADA: *Ontario*, Trenton.

There is little or nothing to separate collected specimens of *betulella* from *comtoniella* or *rubrifasciella* except the complete absence of any reddish outer border to the scale ridge on forewing (a distinction that does not hold for all specimens of *rubrifasciella*) and a more glossy sheen on the specimens of *comptoniella* and *rubrifasciella* (a comparative difference that is displayed only when series of the three species are seen side by side). The thing that really distinguishes *betulella* is its host plant, *Betula*. It also differs from the other species of American *Acrobasis* with the scale ridge on forewing in that it has been found in the Rocky Mountain region and in areas west thereof. The Colorado and California records are from the specimens in the National Collection mentioned by Dyar. I have seen no later collections from any area west of the Rockies.

37. Acrobasis rubrifasciella Packard

FIGURE 165

Acrobasis rubrifasciella Packard, Ann. Lyc. Nat. Hist. New York, vol. 10, p. 267, 1873.—Grote, Bull. U. S. Geol. Geog. Surv. Terr., vol. 4, p. 693, 1878.—Hulst, Phycitidae of N. Amer., p. 124, 1890.—Ragonot, Monograph, pt. 1, p. 106, 1893.—Forbes, Cornell Mem. 68, p. 617, 1923.—McDunnough, Canadian Ent., vol. 65, p. 206, 1933; Check list, No. 6103, 1939.

Phycis rubifasciella (Packard) Beutenmuller, Canadian Ent., vol. 22, p. 16, 1890 (spelling! and larva).

Acrobasis alnella McDunnough, Canadian Ent., vol. 54, p. 36, 1922.

Similar to *betulella* except that normally there is a faint, but distinguishable, wine-red bar outwardly bordering the scale ridge on forewing and that, in series, the forewing surface has a more glossy appearance. Neither of these differences holds for all specimens; nor are the genitalic differences noted by McDunnough (1933), the width of the lateral flanges of the apical projection of gnathos, reliable as a specific character. Alar expanse, 20–24 mm.

TYPE LOCALITIES: Orono, Maine (*rubrifasciella*, in MCZ); Ottawa, Canada (*alnella*, Canadian Nat. Coll.).

FOOD PLANT: *Alnus*.

DISTRIBUTION: UNITED STATES: *Maine*, Orono (June); *New Hampshire*, Durham; *Massachusetts*, Amherst (June); *Connecticut*, East River (July); *New York*, Catskill Mts.; *North Carolina*, Black Mts. CANADA: *Ontario*, Ottawa (July); *Quebec*, Meach Lake (July); *Nova Scotia*, Truro (July, Aug.).

38. Acrobasis comptoniella Hulst

Acrobasis comptoniella Hulst, Phycitidae of N. Amer., p. 125, 1890.—Ragonot, Monograph, pt. 1, p. 108, 1893.—Dyar, Proc. Ent. Soc. Wash., vol. 10, p. 46, 1908.—Forbes, Cornell Mem. 68, p. 618, 1923.—McDunnough, Check list, No. 6104, 1939.—Craighead, U. S. Dept. Agr. Misc. Pub. 657, p. 450, 1950.

Superficially like *rubrifasciella* except wine-red bar bordering scale ridge of forewing always present and of a more intense and darker shade. Hind wing generally darker. Alar expanse, 21–25 mm.

TYPE LOCALITY: Long Island, N. Y. (type, ♀, in AMNH, ex Rutgers; paratype, ♀, from type locality in USNM).

FOOD PLANTS: *Comptonia* and *Myrica*.

DISTRIBUTION: UNITED STATES: *Maine*, Bar Harbor (July), Kennebunk (July), Mount Desert (July); *New Hampshire*, Center Harbor, Durham; *Massachusetts*, Melrose (June), North Saugus; *Connecticut*, East River (July); *New York*, Long Island; *New Jersey*, Bergenfield, New Lisbon (June); *Michigan*, Dickinson County. CANADA: *Ontario*, Trenton.

The best way to separate *comptoniella* from the two preceding species is by rearing from their respective food plants.

39. Acrobasis myricella Barnes and McDunnough

FIGURE 163

Acrobasis comptoniella Grossbeck (not Hulst), Bull. Amer. Mus. Nat. Hist., vol. 37, p. 129, 1917.

Acrobasis myricella Barnes and McDunnough, Contributions, vol. 3, p. 221, 1917.—McDunnough, Check list, No. 6105, 1939.

Close to *comptoniella* Hulst, but superficially quite different; smaller, white dusting in pale (basal and central-costal) areas much denser and more contrasted; dark areas blackish gray with very faint purplish overtint; reddish bar bordering black scale ridge narrow and inconspicuous; subterminal line distinct, white. Alar expanse, 17–19 mm.

TYPE LOCALITY: Fort Myers, Fla. (Apr., May; type in USNM).

FOOD PLANT: *Myrica*.

DISTRIBUTION: *Florida*.

Except for the type series from the type locality I have seen only one specimen (a female from Royal Palm State Park, Fla., Apr. 5, 1929, F. M. Jones, collector) that can be definitely assigned to the name *myricella*. We have, however, in the National Collection a series of males and females reared by Chas. R. Ely at East River, Conn., from *Myrica cerifera*, that are intermediate between *myricella* and typical *comptoniella* (reared from *Comptonia*), like the former in size and in the intensity and extent of the white dusting on forewing, but with the subterminal line obscure as in *comptoniella*. I think they are only a variety of *comptoniella*. Indeed, *myricella* may prove to be only

a race of Hulst's species; but with our present knowledge we must retain it as a distinct species.

40. Acrobasis tumidulella (Ragonot), new combination

FIGURE 645

Cateremna tumidulella Ragonot, N. Amer. Phycitidae, p. 13, 1887.

Seneca tumidulella (Ragonot) Hulst, Phycitidae of N. Amer., p. 178, 1890.

Hyphantidium tumidulellum (Ragonot) Hampson, *in* Ragonot, Monograph, pt. 2, p. 74; 1901.—McDunnough, Check list, No. 6321, 1939.

This species was based on a single female with the habitus and raised-scale ridge of an *Acrobasis* but with vein 4 absent from hind wing. Bourgogne informs me that the venation is alike on both hind wings. On the strength of this venation the species was referred to Group II of the Phycitinae and made the type of Hulst's *Seneca*. However, I am firmly convinced that the specimen is nothing but an *Acrobasis* with abnormal venation, another of those freaks that turn up all too frequently in the Phycitidae. I have examined the female genitalia of the type (figured here) and can find nothing to distinguish them from those of *caryivorella*. I suspect that *tumidulella* is nothing more than an abnormal specimen of *caryivorella;* but we shall have to await final disposition of the name until a similar freak male is recovered from the type locality.

TYPE LOCALITY: Florida (type in Paris Mus.).

FOOD PLANT: Unknown.

3. Genus Rhodophaea Guénée

Rhodophaea Guénée, Ann. Soc. Ent. France, ser. 2, vol. 3, p. 312, 1845; Europaeorum Microlepidopterorum index methodicus . . . , p. 74, 1845.—Ragonot, Ent. Monthly Mag., vol. 22, p. 19, 1885; Monograph, pt. 1, p. 63, 68, 1893. (Type of genus; *Phycis advenella* Zincken; figs. 166, 649.)

Characters of *Acrobasis* except: Male antenna simple, basal segment cylindrical, no sinus in base of shaft; forewing always smooth; vein 2 of forewing from cell before lower outer angle, but somewhat nearer the angle than in *Acrobasis;* male genitalia with apical process of gnathos an elongate hook (partially divided on *advenella*); eighth abdominal segment of male simple or (on *advenella*) with midventral hair tuft.

This genus is distinguished from the smooth-winged species of *Acrobasis* only by its simple male antenna. Our two American species do not go any too well with *advenella*, the European type of the genus, differing in having an undivided apical projection from gnathos and simple eighth abdominal segment. However, in these characters they agree with other obviously congeneric European species, *marmorea* (Haworth), *legatella* (Hübner), *suavella* (Zincken). *R. advenella* has a somewhat differently shaped transtilla from *caliginella*, *supposita*, and the three aforementioned European species. In all of these the terminal margin of transtilla is more or less indented (as in *Acrobasis*) while in *advenella* it is rather deeply U-shaped.

None of the American species that hitherto have been listed under *Rhodophaea* belongs there. They have entirely different genitalia.

41. Rhodophaea caliginella (Hulst), new combination

FIGURE 647

Nephopteryx caliginella Hulst, Ent. Amer., vol. 3, p. 131, 1887; vol. 5, p. 156, 1889.

Mineola caliginella (Hulst), Phycitidae of N. Amer., p. 128, 1890; U. S. Nat. Mus. Bull. 52, p. 419, 1902.—Barnes and McDunnough, Contributions, vol. 4, p. 174, 1918.—McDunnough, Check list, No. 6113, 1939.

Acrobasis caliginella (Hulst) Ragonot, Monograph, pt. 1, p. 115, 1893.

Myelois caliginoidella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 33, 1905.—McDunnough, Check list, No. 6072, 1939. (New synonymy.)

Similar in color and markings to *Acrobasis comptella* Ragonot except that the narrow black line outwardly bordering the whitish basal area of forewing does not extend all the way to inner margin. This slight difference in maculation seems to be constant and will distinguish the females of the two species which, otherwise, are difficult to tell apart. Alar expanse, 18–25 mm.

TYPE LOCALITIES: Arizona (*caliginella*, in AMNH, ex Rutgers); Santa Clara, Calif. (*caliginoidella*, in USNM).

FOOD PLANT: Scrub oak. This host record from reared specimens in National Collection received from Commander Dammers, Riverside, Calif., June 1938.

DISTRIBUTION: *California*, Alma (Aug.), Atascadero (July), Los Angeles County (July), Riverside (June), San Diego (May, June, July, Aug.), Santa Clara; *Arizona*.

In addition to the female type in the Rutgers Collection there is also a female from Arizona ("7810") in the National Collection bearing Hulst's "type" label. This specimen was originally in the Fernald Collection. A female from California donated by Hulst to the Brooklyn Museum Collection and twice labeled "*Acrobasis comptella*" in his and Ragonot's handwriting is also in the National Museum. This specimen, except that it lacks an abdomen, is in good condition. It is certainly *caliginella* and presumably was responsible for Hulst's synonymizing of *caliginella* and *comptella*. The males of *caliginella* have hitherto been known as *caliginoidella* Dyar. Hulst evidently never saw a male of his species.

42. Rhodophaea supposita (Heinrich), new combination

FIGURES 167, 648

Mineola supposita Heinrich, Proc. Ent. Soc. Washington, vol. 42, p. 33, 1940.

Forewing very dark grayish fuscous with a powdering of white scales on basal and midcostal areas and very faintly in the area bordering terman; antemedial line narrow, slanting from inner third of costa to just before middle of inner margin, slightly notched at vein 1b, pale ashy gray bordered inwardly from top of cell to inner margin by a dull red triangular patch which has an obscure, straight, blackish line along its inner

edge; inner margin from base to antemedial line narrowly bordered by reddish scales; subterminal line narrow, slightly outcurved between vein 6 and lower fold, pale gray, inwardly bordered by a narrow black line; a blackish fuscous patch outwardly bordering the antemedial line from costa to cell; a similar dark shade on costa near apex; these blackish patches shading into the dark central area of wing; black discal dots at end of cell distinct and separate; some obscure dull red shading in terminal area toward tornus; along termen a narrow discontinuous black line. Hind wing pale smoky fuscous with veins, terminal margin, and apical area darker. Alar expanse, 16–20 mm.

Male genitalia similar to those of *caliginella* except transtilla broader at apex and arms of anellus stouter. Female genitalia differing from those of *caliginella* chiefly in that there are no patches of small scobinations in bursa near its junction with ductus bursae.

TYPE LOCALITY.: Vancouver, British Columbia (type in Canadian Nat. Coll.).

FOOD PLANT: *Cotoneaster*.

Known so far only from the type series from Vancouver. It is distinguished from *caliginella* chiefly by its generally darker color.

4. Genus Trachycera Ragonot

Trachycera Ragonot, Monograph, pt. 1, p. 2, 1893. (Type of genus, *Rhodophaea pallicornella* Ragonot.)

This genus is close to *Rhodophaea*, being distinguished from it chiefly by male characters. The male of *pallicornella* from which these were drawn is apparently lost. Clarke was unable to locate it at Paris, where it should have been; and, as no other males agreeing with Ragonot's description or figure (Monograph, pl. 5, fig. 20) are available, we are unable to check his characters. Ragonot separates *Trachycera* from *Rhodophaea* widely in his generic key (Monograph, pt. 1, pp. xliii and xliv) on the basis of the trifid or bifid condition of the median vein of hind wing. This is an error, however, for the true *Rhodophaea* species are no more bifid than is *Trachycera*. The female of *pallicornella* has essentially the same venation as the type of *Rhodophaea* (*advenella*).

The distinguishing male characters given by Ragonot are: Serratiform male antenna; very short labial palpus (scarcely reaching to middle of face); and minute maxillary palpus.

The female has a pair of small signa in the bursa copulatrix, developed as granulate cups (as in *Davara*).

43. Trachycera pallicornella (Ragonot)

FIGURE 650

Rhodophaea pallicornella Ragonot, N. Amer. Phycitidae, p. ,3 1887.—Hulst, Phycitidae of N. Amer., p. 119, 1890.

Trachycera pallicornella (Ragonot), Monograph, pt. 1, p. 2, 1893.—McDunnough, Check list, No. 6057, 1939.

The holotype of *pallicornella* is a female labeled in Ragonot's handwriting "ty. or. Pl. V, fig. 20." According to Clarke the Ragonot figure represents it accurately. Unfortunately it is a mended specimen and the glued-on abdomen is spurious. Its genitalia are pyraustine rather then phycitid.

I have before me a female which is an exact match for Ragonot's figure. It is somewhat smaller (15 mm.) than the type ("19 mm.") but this difference is easily within the normal range for many species of medium-sized Phycitinae. It was collected at Devils River, Tex. (May). The genitalia are figured from this specimen.

Forewing pale gray with some blackish dusting on base, especially on base of costa; a faint purplish gray shade on lower part of postmedian area; antemedial band rather broad, red narrowly lined with black on inner and outer sides, the back outer margin somewhat widened at costa; subterminal line narrow, nearly vertical, with an outward bulge between vein 6 and lower fold, whitish, bordered inwardly by a narrow black line and by a black outer patch at costa near apex; discal and terminal dots obsolete. Hind wing dull whitish with a faint yellow tint and shading to pale fuscous towards apex. Alar expanse, 15–19 mm.

TYPE LOCALITY: Texas (type in Paris Mus.).

FOOD PLANT: Unknown.

5. Anabasis, new genus

TYPE OF GENUS: *Myelois ochrodesma* Zellar.

Tongue well developed. Antenna pubescent; on male, basal segment enlarged and angulate (as in *Acrobasis*), shaft simple. Labial palpus upturned reaching to vertex (slightly longer on female than on male). Maxillary palpus rather broadly scaled. Forewing with a transverse, antemedian ridge of raised scales; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle, approximate to 2 at base, nearer to 2 than to 4; 4 and 5 closely approximate for some distance from base; 6 from below upper angle of cell, slightly bent towards base; 10 from the cell; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from before but very near the angle; 4 and 5 from the angle, closely contiguous (or more or less anastomosed) for about half their lengths; 7 and 8 contiguous or weakly anastomosed for some distance beyond cell; cell one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with ventral hair tuft and a pair of modified, ventrolateral tufts.

Genitalic characters as in *Acrobasis* except: Harpe with a transverse, sclerotized ridge from base of costa to lower outer angle of sacculus; a cluster of modified scales on outer edge of inner margin in the angle between sacculus and cucullus; terminal margin of vinculum more rounded. (These may be only specific characters.)

A development from and quite close to *Acrobasis*, which it replaces in tropical America; distinguished from that genus chiefly by shorter cell and the contiguous position of veins 4 and 5 of hind wing. Except

on denuded wings under strong magnification they appear to be stalked for half their lengths. Contains one tropical American species.

44. Anabasis ochrodesma (Zeller), new combination

FIGURES 168, 652

Myelois ochrodesma Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 209, 1881.

Piesmopoda ochrodesma (Zeller) Ragonot, Monograph, pt. 1, p. 165, 1893.

Acrobasis crassisquamella Hampson, *in* Ragonot, Monograph, pt. 2, p. 520, 1901 (new synonymy).

Forewing grayish brown finely powdered with blackish scales and with a faint rosy suffusion; antemedial line oblique, narrow, obscured by a heavy whitish ocherous ridge of raised scales on its inner margin and bordered outwardly by a narrow black line; subterminal line obscure, narrow, when distinguishable, sinuate, ocherous white, bordered inwardly by an obscure, broken, black line; discal and terminal dots obsolete. Hind wing smoky white; veins and a narrow shade along termen, fuscous. Alar expanse, 13–16 mm.

Genitalia as given for the genus; bursa of female with small signum.

TYPE LOCALITIES: Honda, Colombia (*ochrodesma*, in BM); Teapa, Tabasco, México (*crassisquamella*, in BM).

FOOD PLANTS: *Cassia alata, Cassia nodosa, Cassia tora* (U. S. Dep. Agr. Florida rearings; larva a leaf-folder), *Sciacassia siamea*.

DISTRIBUTION: UNITED STATES: *Florida*, Coconut Grove (May), Miami (May), St. Petersburg (June). PUERTO RICO: Bayamón (Sept.), Coamo Springs (Apr.), Mayagüez (Jan.), Puerto Real (Vieques Isl., Apr.), Rio Piedras (Feb.). VIRGIN ISLANDS: Kingshill (St. Croix, Oct., Nov., Dec.). CUBA: Santiago de las Vegas (*Havana*, Dec.). GRENADA. JAMAICA. TRINIDAD: Fyzabad (Feb.), Tunapuna (Apr.). MÉXICO: *Tabasco*, Teapa. GUATEMALA: Quiriguá (May). PANAMÁ: Corozal (July), Porto Bello (Apr.). COLOMBIA: Honda.

An easily recognized tropical American species whose range has been extended into southern Florida.

6. Genus Mildrixia Dyar

Mildrixia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 405, 1914. (Type of genus; *Mildrixia constitutionella* Dyar.)

Tongue well developed. Antenna of male strongly ciliate, the cilia over three times longer than width of segments; basal segment elongate, subtubular, flattened and broadening towards apex; first segment of shaft swollen and with a short spine and scale tuft from inner upper angle (this with the rough scaling of basal segment gives the latter when fully scaled the appearance of the triangulate first segment of *Acrobasis*); antenna of female simple and very weakly pubescent. Labial palpus obliquely ascending, reaching to slightly above vertex; moderately rough scaled beneath; third segment acuminate, about two-thirds the length of second. Maxillary palpus moderately large, squamous. Forewing narrowly elongate, with transverse, antemedial ridge of raised scales; 11 veins; vein 2 from before, but near lower outer angle of cell; 3 from the angle, approximate to 2 at base and for a short distance beyond; 4 and 5 connate or very shortly stalked; 6 from very close to upper angle of cell, closely approximate to 8 at base, nearly straight (very slightly bent towards base); 10 from the cell, closely approximate to the stalk of 8–9 for some distance from cell; male without costal fold. Hind wing with vein 2 from before but close to lower outer angle of cell; 3 contiguous with the stalk of 4–5 for some distance from angle, on undenuded wings appears stalked with 4–5; 4 and 5 stalked for more than half their lengths; 7 and 8 contiguous or weakly anastomosed for a short distance beyond cell; cell one-third the length of wing; discocellular vein oblique. Eighth abdominal segment of male with broad ventral hair tuft.

Male genitalia of the old world *Acrobasis* type except: Uncus subtriangulate, its apex rather broadly rounded; transtilla terminating posteriorly in a U-shaped projection with elongate, slender, widely spaced and divergent arms; vinculum longer than broad, evenly tapering to bluntly pointed terminal margin; anellus an elongate, semitubular plate with short lateral lobes near base; penis armed with a short, sclerotized plate and numerous sclerotized wrinklings.

Female genitalia of the *Acrobasis* type but without any sclerotized plate or plates at genital opening; a single signum in bursa, developed as a small, cupped, granulate plate.

A distinct genus, distinguished at once by its male antenna, venation, and transtilla. Contains one tropical American species.

45. Mildrixia constitutionella Dyar

FIGURES 169, 651

Mildrixia constitutionella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 405, 1914.

Forewing grayish fuscous with some whitish dusting, especially in median area about the discal spots; antemedial scale ridge blackish preceded by a narrow white line and followed by an indistinct dark shade; discal dots at end of cell distinct, black; just beyond the lower discal dot, an outwardly angled mark from the upper edge of which a narrow dark shade extends to the inner costal edge of the subterminal line (distinct only on well-marked and unrubbed specimens); subterminal line narrow, denticulate, pale, bordered inwardly and outwardly by somewhat broader dark lines; terminal dots blackish, more or less confluent. Hind wing translucent, opalescent white, the veins faintly darkened toward their outer extremities, especially on the females; a dark shade along costa and a narrow one along termen. Alar expanse, 19–22 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Jalapa, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Jalapa. GUATEMALA: Volcán Santa María (June, July, Oct.).

7. Genus Sematoneura Ragonot

Sematoneura Ragonot, Nouv. Gen., p. 9, 1888; Monograph, pt. 1, p. 136, 1893. (Type of genus: *Sematoneura atrovenosella* Ragonot.)

Tongue well developed. Antenna of male shortly ciliate (cilia a trifle longer than width of shaft), of female weakly pubescent. Labial palpus upturned, reaching vertex, cylindrical, slender; third segment about two-thirds length of second, acuminate. Maxillary palpus filiform. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle, much nearer to 4 than to 2; 4 and 5 closely approximate for a short distance from cell; 6 from well below upper angle of cell, straight; 8 and 9 long stalked; 10 shortly stalked with 8–9; male without costal fold. Hind wing with vein 2 from well before outer angle of cell; 3 from before, but near the angle; 4 and 5 closely approximate for a short distance from the angle; 7 and 8 closely approximate or contiguous beyond cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a single, broad ventral hair tuft.

Male genitalia with apical process of gnathos a simple, elongate hook, slightly notched at apex. Uncus broadly triangulate. Transtilla complete, stout, arched, its central area developed as a flat, broad lobe with slightly concave terminal margin. Harpe with costa sclerotized and produced at apex into a short projecting digitus. Anellus a slightly curved plate with moderately long lateral arms. Aedeagus simple; penis armed with a single elongate, moderately stout cornutus, about one-third as long as aedeagus. Vinculum stout, as broad as or a trifle broader than long, tapering to broad, truncate terminal margin.

Female genitalia with bursa and ductus bursae simple, without signum, smooth except for minute granulations in bursa; ductus bursae shorter than bursa; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

The foregoing description is drawn from the type species (*atrovenosella*). In male genitalia the new species (*abitus*), tentatively included in the genus, departs in some apparently essential details of structure, having a different type of transtilla and gnathos and lacking the apical projection from costa of harpe; but in all other structural characters it agrees with *atrovenosella*. When its female is discovered a new generic placement may be necessary.

46. Sematoneura atrovenosella Ragonot

FIGURES 4, 171, 653

Sematoneura atrovenosella Ragonot, Nouv. Gen., p. 10, 1888; Monograph, pt. 1, p. 136, 1893.

Forewing gray with more or less ochraceous dusting above inner margin and in outer area between the veins; the veins conspicuously outlined by blackish scaling; a similar narrow, dark line along the lower fold; these dark lines expanded and intensified at basal third indicating the remains of an antemedial band, and broken in outer area by a rather broad, faint, pale subterminal band; lower discal dot at end of cell faintly indicated; a line of blackish dots along termen between the vein ends. Hind wings dusky white, translucent; the veins darkened and a narrow dark line along termen. Alar expanse, 26–35 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Chanchamayo, Perú (type in Zool. Mus. Univ. Berlin).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Coatepec. COSTA RICA: Huan Viñas (Jan., Feb., Nov.), Tuis (May). COLOMBIA: La Selva (San Juan Chaco, Sept.), Juntas (San Juan Chaco, Feb.). ECUADOR: Alpayacu (Río Pastaza), Quito. PERÚ: Chanchamayo, Santo Domingo (Nov.). ARGENTINA: Tucumàn.

One example before me (a female from Santo Domingo, Perú, 6,000 ft.) differs in coloration from normal specimens in having a dark suffusion over the basal area to the antemedial line and a distinct antemedial pale line with continuous, black outer border. It also lacks any trace of ocherous dusting on the forewing. In genitalia and otherwise in color and maculation it is normal. I believe that it is only a color form. The specimen was from the unplaced material in the British Museum.

47. Sematoneura abitus, new species

FIGURE 172

Similar in color and markings to *atrovenosella* except a short strongly contrasted black streak just below costa at base and a broad black streak along median fold extending from base to end of cell. The ciliations of the male antenna are also a trifle shorter than those of *atrovenosella*. Alar expanse, 31 mm.

The male genitalia differ markedly from those of *atrovenosella* in several details. Apical projection of gnathos is a rather short triangulate, pointed hook. The costa of harpe is broadly sclerotized but lacks the projecting digitus at apex. The gnathos is developed into a strongly sclerotized, hairpinlike, backwardly projecting loop with dense scobinations along its inner margin.

TYPE LOCALITY: Alpayacu, Río Pastaza, East Ecuador (type in BM).

FOOD PLANT: Unknown.

Described from unique male type collected by M. G. Palmer at 6,000 ft. The specimen is not in good condition but the essential features of the pattern are distinguishable and the male genitalia are so distinctive that description seems justified. In the absence of a female the generic placement cannot be made with absolute certainty. I expect, however, that the female genitalia will exhibit no radical difference from those of the type of the genus.

8. Genus Hypsipyla Ragonot

Hypsipyla Ragonot, Nouv. Gen., p. 10, 1888; Monograph, pt. 1, p. 137, 1893. (Type of genus: *Hypsipyla pagodella* Ragonot, synonym of *Magiria robusta* Moore; India; figs. 173, 656.)

Tongue well developed. Antenna of male shortly

ciliate (cilia but slightly longer than width of shaft, except on male of *dorsimacula* where they are about twice as long as width of shaft). Labial palpus of male upturned, reaching vertex, slender; third segment about half as long as second, acuminate; of female obliquely ascending. Maxillary palpus filiform (moderately large in *pagodella* and *grandella*, minute in other species). Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle, much closer to 4 than to 2; 4 and 5 approximate for a short distance from cell, occasionally connate; rarely short stalked; 6 more or less bent towards base and more or less approximate to upper angle of cell; 10 normally from the cell, rarely connate or shortly stalked with 8–9; male without costal fold. Hind wing with vein 2 from well before outer angle of cell; 3 from before, but near the angle; 4 and 5 normally shortly stalked, occasionally connate, partially anastomosed or (in some large females) closely approximate for a short distance from cell; 7 and 8 closely approximate beyond cell; cell half or (males of *grandella*) somewhat less than half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple or with two or three pairs of ventral hair tufts.

Male genitalia with apical process of gnathos a hook, forked at apex. Uncus more or less triangulate; apex rounded. Transtilla complete, stout, arched, its central area produced into two widely spaced horns; the latter stout in all species except *pagodella*. Harpe with costa strongly sclerotized but not produced at apex. Anellus V- or U-shaped with long lateral arms. Aedeagus simple; penis armed with a single, more or less twisted, fattened bladelike cornutus (except *dorsimacula*). Vinculum stout, short or but slightly longer than broad, with truncate, broad terminal margin.

Female genitalia with bursa and ductus bursae simple, unsclerotized except for a narrow band along ventral margin of genital opening; with or without signum; when present, the latter developed as a small, scobinate, cup-shaped plate; ductus bursae shorter than bursa; ductus seminalis from bursa at its junction with ductus bursae.

The genus is very close to and difficult to distinguish from *Sematoneura*. It is characterized chiefly by the bent condition of vein 6 of forewing. In *Sematoneura* this vein is always perfectly straight and remote from 8–9 at base. In *Hypsipyla* 10 is also normally from the cell and there is frequent stalking of 4 and 5 of hind wing, neither of these conditions occurs in *Sematoneura;* but the venation is so individually variable in *Hypsipyla* that it cannot be trusted.

48. Hypsipyla grandella (Zeller)

FIGURES 5, 174, 655

Nephoteryx grandella Zeller, Isis von Oken, 1848, p. 881.

Hypsipyla grandella (Zeller) Ragonot, Monograph, pt. 1, p. 139, 1893.—Dyar, Ins. Insc. Menstr., vol. 7, p. 41, 1919.—Monte, Rev. de Ent., Brazil, vol. 3, p. 281, 1933.

Hypsipyla cnabella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 405, 1914.

Forewing grayish fuscous shaded (especially on lower half of wing) with dull rust-red; veins outlined in black; antemedial pale line narrow, incomplete, rounded outward at middle and indented at vein 1b, bordered outwardly by a narrow, discontinuous, black line; beyond this in median area between top of cell and vein 1b, an expanded faint whitish patch; some faint whitish dusting also in the middle-outer area between the veins; subterminal line faint, indicated chiefly by the intensified black streaks bordering it inwardly on the veins, sinuate, deeply notched at lower fold; discal spots obsolete; terminal black dots between the vein ends distinct. Hind wing hyaline white with a fuscous shade along costa, some fuscous shading on the vein ends and a narrow fuscous line along termen. Alar expanse, 23–45 mm.

Male genitalia with uncus rather abruptly narrowed beyond its broad base, the apex narrowly rounded; apical hook of gnathos narrow, short; paired horns of transtilla curving outward (away from each other); vinculum distinctly broader than long, its terminal margin very broad and but slightly convex, nearly straight. Eighth abdominal segment of male simple. Female genitalia with signum.

TYPE LOCALITIES: Brazil (*grandella*, location of type unknown to me); Córdoba, México (*cnabella*, in USNM).

FOOD PLANTS: *Cedrela* and *Swietenia* (larva bores in fruits and branches).

DISTRIBUTION: UNITED STATES: *Florida*, Miami (Nov.). MÉXICO: Córdoba (Feb., Sept.), Jalapa. GUATEMALA: Cayuga (Apr., May, Oct.), Chejel (June), Quiriguá (June). HONDURAS: La Cambra (Feb.). COSTA RICA: Avangarez (July), Juan Viñas (Jan., Feb., Nov.), San José (Jan.), San de Montes de Oca (Oct.), Tuis (May, June). PANAMÁ: Almirante (Aug.), Summit (C. Z., Mar.). PUERTO RICO: Cayey (May). CUBA: Santiago de las Vegas (Apr.). HAITI: Pétionville (June, Dec.). JAMAICA. TRINIDAD (Dec.). COLOMBIA: "Above Río Negro." VENEZUELA: El Valle (July), Maracay, Trompillo (July). BRITISH GUIANA: Georgetown (July). BRAZIL: Araçatuba (São Paulo, Apr.), Baía (Feb.), Campo Bello, Castro (*Paraná*), Espírito Santo, Nova Teutonia (May), Santa Catarina (Aug., Sept.). PARAGUAY: Sapucay (Oct.), Villarrica (Sept., Oct.). ECUADOR: Loja. ARGENTINA: Tucumán. PERÚ: Lima.

Generally distributed throughout tropical America wherever its food plants occur.

A native American species close to and superficially similar to the Indina *H. robusta*; but with different male and female genitalia. It is apparently of some economic importance in the West Indies and South America as a pest of mahogany and the *Cedrela* species. Like many borers it varies greatly in size, and the venation is more than ordinarily unstable even for a phycitid. Vein 10 of forewing may be from the cell, separated from, closely approximate or connate with 8–9 or sometimes shortly stalked with them, Veins 4 and 5 may be anything from approximate towards base to shortly stalked. Vein 6 is always slightly bent towards base

but less so and more remote from the base of 8–9 on large females than on the smaller females and average-size males. On the hind wing 4 and 5 are usually shortly stalked or connate but on some large specimens are closely approximate for nearly half their lengths beyond the lower angle of the cell.

49. Hypsipyla ferrealis (Hampson), new combination

FIGURES 176, 657

Crocidomera ferrealis Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 4, p. 352, 1929.

Maculation of forewing similar to that of *grandella* except: Brownish fuscous, the general color decidedly more brown than gray, the dull reddish dusting giving the wing a somewhat rosy brown tint; dark lining on the veins less conspicuous and more discontinuous; antemedial pale line very faint, obsolete on many specimens, indicated chiefly by its broken black outer margin; the white spot beyond this black margin (conspicuous in *grandella*) absent or indicated only by a faint ocherous white shade; subterminal line very faint, indicated by a black shading on the veins along its inner margin, sinuate, rather deeply indentate at vein 6 and lower fold. Hind wing smoky fuscous with a faint brownish or ocherous tint, more or less smoky white towards base; veins darkly outlined. Eighth abdominal segment of male with three pairs of ventral hair tufts. Alar expanse, 20–43 mm.

Male genitalia with uncus of the same shape, but wider than that of *grandella;* vinculum narrower, longer than broad; transtilla with horns of central area divergent, forming a round-bottomed V, the central connecting part of the transtilla slender. Female genitalia without signum.

TYPE LOCALITY: Sixaola River, Costa Rica (type in BM).

FOOD PLANT: *Carapa guianensis* (larvae feeding on the seeds).

DISTRIBUTION: COSTA RICA: Cachí, Cain, Juan Viñas (May), Puerto Limón, Sixaola River (May, Sept.), Tuis (May). COLOMBIA: San Antonio (Dec.). VENEZUELA: Maturaca (Sept.). FRENCH GUIANA: Cayenne, St. Jean Maroni, St. Laurent Maroni. TRINIDAD: Caparo. BRAZIL: Pará.

A distinct species easily distinguished from *grandella* by its dark hind wings. The foregoing food plant and Venezuelan records are from a series of small reared specimens (20–24 mm.) submitted by Dr. Ballou in 1942. These are not only considerably smaller than average from the other localities listed; but are somewhat grayer in color. The genitalia, however, are like those of typical Costa Rican examples. In venation *ferrealis* appears somewhat less variable than *grandella*. Vein 10 of forewing is always from the cell and 4 and 5 usually shortly stalked, rarely contiguous for a short distance beyond the cell.

50. Hypsipyla dorsimacula (Schaus), new combination

FIGURES 175, 654

Myelois dorsimacula Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 245, 1913.

The female type is badly rubbed and the markings consequently obscured; ground color bronzy brown; faint indications of a pale antemedial line rather far out on wing; fainter indications of a subterminal line; at end of cell a dark brown spot on discocellular vein and shortly separated from it a similar spot in cell, between them a pale spot (this marking at end of cell seems the characteristic pattern character of the species); below discocellular vein, on lower fold, a short blackish streak. Hind wing semihyaline, lilacine, darker towards apex; veins not appreciably darker. Alar expanse, 40 mm.

Female genitalia without signum.

TYPE LOCALITY: Sixaola River, Costa Rica (Sept.) (type in USNM).

FOOD PLANT: Unknown.

In addition to the female type I have before me what I believe to be a male of the same species from the Janse Collection, taken at La Selva, San Juan, on the Chaco slopes of Colombia (4,600 ft., Sept.). It is as badly rubbed as the type but shows the same characteristic markings at end of cell and on the fold beneath; ground color of forewing rust-red; hind wing hyaline white with a very faint ocherous tint; antennal ciliations longer than on other species of the genus; at least twice as long as width of shaft. Male genitalia with stouter gnathos and quite differently shaped transtilla from previous species, the prongs of transtilla rather narrowly separated; penis without cornutus. The venation is alike on both specimens except for vein 10 of forewing, which is from the cell on the female and short-stalked with 8–9 on the male; 4 and 5 of fore and hind wings are short-stalked; 6 of forewing is sharply bent towards base and connate with 8–9. Eighth abdominal segment of male simple.

51. Hypsipyla fluviatella Schaus

FIGURE 177

Hypsipyla fluviatella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 246, 1913.

Forewing long, and narrower in proportion than other species of the genus; reddish brown, darker brown in basal area; antemedial line well out towards middle of wing, indicated by its brown outer border, the latter out-bent from costa, thence nearly vertical to inner margin, forming three lunules, defined by narrow, pale buff inner shadings (the remains of the pale antemedial line), also preceded on inner margin by some silvery gray dusting; a narrow, elongate, pale buff patch on inner margin at tornus; a similar, wider, pale streak from cell to outer margin, occupying the space between veins 5 and 8 and bisected longitudinally by a narrow red-brown streak along vein 6. Hind wing hyaline white, inner margin rather broadly tinted with ocherous, and a narrow ocherous line along outer margin. Alar expanse, 45–46 mm.

Male genitalia with uncus broad throughout, its terminal margin broadly rounded. Transtilla complete but the central fusion weak; the horns widely spaced, forming a broad, shallow U. Apical process

of gnathos rather broad, oval, flattened. Eighth abdominal segment of male simple. Female unknown.

TYPE LOCALITY: Sixaola River, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

A distinct species easily distinguished by its narrow, peculiarly marked, red-brown forewings and the oval, flattened shape of the apical process of gnathos. The male hind wings are distinctly triangulate, but this is probably only a sex character.

The forewing venation is fairly stable; vein 10 from the cell; 6 bent towards base and narrowly separated from 8–9 at base; 4 and 5 closely approximate for a short distance from cell. Hind wing with veins 4 and 5 shortly stalked or closely approximate for some distance from the cell.

The species is represented only by the type series of four males from the type locality.

9. Genus Hemiptilocera Ragonot

Hemiptilocera Ragonot, Nouv. Gen., p. 9, 1888; Monograph, pt. 1, p. 144, 1893. (Type of genus: *Hemiptilocera chinographella* Ragonot.)

Tongue well developed. Antenna of male with basal segment elongated, cylindrical; a tuft of scales on base of shaft (weak on *chinographella*); shaft unipectinate for two-thirds, crenulate and pubescent beyond. Antenna of female like that of the male type (*chinographella*) except for lack of scale tuft on shaft and for shorter basal segment; on other species of the genus shaft simple and pubescent. Labial palpus ascending; reaching to or nearly to vertex (shorter on *chinographella* than on other species); slender. Maxillary palpus small, squamous. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle, much closer to 4 than to 2; 4 and 5 connate (*chinographella*) or closely approximate at base and for a very short distance from cell (other species of genus); 6 bent towards base, close to or connate with 8 at base; 10 from the cell, closely approximate to the stalk of 8–9 for some distance from cell; male without costal fold. Hind wing with vein 2 from well before outer angle of cell; 3 from the angle, connate with or closely approximate to 4–5; 4 and 5 stalked for about half their lengths; 7 and 8 closely approximate beyond cell; cell one-half or slightly less than one-half the length of wing; discocellular vein curved. Eighth abdominal segment of male with one or more paired hair tufts and sternal plates modified, one strongly sclerotized element in the form of an open loop.

Male genitalia with apical process of gnathos a hook with notched apex. Uncus triangulate, apex bluntly pointed. Transtilla complete, stout, arched, its central area produced into widely spaced horns. Harpe with costa strongly sclerotized (produced at apex on *bigrana* and *plumigerella*, not produced on *chinographella*). Anellus with short, stout, lateral arms. Penis armed with strongly sclerotized cornutus and numerous sclerotized wrinklings. Vinculum stout, longer than broad, terminal margin broad and more or less indented.

Female genitalia with signum developed as a small, strongly scobinate pocket; bursa large; ductus bursae short, more or less sclerotized and strongly scobinate-granulate, the scobinations and granulations extending into bursa for a short distance from place of junction with ductus; genital opening with sclerotized and more or less wrinkled plate on lower margin (except on *exoleta*); ductus seminalis from bursa near junction of bursa and ductus bursae.

This genus is distinguished by its pectinate male antenna, the strong, stalking of veins 4–5 of hind wing, the long vinculum with broad terminal margin, the short arms of anellus and its short, granulate-scobinate ductus bursae. Eventually it may have to be restricted to its type species (*chinographella*) and a new generic placement found for the other species now included. All of these have simple pubescent female antennae; while those of *chinographella* are pectinate in both sexes. There are also several differences between males of *chinographella* and those of *plumigerella* and *bigrana* (notably in the shape of the transtilla, the costal development of harpe, and the size of the antennal tuft); but unfortunately we do not know the males of three other species (*letharda, jocarella, exoleta*) and until they are known it seems the wiser course not to attempt further generic separation. All the species have similar habitus and wing maculation and (except for *exoleta*) female genitalia showing only specific differences.

52. Hemiptilocera chinographella Ragonot

FIGURES 178, 658

Hemiptilocera chinographella Ragonot, Nouv. Gen., p. 9, 1888; Monograph, pt. 1, p. 144, 1893.

Male antenna with scale tuft on base of shaft weak, clay colored. Antenna of female pectinate, the pectinations a trifle shorter than those of the male. Thorax and basal segment of antenna clay-yellow. Forewing clay yellow ("olivaceous ocherous" according to Ragonot) dusted and shaded with dull reddish brown and dark grayish fuscous, the ground color predominating in the basal area, along the costa and (more faintly) bordering the termen and as a narrow longitudinal streak between the transverse line and including at its middle the lower discal spot; antemedial line faint, indicated chiefly by the broken elements of its outer dark border (a short notched blackish streak slanting outwardly from costa, a blackish spot on top of cell, another on lower vein of cell and a third on lower fold, these three blackish spots in a vertical line out near middle of wing, on a few well-marked specimens connected by a very faint, twice-outcurved dark line); subterminal line somewhat stronger, inwardly margined by a black spot, outwardly margined by a duller dark shade, more or less accented at costa and on the veins; discal dots at end of cell separated, distinct, especially the lower one, black; along termen a row of distinct,

well contrasted, black dots (these a rather characteristic feature of most of the species of the genus); on the female a conspicuous whitish patch on inner margin at inner edge of the subterminal line (this whitish patch not present on the males before me). Hind wing semihyaline, shaded with smoky fuscous towards apex, on the veins and narrowly along termen. Eighth abdominal segment of male with a single moderately long pair of ventrolateral hair tufts. Alar expanse, 22–26 mm.

Male genitalia with central part of transtilla quadriform (the horns flattened and with flattened lobes from their bases, the space between the horns even throughout); harpe with costa not produced at apex; apex of cornutus enlarged, sharply bent and bearing a row of thornlike spines. Female genitalia with ventral plate at genital opening smooth or nearly so; granulations of ductus bursae dense and forming a continuous sclerotized mass.

TYPE LOCALITY: Chanchamayo, Perú (type in Zool. Mus. Univ. Berlin).

FOOD PLANT: Unknown.

DISTRIBUTION: FRENCH GUIANA: Cayenne. BRAZIL: Pará. PERÚ: Chanchamayo.

53. Hemiptilocera bigrana (Zeller)

FIGURES 180, 660

Myelois bigrana Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 200, 1881.

Hemiptilocera bigrana (Zeller) Ragonot, Monograph, pt. 1, p. 145, 1893.

Male antenna with hair tuft strong, black. Antenna of female pubescent. Thorax and base of antenna dull whitish dusted with fuscous. Forewing pale gray dusted with dull rosy and dark grayish fuscous; the dark dusting more evenly distributed than in *chinographella;* lower discal spot at end of cell large, strongly contrasted; upper spot weak or not distinguishable; antemedial line not defined; subterminal defined by its dark borders, which consist of blackish streaks on the veins. Hind wing hyaline white with a faint smoky fuscous shade at apex, on the outer half of the veins and narrowly along termen. Eighth abdominal segment of male with a long, strong pair of ventrolateral hair tufts and two other pairs of modified scale tufts. Alar expanse, 25–29 mm.

Male genitalia with central part of gnathos a stout crescent-shaped projection with the horns widely spaced; harpe with apex of costa produced into a short spine; cornutus a spatulate ribbed blade. Female with ventral plate at genital opening deeply wrinkled; ductus bursae with a central, elongate, irregular patch of scobinations, extending into adjacent area of bursa.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Guerrero (Aug.), Iguala (*Guerrero*, June), Popocatépetl Parks (Distrito Federal, June). COLOMBIA: Honda.

The Mexican records are from specimens in the U. S. National Museum.

54. Hemiptilocera plumigerella (Ragonot), new combination

FIGURE 179

Nephopteryx plumigerella Ragonot, Nouv. Gen., p. 14, 1888; Monograph, pt. 1, p. 261, 1893.

This species is known only from the male type. From Ragonot's description the forewing color and markings must be similar to those of *chinographella* except much more heavily overshaded with vinous brown. The lower discal spot is conspicuous as in *bigrana* and the antennal tuft is stout and ochraceous in color. Hind wing iridescent, semitransparent, grayish brown. Eighth abdominal segment of male with a single pair of long, stout ventrolateral hair tufts and another pair of much shorter, central tufts. Alar expanse, 21 mm.

Male genitalia with transtilla as in *bigrana*, except that the crescent-shaped central projection is much more slender; cornutus a short bluntly pointed plate with a row of short, blunt spines near apex.

TYPE LOCALITY: "America Meridionalis" (type in Paris Mus.).

FOOD PLANT: Unknown.

55. Hemiptilocera letharda (Schaus), new combination

FIGURE 662

Chloropaschia letharda Schaus, Proc. Ent. Soc. Washington, vol. 24, p. 237, 1922; Ann. Carnegie Mus., Pittsburgh, vol. 16, p. 112, 1925.

Forewing olive buff shaded with vinaceous fawn on subcoastal, median, and basal areas; the wing markings black, and some faint scatterings of black scales on forewing and thorax; antemedial line indicated only by broken fragments of its narrow outer border; discal black spots at end of cell both conspicuous, the lower one large; black dots on veins forming the inner margin of the pale subterminal line and black dots along termen also conspicuous. Hind wing semitransparent, smoky white, the veins slightly darkened; a dark shade towards apex and a narrow dark line along termen. Alar expanse, 29 mm.

Female genitalia similar to those of *bigrana* but with a heavier concentration of scobinations in ductus bursae and a much stronger signum.

TYPE LOCALITY: Cabima, Panamá (May; type in USNM).

FOOD PLANT: Unknown.

In addition to the female type I have before me a British Museum female from Presidio, México, originally identified as *H. bigrana*. It is paler than the Schaus type, but this apparently is due to its faded and slightly rubbed condition. Schaus recognized his original misplacement of the species in the Epipaschiidae and in his 1925 paper referred it to the Phycitinae, transferring the specimen to *Hemiptilocera* in the National Collection; but I am unable to find any published reference of his or Dyar's giving of the generic reference.

56. Hemiptilocera jocarella (Schaus)

FIGURE 659

Acrobasis jocarella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 245, 1913.

Hemiptilocera jocarella (Schaus) Dyar, Ins. Insc. Menstr, vol. 7, p. 42, 1919.

Forewing reddish brown, the reddish (vinous) shade predominant in cell and, broadly, along lower fold; a dull olivaceous shade along costa and in terminal area; antemedial line obsolete, indicated only by fragments of its outer border (a black narrow streak from costa to cell, a black spot on lower margin of cell, and a thin, in-bent black streak from vein 1b to inner margin); subterminal line indicated by a pale black margined spot on costa and an outward series of short whitish streaks on veins 6 to 1b, these spots inwardly and outwardly margined by black dots; a series of black dots along termen (less distinct than in the other species of the genus); the usual black discal spots, only the lower one pronounced, and it but slightly so. Hind wing glossy purplish or smoky brown; the veins but faintly darkened; a fine dark line along termen. Alar expanse, 21–26 mm.

Female genitalia exhibit (in the amount of scobination of ductus bursae and the smaller size of signum) but trifling differences from those of *letharda*. The male of *jocarella* is unknown.

TYPE LOCALITY: Avangarez, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: COSTA RICA: Avengarez (July). PANAMÁ: Porto Bello (Dec.). BRAZIL: Nova Teutonia (May).

These records from four females in the U. S. National Museum. When males can be associated it is quite ikely that *jocarella* will prove to be only the female form of *plumigerella*.

57. Hemiptilocera exoleta (Zeller)

FIGURE 661

Myelois exoleta Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 201, 1881.

Hemiptilocera exoleta (Zeller) Ragonot, Monograph, pt. 1, p. 146, 1893.

This species is represented only by the female type. I have seen nothing that matches Ragonot's description or Zeller's rather crude figure; but from both and from details of the female genitalia the reference is doubtful. Ragonot himself questions the correctness of his generic placement; but in the absence of a male no better placement could or can be made.

The forewing shows the usual distinctively contrasted row of terminal dots and the maculation otherwise is that of a *Hemiptilocera* except that the usual discal dots are replaced by a reddish lunule. According to Ragonot the cell of hind wing is also short for a *Hemiptilocera*. Alar expanse, 25 mm.

The genitalia show a peculiar development of the eighth segment collar, a central-dorsal, invaginated, sclerotized pocket flanked by a pair of irregular, elongate, flattened lobes and on dorsum of ovipositor a pair of shallow sclerotized pockets (fig. 661a). The genital opening also is unsclerotized, lacking the usual ventral shield.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

A male will be needed for certain generic placement.

10. Genus Crocidomera Zeller

Crocidomera Zeller, Isis von Oken, 1848, p. 865.—Ragonot, Monograph, pt. 1, p. 132, 1893. (Type of genus: *Crocidomera turbidella* Zeller.)

Tongue well developed. Antenna pubescent; male with a short, blunt, spine from upper outer angle of basal segment of shaft; basal segment of male antenna swollen and broadly scaled. Labial palpus upcurved, reaching to vertex or slightly above it; third segment over half as long as second, acuminate. Maxillary palpus small, squamous. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 approximate for a short distance from cell; 6 from below upper angle of cell, very slightly bent towards base; 8–9 stalked for about half their lengths; 10 from the cell approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle; 4–5 contiguous for about one-third their lengths beyond cell; 7 and 8 closely approximate beyond cell; cell slightly less than half the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound ventral and ventrolateral tufts.

Male genitalia with apical process of gnathos an elongate hook, blunt and rounded or slightly notched at apex. Uncus broad, hoodlike, apical margin broadly rounded or broad and truncate. Transtilla complete, stout, arched, with a strongly forked central projection. Harpe with costa rather broadly sclerotized, but not produced at apex, clasper more or less developed, simple, erect. Anellus with broad, dorsoventrally flattened lateral arms. Aedeagus with longitudinal rows of thornlike spines towards apex; penis with sclerotized wrinklings, but otherwise unarmed. Vinculum stout, slightly constricted from middle to moderately broad terminal margin; slightly longer than broad.

Female genitalia with signum developed as a small scobinate cup-shaped patch; ductus bursae moderately long (shorter than bursa), expanding gradually to the wide genital opening and with some strong sclerotized wrinklings before genital opening; lower margin of genital opening sclerotized, wrinkled and more or less finely scobinate; dense, fine scobinations on the dorsal membrane behind genital opening; ductus seminalis from bursa near junction of bursa and ductus bursae.

A tropical American genus ranging as far north as our Texas border and probably into southern Florida; easily distinguished by its genitalia and male antenna.

58. Crocidomera turbidella Zeller

FIGURES 182, 664

Crocidomera turbidella Zeller, Isis von Oken, 1848, p. 865.—Ragonot, Monograph, pt. 1, p. 132, 1893.

Ground color of forewing variable, pale ocherous gray or white shaded with faintly reddish or reddish brown on outer area and in a narrowing shade towards base along inner margin; an indistinct blackish spot on costa beyond base; two other blackish dots marking the place of the obsolete antemedial line, one on costa, the other at top of cell; a dark patch on inner margin at what would be the inner margin of the antemedial line, on well marked specimens containing one or two minute black dots or dashes; subterminal pale line faint but distinguishable, indicated chiefly by an inner border of black spots on the veins and similar, fainter dark streaks (or a confluent dark shade) bordering it outwardly; a row of black dots along termen, quite marked on fresh specimens; discal dots at end of cell small, black, more or less confluent, when separated the lower not appreciably enlarged; below these, on the fold of some specimens, a larger spot of reddish or brown scales. Hind wing transparent, opalescent white with a faint fuscous shading at apex and at the vein ends and a fine dark line along termen. Alar expanse, 20–25 mm.

Male genitalia with apical process of gnathos bluntly rounded at apex; uncus subtriangulate, its apical margin evenly rounded; central projection of transtilla V-shaped, the prongs divergent and rather slender; harpe with outer margin of cucullus evenly rounded. Female genitalia with sclerotization along lower margin of genital opening narrow and but slightly wrinkled.

TYPE LOCALITY: "South America" (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: CUBA: Baracoa, Santiago (June, Oct.). JAMAICA. MÉXICO: Jalapa. UNITED STATES: *Texas*, San Benito (May, Oct.). These localities from examples (in USNM) from which the foregoing description was drawn.

I have omitted the Moschler reference cited by Ragonot for I suspect that the Puerto Rican specimens which he and Ragonot had and from which the Ragonot description was partly drawn are not *turbidella* but *fissuralis* without the peculiar longitudinal black streak on forewing characteristic of the type of *fissuralis*. I have seen no specimens of *Crocidomera* from any South American locality except the Bolivian example mentioned in the following discussion of *fissuralis*. I doubt that this could be Zeller's species.

59. Crocidomera fissuralis (Walker)

FIGURES 183, 665

Nephopteryx fissuralis Walker, List, vol. 27, p. 58, 1863.

Myelois ♀? *adonea* Felder and Rogenhofer, Reise . . . *Novara* . . ., Lepidoptera, pl. 137, fig. 8, 1874.

Crocidomera fissuralis (Walker) Möschler, Die Lepidopteren-Fauna von Portorico, p. 327, 1890.—Ragonot, Monograph, pt. 1, p. 133, 1893.

A photograph of the female type of *fissuralis* shows a specimen with a strongly contrasted, black longitudinal streak on forewing extending along lower median vein from base of wing to subterminal line and giving off two short forks, one along vein 2, the other along vein 3. The figure of *adonea*, presumably also a female, shows a similar marking. I have seen nothing to match this peculiar pattern except one female from the Janse collection from the Provincia del Sara (Department of Santa Cruz), Bolivia. The genitalia of this specimen match those of *fissuralis* fairly well except for the sclerotization of the ductus bursae, which is more like that of *stenopteryx*. The specimen cannot be placed with certainty until a male from the type locality is associated with it. I doubt very much that the peculiar longitudinal streaking represents anything more than an aberrational or varietal character; for I have before me a series of three males and three females from Puerto Rico which lack the longitudinal streak, but are obviously distinct specifically from what I have recognized as *turbidella*. Their female genitalia are identical in all details with those of the type of *fissuralis*. On superficial characters they differ from *turbedilla* chiefly in having the lower discal spot at end of cell more pronounced and distinctly enlarged in comparison to the upper discal spot. Alar expanse, 25–30 mm.

Male genitalia with terminal margin of uncus notched; apical projection of gnathos slightly notched at apex; central projection of transtilla with its prongs converging towards their apices; harpe with cucullus triangulate, its apex narrowly rounded; aedeagus much stouter and its thornlike spines stronger and more numerous than those of *turbidella* or *stenopteryx;* terminal margin of vinculum nearly straight, terminal part of vinculum proportionally about twice as wide as that of either *turbidella* or *stenopteryx*. Female genitalia with ventral plate at genital opening deeply wrinkled.

TYPE LOCALITIES: Santo Domingo [Dominican Republic] (*fissuralis, adonea*, both in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: DOMINICAN REPUBLIC. PUERTO RICO: Aguirre Central (Apr.), Coamo Springs (Apr.), Culebra Isl. (Feb.).

60. Crocidomera stenopteryx (Dyar), new combination

FIGURES 181, 663

Dioryctria stenopteryx Dyar, Ins. Insc. Menstr., vol. 10, p. 16, 1922.

Forewing ocherous gray with blackish markings; a black dot at base of cell; three black streaks beyond on lower median vein; a couple of black dots on costa near base; a black discal spot at lower, outer angle of clel; antemedial pale line indicated below median vein, preceded by a dark patch on inner margin (somewhat tinted with reddish brown on female), margined outwardly by an obscure, blackish line, beyond which on inner margin a somewhat diffused dark shade; vein 1b more or less outlined in black scaling; subterminal line faint, bordered inwardly and outwardly by some blackish dots or streaklets on the veins; a fine black line along termen (formed by the confluent terminal dots). Hind wing transparent, hyaline white with a faint

grayish shade along costa and a fine fuscous line along termen. Alar expanse, 25–27 mm.

Male genitalia with terminal margin of uncus broad, very slightly convex; apical process of gnathos slightly notched at apex; prongs of central projection of transtilla slightly convergent toward their apices; harpe with terminal margin of cucullus oblique, apex bluntly pointed. Female genitalia with ductus bursae smoothly sclerotized between its sclerotized, wrinkled part and the schrotized and wrinkled margin of genital opening.

TYPE LOCALITY: Tehuacàn, Mexico (type in USNM).

FOOD PLANT: Unknown.

Known only from the type locality.

11. Cuniberta, new genus

TYPE OF GENUS: *Nephopteryx subtinctella* Ragonot.

Tongue well developed. Antenna of male with basal segment elongate, cylindrical; shaft weakly serrate and pubescent (the cilia about as long as width of segments), basal segments swollen and incurved, forming a sinus containing a row of minute thornlike spines and overlaid with a spread of appressed scales; antenna of female simple and very weakly pubescent. Labial palpus upturned, scarcely reaching vertex; third segment shorter than second, acuminate. Maxillary palpus small, squamous. Forewing smooth; 11 veins; vein 2 from before (but rather near) lower outer angle of cell; 3 from the angle, but little further from 2 at base than from 4; 4 and 5 short stalked; 6 from below upper angle of cell, straight; 8 and 9 stalked for half their lengths; 10 from the cell, closely approximate to basal half of the stalk of 8-9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with 4-5; 4 and 5 stalked for approximately half their lengths; 7 and 8 closely approximate beyond cell; cell slightly less than half the length of wing; discocellular vein curved. Eighth abdominal segment with 2 pairs of ventrolateral hair tufts.

Male genitalia with apical process of gnathos an elongate, stout, rather broad hook with blunt, notched apex. Uncus triangulate. Transtilla complete, stout, arched, produced at middle into a broad U-shaped projection. Harpe simple. Anellus with rather broad, dorsoventrally flattened lateral arms. Aedeagus moderately slender with a single row of very minute serrations along one lateral margin towards apex, otherwise simple; penis with fine sclerotized wrinklings, otherwise unarmed. Vinculum stout, somewhat longer than broad.

Female genitalia with signum developed as a small granulate cup-shaped patch; bursa small; ductus bursae considerably longer than bursa, unsclerotized except for a narrow sclerotization along lower margin of genital opening; ductus seminalis from ductus bursae near genital opening.

The genus is close to both *Hemiptilocera* and *Crocidomera* and shares some of the characters of each but is distinct from both in the definite stalking of veins 4-5 of forewing and in the attachment of the ductus seminalis of the female genitalia.

Contains one North American species.

61. Cuniberta subtinctella (Ragonot), new combination

FIGURES 170, 666

Nephopteryx subtinctella Ragonot, N. Amer. Phycitidae, p. 7, 1887; Monograph, pt. 1, p. 302, 1893.—Hulst, Phycitidae of N. Amer., p. 146, 1890.—McDunnough, Check list, No. 6175, 1939.

Forewing gray, more or less dusted with whitish on basal and median areas; antemedial line nearly vertical, out-angled at upper and lower margins of cell, bordered outwardly by a black line which is expanded and strongly accented on costa, bordered inwardly on lower margin by a reddish or reddish olivaceous patch; on some specimens a similar shade in fold beyond the antemedial line; subterminal line sinuous, bordered inwardly by a fine black line which, in most specimens, expands on costa into a conspicuous black spot or streak; on costa following the subterminal line a similar more or less expanded black spot; discal dots at end of cell usually confluent and forming a thin black lunule along the discocellular vein; a thin black streaklet on vein 2. Hind wing pale smoky fuscous; veins scarcely darker; a faintly darkened line along terminal margin. Alar expanse, 22–26 mm.

Genitalia as given for the genus; male with apex of uncus narrowly rounded; vinculum evenly tapering to rather broad terminal margin.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Utah*, Park City (June), Provo (July, Aug.); *California*, Shasta Retreat (Siskiyou County, Aug.). CANADA: *British Columbia*, Kaslo (June).

12. Heras, new genus

TYPE OF GENUS: *Heras disjunctus*, new species.

Tongue well developed. Antenna of male with first segment rather long, cylindrical; shaft with a sinus and heavy scale tuft at base, otherwise weakly pubescent. Labial palpus upcurved, reaching above vertex; dorsoventrally flattened; third segment somewhat shorter than second. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 connate or very shortly stalked, shortly separated from 3 at base; 6 from slightly below upper angle of cell, very slightly bent towards base; 10 from the cell, closely approximate to the stalk of 8–9; on male, a long narrow costal fold and, on upper surface of wing, a fovea (depressed pocket) in cell slightly beyond base. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with 4–5; 4 and 5 stalked for half their lengths; 7 and 8 closely approximate beyond cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with sternal plate developed as a narrow sclerotized pocket at

its center; in the intersegmental area two pairs of membranous eversable lobes (not haired), one long ventrolateral pair and one shorter dorsolateral pair.

Male genitalia with apical process of gnathos a narrow, somewhat flattened hook with slightly forked apex. Uncus triangulate. Transtilla complete, stout; a rather short bridge with long widely spaced lateral arms projecting backward; and a similarly spaced, shorter pair of arms projecting forward and articulating with the anellus. Harpe with a strong, long hair tuft from outer surface of base of sacculus, otherwise simple. Anellus a narrow plate with very long, slender, strongly sclerotized, lateral arms. Aedeagus rather long and slender, sclerotized only on dorsal half; penis with some weak wrinklings and minute scobinations near apex, otherwise unarmed. Vinculum approximately triangulate, but slightly longer than its greatest width; its central, ventral area unsclerotized.

I very much dislike to erect a new genus on a single male; but the genitalic and secondary male characters of this example are so striking and its distinctness from any known genus is so obvious it seems best to give it a name and separate designation. The genus is apparently closest to *Hemiptilocera*.

62. Heras disjunctus, new species

FIGURE 184

Forewing rosy fuscous with costal area beyond antemedial line broadly clay colored (pale ocherous); the rose shade predominant on upper part of wing, the fuscous shade more accented in lower fold and along inner margin; antemedial line weak, indicated chiefly by a distinct but small whitish ocherous spot near inner margin; subterminal more distinct, whitish ocherous, terminating at inner margin in another pale spot similar to the one on antemedial line, inner dark margin of subterminal line narrow and very faint; discal dots at end of cell confluent, blackish; terminal dots confluent, some faint blackish streaking on the veins before and beyond the subterminal line. Hind wing pale smoky fuscous; darker along the veins and towards outer margin. Alar expanse, 22 mm.

Male genitalia with the long posteriorily projecting arms of transtilla terminating in flattened lobes; apex of uncus narrowly rounded. Vinculum tapering to evenly rounded terminal margin. Female unknown.

TYPE LOCALITY. Don Amo, Colombia (200 ft., July) (type in Janse Coll.).

FOOD PLANT. Unknown.

Described from unique male type. Superficially (in maculation and color) it strongly resembles *Hyalospila stictoneurella* Ragonot.

13. Adanarsa, new genus

TYPE OF GENUS: *Rhodophaea intransitella* Dyar.

Tongue well developed. Antenna simple and pubescent in both sexes. Labial palpus upturned, reaching to vertex; slightly flattened laterally; third segment about half the length of second, blunted and slightly broadened (ventrally) by scales at apex. Maxillary palpus small, squamous. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 shortly stalked, separated at base from 3; 6 from below upper angle of cell, straight; 8 and 9 stalked for half their lengths; 10 from the cell, closely approximate to the stalk of 8–9 for a short distance beyond cell; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, approximate to 4–5 at base; 4 and 5 stalked for half or nearly half their lengths; 7 and 8 weakly anastomsed for a short distance beyond cell; cell half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a small pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos a slender, rather long hook with slightly forked apex. Uncus semitriangulate. Transtilla complete, strongly sclerotized and arched, supporting at its center a rather narrow, smooth, curved crosspiece. Harpe with strongly sclerotized, erect clasper, otherwise simple. Anellus with short, broad, dorsoventrally flattened lateral arms. Aedeagus with a row of very fine serrations along one lateral edge towards apex; penis armed with a single, slender, sinuate, cornutus. Vinculum stout, about as long as greatest width; terminal margin broad.

Female genitalia with cornutus developed as a single, short, stout, hooked thorn; ductus bursae much shorter than bursa, broad, flattened and with a broad transverse sclerotized band across it at junction of ductus and bursa; genital opening weakly and narrowly sclerotized along its lower margin and with a narrow, transverse sclerotized band in the membrane just behind the opening; ductus seminalis from bursa near its junction with ductus bursae.

A distinct genus distinguished from related genera with complete transtilla by the strongly sclerotized clasper and the slight but definite anastomoning of veins 7–8 of hind wing. The amount of anastomosis varies in different specimens of the type species but is always present and always for somewhat less than half the length of the veins.

63. Adanarsa intransitella (Dyar), new combination

FIGURES 185, 667

Rhodophaea intransitella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 33, 1905.—McDunnough, Check list, No. 6075, 1939.

Forewing pale ash gray with a fine scattered dusting of black scales and a very faint clouding of ocherous fuscous above inner margin between the transverse lines; antemedial line obsolete, indicated only by small black spot on costa and a larger black spot on inner margin at what would be the inner margin of the transverse line; outer line faint, indicated chiefly by bordering black dashes on costa, a faint blackish line along its outer border and a few inwardly bordering black dots; lower discal spot black, followed outwardly by an obscure dark streak; a row of black dots along termen. Hind wing whitish, subpellucid; more or less shaded

with fuscous towards apex and with a dark line along termen. Alar expanse, 16–19 mm.

Male genitalia with apex of uncus evenly but rather narrowly rounded; clasper broadly flaring at apex; vinculum no longer than broad; terminal margin abruptly truncate, nearly straight (very slightly concave at middle); aedeagus stout. Female genitalia as given for the genus.

TYPE LOCALITY: Albuquerque, N. Mex. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *New Mexico*, Albuquerque (July); *Arizona*, Christmas, Kingman (Oct.), Phoenix (Mar.).

14. Birinus, new genus

TYPE OF GENUS: *Birinus russeolus*, new species.

Tongue well developed. Antenna simple and pubescent. Labial palpus upturned, slender, barely reaching to vertex; third segment shorter than second, acuminate. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before (but moderately near) lower outer angle of cell; 3 from the angle, closer to 4–5 than to 2; 4 and 5 very shortly stalked; 6 from very near to upper angle of cell, bent towards base, approximate at base to stalk of 8–9; 8 and 9 long stalked (for more than two-thirds of their lengths); 10 from the cell, closely approximate to stalk of 8–9 for a considerable distance beyond cell. Male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 stalked for a little over half their lengths; 7 and 8 closely approximate for a short distance beyond cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical projection of gnathos long, nearly straight, needlelike. Uncus spatulate, broadest at apical margin. Transtilla complete, a very slightly curved band (nearly straight on posterior margin), broad at its bases, narrow at middle. Harpe with sacculus strongly sclerotized throughout its length and with apex produced as a short spur at lower outer angle of harpe; costa very short, sclerotized; bent upward at a sharp right angle a short distance from base, not produced; cucullus forming more than half of the harpe area. Sclerotized part of anellus greatly reduced. Aedeagus long, moderately stout, smooth; penis armed with two narrow, blade like cornuti and numerous fine granulations. Vinculum triangulate, sclerotized only along margins.

The foregoing description is incomplete, as the female is unknown; but the new genus seems to be justified by the male genitalia, which are unlike anything else in the American fauna.

64. Birinus russeolus, new species

FIGURES 8, 186

Forewing reddish brown, the rust-red shading a little more pronounced in outer costal and marginal areas and along lower vein of cell; a faint pale, clay-colored blotch in outer median area between vein 8 and the lower fold, enclosing in its center a small patch of blackish brown scales and at its inner margin bordered by a similar blackish smudge formed by the confluent discal spots; on the fold below and just before lower outer angle of cell a somewhat larger blackish brown patch preceded by a small clay-colored spot; a thin line of dark scales along the remainder of the fold to base of wing; the usual antemedial and subterminal lines obsolete; terminal dots very faint. Hind wing pale smoky fuscous, the veins brown and the cell filled with brown scaling. On the underside of fore and hind wings dark brown sex-scaling (a male character) covers the upper wing area (above lower margin of cell) from base to somewhat beyond the outer margin of the cell. Forefemora of male with a strong, clay-colored, hair tuft from upper basal angle (also a male character). Alar expanse, 22 mm.

Male genitalia as given for the genus. Female unknown.

TYPE LOCALITY: Tumatumari, Potaro River, British Guiana (type in Cornell).

FOOD PLANT: Unknown.

Described from unique male type collected by W. T. M. Forbes, June 20, 1927 (Cornell lot 760 sub. 114).

15. Genus Bertelia Barnes and McDunnough

Bertelia Barnes and McDunnough, Contributions, vol. 2, p. 140, 1913. (Type of genus: *Bertelia grisella* Barnes and McDunnough.)

Tongue well developed. Antenna of male with a strong posterior scale tuft on basal segment; shaft with a deep incurvation (sinus) at base, the sinus containing a few minute spinelike thorns but no scale tuft, shaft beyond sinus strongly unipectinate; antenna of female simple and pubescent. Labial palpus upturned on male, reaching a trifle higher than vertex; oblique on female; third segment on male slender, acuminate, about half the length of second, on female shorter and somewhat expanded with scales at apex. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell, 3 from the angle; 4 and 5 shortly stalked; 6 from below upper angle of cell, straight; 8 and 9 stalked for a trifle more than half their lengths; 10 from the cell, closely approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 contiguous, shortly anastomosed or stalked, usually stalked for less than half their lengths; 7 and 8 closely approximate for half their lengths beyond cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos developed as a stout hook, slightly notched at apex. Uncus triangulate. Transtilla incomplete, but with the elements long and stout, their apices broadly and irregularly developed and hooked. Harpe simple. Anellus U-shaped, its lateral arms dorsolaterally flattened. Aedeagus with a short row of minute scobina-

tions along one lateral edge towards apex, moderately stout; penis with a few sclerotized wrinklings, otherwise unarmed. Vinculum stout, slightly longer than greatest width; terminal margin broad.

Female genitalia with bursa large and elongate, signum present, developed as a small, scobinate, cup-shaped depression, ductus bursae very short; genital opening with a narrow, short, sclerotized plate on its lower margin and a large semicircular, sclerotized and scobinate dorsal plate in the membrane behind the opening; a pair of ventral scobinate plates in the intersegmental area between eighth segment collar and ovipositor; ductus seminalis from lobe of bursa near its junction with ductus bursae.

A distinct genus containing one described North American species. The venation of the hind wing is individually variable in the amount of stalking or anastomosis of veins 4 and 5.

65. Bertelia grisella Barnes and McDunnough

FIGURES 187, 669

Bertelia grisella Barnes and McDunnough, Contributions, vol. 2, p. 140, 1913.—McDunnough, Check List, No. 6140, 1939.

Forewing pale ashy gray dusted with fuscous; faint interrupted black streaking on upper and lower veins of cell, the lower fold and some of the veins beyond cell; antemedial line obscure, indicated chiefly by its narrow blackish outer border (out-angled from costa) and by a whitish incurved line between cell and inner margin, preceding which is an obscure dark shading; subterminal line nearly obsolete, followed on costa by a blackish shade; discal dots obsolete on many specimens, occasionally indicated by a small blackish dot at lower outer angle of cell. Hind wing semihyaline white with a faint ocherous tint; veins not appreciably darkened; a faint fuscous line along outer margin. Alar expanse, 24–30 mm.

Male genitalia with apex of uncus bluntly and narrowly rounded; terminal margin of vinculum slightly angled; lateral arms of anellus moderately long and broad. Female genitalia as given for the genus.

TYPE LOCALITY: Redington, Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Redington, Santa Catalina Mts. (Sept.).

16. Genus Hypargyria Ragonot

Hypargyria Ragonot, Nouv. Gen., p. 9, 1888, Monograph, pt. 1, p. 122, 1893.—Janse, Journ. Ent. Soc. South Africa, vol. 4, p. 149, 1941. (Type of genus: *Hypargyria metalliferella* Ragonot; India.)

Tongue well developed. Antenna pubescent, basal segment on male elongate with a short spur of scales from its upper inner angle (giving the base of antenna much the same appearance as that of the undenuded two first segments of the male antenna of *Mildrixia*, fig. 169f); male shaft with a deep sinus towards base containing a longitudinal row of very minute teeth but no scale tuft; antenna of female simple. Labial palpus upturned, reaching a little above vertex; third segment nearly as long as second, acuminate. Maxillary palpus squamous. Forewing with transverse, antemedial ridge of raised scales; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle, at base about equidistant from 4–5; 4 and 5 connate or very shortly stalked; 6 from upper angle of cell, connate with stalk of 8–9, straight or but slightly bent towards base; 10 from the cell, approximate to the stalk of 8–9; male with a notch in costa very close to base and on underside at base of costa a small knot of modified scales and (projecting into the costal notch) a very short brush of stiff hairs. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with stalk of 4–5; 4 and 5 stalked for slightly less than half their lengths; 7 and 8 closely approximate for less than half their lengths beyond cell; cell slightly more than one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound ventral scale tufts.

Male genitalia with gnathos weak, lacking a central projection, the lateral arms meeting at the base of a rudimentary subanal plate. Uncus triangulate. Transtilla incomplete, but with the elements long and stout, their apices broadly developed. Harpe with costa broadly and very strongly sclerotized and stoutly projecting at apex; a fine moderately long hair tuft from a sclerotized disk attached to base of sacculus. Anellus a broad, deep plate (bearing short, knoblike, stoutly spined, lateral projections on the American species). Aedeagus smooth; penis armed with two or more short, rather stout, straight spines, a deeply wrinkled, sclerotized band, and a cluster of fine moderately long spines. Vinculum very stout, considerably larger than uncus and tegumen combined, longer than broad.

Female genitalia with signum developed as a small, round, scobinate, cup-shaped plate; ductus bursae shorter than bursa, a broad, strongly sclerotized band at the junction of ductus and bursa and a narrower sclerotized band at genital opening; behind genital opening a conspicuous pair of strongly sclerotized, granulate, pocket like lobes; ductus seminalis from bursa near junction of bursa and ductus bursae.

Presumably an Old World genus of tropical and probably African origin; possessing some structural characters of *Acrobasis*, *Mildrixia*, and *Bertelia* but amply distinct from any of them. It contains two American species.

66. Hypargyria definitella (Zeller)

FIGURES 188, 668

Myelois definitella Zeller. Horae Soc. Ent. Rossicae, vol. 16, p. 205, 1881.

Hypargyria definitella (Zeller) Ragonot, Monograph, pt. 1, p. 124, 1893.

Forewing purplish ocherous to purplish brown, most of basal area and costal half of median area white sparsely dusted with red scales, the red dusting most abundant along midcosta; a small ocherous patch on inner margin near base; antemedial line evenly curved,

ocherous, bordered outwardly by a red or purplish line continued from a rather pronounced costal dash, and inwardly by the vertical scale ridge, the latter red, reddish ocherous or purple with some admixture of blackish scaling; subterminal line very faint with faint purplish borders; discal spots at end of cell separated, blackish; black terminal dots faint. Hind wing hyaline white with a faint smoky tint on some specimens; the veins darkened (brown) and a narrow brown line along termen. Undersides of male fore and hind wings in the area between vein 2 and costa and from near end of cell outward covered with shining silvery scales; also on forewing a short black median streak from base, more or less extended into cell along lower edge of upper vein of cell and on hind wing a similar black streak on upper vein of cell; these black sex-scalings not constant and altogether absent from occasional males. Alar expanse, 16–20 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: PUERTO RICO: Puerto Real (Vieques Isl., Apr.), San Germán. VIRGIN ISLANDS: Kingshill (St. Croix, June, Oct.). COLOMBIA: Honda, Valparaíso. BRAZIL: Castro, Santa Catarina.

The males of this species can be distinguished at once from any other American phycitid by the shining silvery scaling on the undersides of the wings; a character, however, shared by the Old World type of the genus. The Old World *metalliferllae* exhibits a number of slight but consistent male genitalic differences: The heavier and more abundant spining on the penis, a different shape to the apical projection of costa of harpe, a different shape to the apices of the elements of transtilla (not developed into paired hooks as in the American species), and an anellus without spined lateral projections. Such differences are certainly specific but no more. Through the courtesy of the British Museum I have been able to examine males of *metalliferella* from Pusa in India and Nyasaland in Africa. There were no differences of any kind between them.

67. Hypargyria slossonella (Hulst), new combination

Salabria slossonella Hulst, Canadian Ent., vol. 32, p. 170, 1900.
Acrobasis tenuella Barnes and McDunnough, Contributions, vol. 2, p. 181, 1913.
Acrobasis slossonella (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 195, 1916.—McDunnough, Check list, No. 6108, 1939.

Not distinguishable from *definitella* except that the males lack entirely the silvery scaling on the undersides of the fore and hind wings.

I suspect that it is only a variety or race of *definitella;* but until more material is available and something is known of their life histories the two forms will have to be kept as separate species. The genitalia of *slossonella* exhibit no differences of any specific significance from those of *definitella.*

TYPE LOCALITIES: Miami, Fla. (*slossonella,* in AMNH, ex Rutgers); Everglades, Fla. (*tenuella,* in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Florida,* Everglades (Apr.), Fort Myers (Apr.), Miami ("February-March"). MÉXICO: Oaxaca.

17. Chararica, new genus

TYPE OF GENUS: *Myelois annuliferella* Dyar.

Tongue well developed. Antenna simple and pubescent on both sexes. Labial palpus upturned, reaching to vertex, slender; third segment about as long as second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before, but near, lower outer angle of cell; 3 from the angle; 4 and 5 separated at base, distance separating them slightly less than that separating 3 and 4; 6 from below upper angle of cell, straight; 8 and 9 stalked for slightly less than half their lengths; 10 from the cell, approximate to the stalk of 8–9 for a short distance; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with or very closely approximate to 4 at base; 4 and 5 shortly stalked; 7 and 8 approximate for a short distance beyond cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male with gnathos weak, lacking a central projection, the lateral arms articulating with a thinly sclerotized subanal plate. Uncus triangulate, sharply tapering to a blunt point. Transtilla complete, with a central sclerotized apron connecting transtilla and uncus, and with a pair of widely spaced lateral arms each bearing at its apex a clutter of slender spinelike setae. Harpe with costa slightly concaved, strongly sclerotized, not produced at apex; cucullus large, forming about two-thirds of the harpe, outer margin broadly rounded. Anellus with stubby, stout, convergently directed, lateral projections. Aedeagus with lateral margins serrated toward apex; penis with a few weakly sclerotized wrinklings or granulations, otherwise unarmed. Vinculum stout, nearly square in outline.

Female genitalia with signum developed as a small, finely granulate-scobinate, cup-shaped disk; bursa large; ductus bursae, broad, short, less than half as long as bursa, weakly sclerotized and transversely wrinkled towards genital opening; genital opening broad, with strongly sclerotized transverse plate along lower margin and some weak scobinations on the membrane above and behind the opening; ductus seminalis from bursa near junction of bursa and ductus bursae.

This genus is erected for three North American species now listed under *Rhodophaea,* but differing from that genus in both venational and genitalic characters. It is easily recognized by its male genitalia. The species also have a pattern character which aids in identification: the usual discal dots on forewing at end of cell are replaced by a small obicular marking. This is weak on *bicolorella* but present and distinguishable on most specimens.

68. Chararica annuliferella (Dyar), new combination

FIGURES 189, 670

Myelois annuliferella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 33, 1905.

Rhodophaea annuliferella (Dyar) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5516, 1917.—McDunnough, Check list, No. 6074, 1939.

Forewing dark gray with a faint, pale ocherous shade along inner margin; antemedial line well out on wing, outwardly arched in cell to slightly beyond middle of wing, inbent from lower fold to inner margin, white, bordered outwardly by a narrow black line; basal area with veins black and faint intervenous whitish dusting; subterming line rather near terminal margin, slightly sinuous, fine, white with a narrow, inner, black border; some faint white dusting in median area, especially along costa; usual discal dots at end of cell replaced by small black obicular mark with a whitish center. Hind wing hyaline white; veins not appreciably darkened; a faint, small fuscous shade at apex and a very faint, dark line along termen. Alar expanse, 19–22 mm.

Genitalia of male with lateral arms of transtilla much reduced, widely spaced, their spinelike hair tufts long. Vinculum with terminal margin decidedly incurved at middle. Female genitalia with transverse sclerotized band on lower margin of genital opening narrow.

TYPE LOCALITY: Gallinas Canyon, N. Mex. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *New Mexico*, Gallinas Canyon (July); *Arizona*, Colorado Desert (Yuma County), "So. Ariz.," Kingman (Oct.), Yavapai County.

69. Chararica hystriculella (Hulst), new combination

FIGURES 190, 671

Acrobasis hystriculella Hulst, Ent. Amer., vol. 3, p. 135, 1887.

Rhodophaea hystriculella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Monograph, pt. 1, p. 73, 1893.—McDunnough, Check list, No. 6073, 1939.

Myelois hystriculella (Hulst) Hulst, Phycitidae of N. Amer., p. 119, 1890.

Forewing whitish gray with extreme base dark fuscous and a similar fuscous shade over the outer area from subterminal line on costa obliquely to inner margin near antemedial line, and outward to termen; some black streaking on upper and lower veins of cell and vein 1b before the antemedial line; antemedial line well out towards middle of wing, twice angled outwardly, indicated chiefly by a fine black outwardly bordering line; subterminal line faint, with narrow dark inner and outer borders, beginning as blackish dashes on costa; obicular spot at end of cell conspicuous, black with a narrow whitish center; terminal dots black, more or less confluent. Hind wing hyaline white with a faint fuscous shade at apex and a narrow dark line along termen, these dark shadings very slight on the males, more extended and stronger on some females; veins occasionally darkened on females, not darkened on males. Alar expanse, 17–23 mm.

Male genitalia with uncus narrowly triangulate; lateral arms of transtilla rather long and their terminal hair tufts correspondingly shortened, not so widely spaced as those of *annuliferella;* terminal margin of vinculum very slightly concave, nearly straight. Female genitalia with transverse sclerotized band on lower margin of genital opening broad (at least twice as wide as that of *annuliferella*).

TYPE LOCALITY: Texas (type, ♀, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Blanco County (Sept.), Brownsville (May, June), Chisos Mts. (June), Cotula (Mar., Apr., May), Devils River (May), Kenedy (May), Kerrville (Aug.), Nueces River (Zavalla County, Apr.), Sabinal (Mar.), San Antonio (June, July), San Benito (Mar.), San Diego (Apr., May, June); *Florida*, Coconut Grove, Miami.

70. Chararica bicolorella (Barnes and McDunnough), new combination

Rhodophaea bicolorella Barnes and McDunnough, Canadian Ent., vol. 49, p. 404, 1917.—McDunnough, Check list, No. 6077, 1939.

Forewing with costal half of basal area black, streaked and peppered with white, giving this area of the wing a slate-colored appearance to the naked eye; outer area of wing from subterminal line to outer margin and costa to lower fold a similarly dark shade; remainder of wing ocherous, shading outwardly to tawney or ruddy ocherous; antemedial line obsolete except along outer margin of blackish basal patch; subterminal line faint, narrowly and weakly bordered inwardly and outwardly by blackish lines; obicular mark at end of cell very faint but distinguishable on most specimens; terminal dots confluent. Hind wing hyaline white with a very faint ocherous line on outer margin for a short distance from apex. Alar expanse, 20–24 mm.

Genitalia essentially like those of *hystriculella*.

TYPE LOCALITY: Christmas, Gila County, Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Christmas, Mohave County (May, June, July, Aug., Sept.), Redington; *Nevada*, Clark County (Apr.), "So. Nevada" (July); *California*, San Bernadino County (Apr.).

A striking species easily distinguished by its color pattern, but not structurally different from *hystriculella*. The original type series consists of two males and two females, not four males as stated by the authors.

Both *bicolorella* and *hystriculella* have a strong hair tuft on the metathorax of the male adjacent to the base of the leg. This character is lacking in *annuliferella*.

Genera 18–21: *Myelopsis* to *Ectomyelois*

[Venational division C. Forewing with 11 veins; 4 and 5 stalked for half their lengths or less. Hind wing with veins 7 and 8 anastomosed for over half their lengths beyond cell (the free element of 8 shorter than the anastomosed stalk of 7–8). Transtilla of male genitalia complete.]

18. Myelopsis, new genus

TYPE OF GENUS: *Myelois coniella* Ragonot.

Tongue well developed. Antenna simple, pubescent. Labial palpus upturned, reaching slightly above vertex; second segment somewhat roughly scaled in front; third segment slightly shorter than second, acuminate. Maxillary palpus filiform. Forewing smooth; 11 veins, vein 2 from before but near lower outer angle of cell; 3 from the angle; 4 and 5 shortly stalked, the stalk at base separated from 3 for a distance but slightly less than that between 3 and 2; 6 from below upper angle of cell, straight; 10 from the cell separated from 8–9 at base, and more or less divergent beyond; male without costal fold. Hind wing with vein 2 from well before outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 stalked for slightly less than half their lengths; 7 and 8 strongly anatomosed beyond cell, the free element of 8 short; cell half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos U-shaped (consisting of a pair of widely spaced, short arms). Uncus stout, more or less triangulate, apex rather narrowly rounded. Transtilla complete, but weakly sclerotized. Harpe simple; costa strongly sclerotized and projecting at apex (except in *subtetricella*). Anellus U-shaped, narrowly sclerotized throughout. Aedeagus smooth; penis with sclerotized wrinklings. Vinculum triangulate, tapering, longer than greatest width.

Female genitalia with or without signum, latter when present weak. Ductus bursae membranous. Genital opening simple. Ductus seminalis from middle or towards terminal end of bursa.

This genus comprises several North American species that have been referred to *Myelois* Hübner. The latter a heterogenous assemblage of species, very few of which are actually congeneric with the type of genus (*medullallis* Hübner synonym of *cribrella* Hübner). The latter has veins 7 and 8 of hind wing very shortly and weakly anastomosed beyond the cell, the free element of vein 8 correspondingly long and the cell itself over half the length of the wing. It belongs properly in our venational division B. None of the American and very few of the Old World species that have been assigned to it are properly referrable to *Myelois*. The European *tetricella* Schiffermueller belongs in *Myelopsis*.

71. Myelopsis coniella (Ragonot), new combination

FIGURES 191, 673

Myelois coniella Ragonot, N. Amer. Phycitidae, p. 3, 1887; Monograph, p. 1, p. 53, 1893.—Hulst, Phycitidae of N. Amer., p. 118, 1890.—McDunnough, Check list, No. 6071, 1939.

Rampylla nefas Dyar, Ins. Insc. Menstr., col. 10, p. 172, 1922 (new synonymy).

Forewing pale ash gray (on Utah and Nevada specimens) to blackish gray; on darker specimens the basal and terminal areas are contrastingly paler than the area between the transverse lines; at extreme base on inner margin an obscure ocherous patch (not distinguishable on worn or faded specimens); antemedial line oblique, white with a broad, black outer border; subterminal line sinuate, more or less contrastingly pale and inwardly bordered by a blackish line or varying intensity; discal dots at end of cell usually distinct, separated, black; terminal dots obscure, when distinguishable, more or less confluent. Hind wing hyaline white to pale smoky fuscous with a fine dark line along termen. Alar expanse, 16–22 mm.

Male genitalia with transtilla slender, arched and very weakly sclerotized at the central attachment of its elements. Harpe with costa narrowly sclerotized and projecting a trifle beyond the apex of the cucullus. Female genitalia without signum; bursa membranous; ductus bursae with some minute scobinations near its junction with bursa, otherwise smooth.

TYPE LOCALITIES: Nevada (*coniella*, in Paris Mus.); Mexico City, Mexico (*nefas*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Nevada*, Montgomery Pass (Mineral County, Sept.), *Utah*, Dividend (Aug.), Eureka (June, Aug.), Provo (July, Aug., Sept.), Stockton (Sept.), Trout Creek (Ibapah Mts., Sept.); *Colorado*, Glenwood Springs (Aug.); *Arizona*, Pinal Mts. (July), no definite locality (Aug., Sept.); *New Mexico*, Gallinas Canyon; *Texas*, Burnet County, (Mar.), Kerrville (Mar.); *Nebraska*, Sioux County, (July); *Michigan*, Dickinson County; *Maine*, Bar Harbor (Aug.), Mount Desert (Aug.). CANADA: *British Columbia*, Kaslo (July, Aug.); *Manitoba*, Aweme (Aug.); *Ontario*, Ottawa (July, Aug.). MEXICO: Mexico City (Sept.), Tehuacán (Sept.).

A variable species in color but with remarkably constant genitalia. Dyar's *nefas* has much darker forewings than specimens from Utah or Nevada but no darker than some specimens from Arizona and New Mexico.

72. Myelopsis immundella (Hulst), new combination

Myelois immundella Hulst, Phycitidae of N. Amer., p. 117, 1890.—Ragonot, Monograph, pt. 1, p. 49, 1893.—McDunnough, Check list, No. 6068, 1939.

The type is without abdomen. In size, wing shape, pattern, and general coloration it is like the following species (*subtetricella*) except that the antemedial and subterminal lines of forewing are more whitish and distinct and their dark borders (especially the outer border of the antemedial line) blackish and more strongly contrasted against the dark ground color of the wing. The discal dots are also more strongly contrasted.

The name may represent only a color form of *subtetri-*

cella, but until other specimens matching the type are found and their genitalia studied this cannot be determined one way or the other.

TYPE LOCALITY: Texas (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

73. Myelopsis subtetricella (Ragonot), new combination

FIGURES 192, 672

Myelois subtetricella Ragonot, Ent. Amer., vol. 5, p. 113, 1889; Monograph, pt. 1, p. 47, 1893.—Hulst, Phycitidae of N. Amer., p. 117, 1890.—McDunnough, Check list, No. 6062, 1939.

Myelois zonulella Ragonot, Ent. Amer., vol. 5, p. 113, 1889; Monograph, pt. 1, p. 49, 1893.—Forbes, Cornell Mem. 68, p. 613, 1923.—McDunnough, Check list, No. 6066, 1939. (New synonymy.)

Myelois obnupsella Hulst, Phycitidae of N. Amer., p. 118, 1890.—Ragonot, Monograph, pt. 1, p. 48, 1893.—Barnes and McDunnough, Contributions, vol. 3, p. 193, 1916.—Forbes, Cornell Mem. 68, p. 613, 1923.—McDunnough, Check list, No. 6063, 1939. (New synonymy.)

Forewing brownish gray with some faint whitish dusting on basal and median costal areas; antemedial line but slightly oblique, rather faint, dull whitish with a more or less obscured dark outer border; subterminal line obsolete or very faintly indicated; discal dark dots at end of cell separated, only the lower one distinct and always distinguishable. Hind wings dull smoky white to pale fuscous; veins darkened slightly in several specimens; a narrow dark line along termen. Alar expanse, 20–24 mm.

Male genitalia similar to those of *coniella* except sclerotized costal margin of harpe abruptly terminated before apex of cucullus and not projecting as a free spur at apex. Female genitalia with a small weak signum; bursa weakly sclerotized, finely scobinate, and with a longitudinal sclerotized groove in area near ductus bursae; ductus bursae very short; ductus seminalis from bursa well towards its terminal end.

TYPE LOCALITIES: "North America" (*subtetricella*, in Paris Mus.); north Illinois (*zonulella*, in BM); Canada (*obnupsella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *New Hampshire*, Hampton; *Massachusetts*, Cohasset (July), Forest Hills (May, June), Framington (May), Winchendon (May); *Pennsylvania*, Beaver County (May), New Brighton (May, June), Pittsburgh (May); *Illinois*, Arlington Heights (May), Chicago (May), Quincy (June); *Ohio*, Calla; *Florida* (no specific locality, Mar.). CANADA: *Alberta*, Bilby (June), Edmonton (May); *Manitoba*, Aweme (May, June).

The species is quite distinct and easily identified by male and female genitalic characters. The Florida record cited above is from a spurious "type (male)" of *Myelois immundella* Hulst, originally in the Fernald Collection and now in the U. S. National Museum. It is not *immundella*, and in genitalia, color and markings agrees perfectly with other males of *subtetricella*. Ragonot's *zonulella* was described from four females in the British Museum labeled "N. Ill." and bearing the number "82–54." I have examined the genitalia of two of these and they agree in all details with those of the type of *subtetricella*. As Ragonot designated no holotype I am selecting as lectotype one of the specimens I examined.

74. Myelopsis minutularia (Hulst), new combination

FIGURE 675

Dioryctria minutularia Hulst, Ent. Amer., vol. 3, p. 135, 1887.

Myelois minutulella Hulst, Phycitidae of N. Amer., p. 118, 1890.—Ragonot, Monograph, pt 1, p. 48, 1893.

Myelois minutularia (Hulst) McDunnough, Check list, No. 6064, 1939.

The status of this species is in doubt. It is known only from females which look like small dark examples of *coniella*, of which it may be only a race or variety. However, the ductus bursae of *minutularia* is longer than that of typical *coniella* and the bursa shows considerably more scobination. Hind wing semihyaline, smoky white. Alar expanse, 11–13 mm.

TYPE LOCALITY: Blanco County, Tex. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

The only known distribution is Texas; examples before me are from Blanco and Burnet Counties. The statement by Hulst in his original description that his types are males is an error. The male is unknown.

75. Myelopsis alatella (Hulst), new combination

FIGURES 193, 194, 195, 674

Acrobasis alatella Hulst, Ent. Amer., vol. 3, p. 135, 1887.

Myelois rectistrigella Ragonot, N. Amer. Phycitidae, p. 3, 1887.

Myelois alatella (Hulst) Hulst, Phycitidae of N. Amer., p. 118, 1890.—Ragonot, Monograph, pt. 1, p. 52, 1893.—McDunnough, Check list, No. 6070, 1939.

Myelois fragilella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 114, 1904.—McDunnough, Check list, No. 6060, 1939. (New synonymy.)

Myelois piazzella Dyar, Ins. Insc. Menstr., vol. 13, p. 11, 1925.—McDunnough, Check list, No. 6061, 1939. (New synonymy.)

Forewing ash gray more or less dusted with fuscous, general color varying from pale ash gray to grayish fuscous (but not so dark as some specimens of *coniella*); antemedial line oblique, indicated by its narrow, black outer border which is shortly and sharply out-angled at middle; subterminal line rather close and paralled to outer margin, sinuate, sharply indented between costa and vein 6, very slightly so at lower fold, often obscure, sometimes with a distinct inwardly bordering black line; discal dots separated, black, lower one (at least) always distinct. Hind wing semihyaline smoky white, somewhat darkened towards apex and with more or less darkening of the veins; a fine dark line along termen. Alar expanse, 20–26 mm.

Male genitalia with transtilla a thin, weakly sclerotized subtriangulate plate. Harpe with costa broadly sclerotized, produced at apex, but not extending to apex of cucullus. Female genitalia with a small signum; a rather large round area of dorsal surface of bursa thinly sclerotized.

TYPE LOCALITIES: Napa, Calif. (*alatella*, in AMNH, ex Rutgers); California (*rectistrigella*, in Paris Mus.); Pecos, N. Mex. (*fragilella*, in USNM); San Diego, Calif. (*piazzella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Clarkville (June), Monache Meadows (July), Napa, Placerville (May), San Diego (Mar., Aug.), San Francisco (Apr.); *Utah*, Bellevue (Apr.); *Colorado*, Gunnison County (near Almont, July); *New Mexico*, Fort Wingate (June, July), Jemez Springs (June), Pecos (June).

An individually variable species in color and to some extent in male genitalia. The actual holotypes of *alatella*, *fragilella*, and *piazzella* seem different enough; but there are all intergrades among them in a series from any given locality. Indeed the two cotypes of *alatella* from Napa, Calif. (alike in color and markings) show considerable variation in details of male genitalia (width of the sclerotized costa of harpe, shape of transtilla, and spacing of the apical prongs of gnathos). The genitalia of the cotype from Napa (in USNM, fig. 193) shows an extreme of variation. The other cotype (in AMNH, ex Rutgers, the actual holotype) has genitalia identical with those of *piazzella* shown in figure 195. At most, the Dyar names represent forms or varieties, but not species or local races.

19. Genus Anypsipyla Dyar

Anypsipyla Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 327, 1914. (Type of genus: *Anypsipyla univitella* Dyar.)

Tongue well developed. Antenna of male shortly ciliate, the cilia no longer than width of shaft; of female pubescent. Labial palpus obliquely upturned, reaching slightly above vertex; third segment about as long as second, acuminate. Maxillary palpus very slightly dilated with scales at apex (subsquamous). Forewing smooth; 11 veins; vein 2 from before but close to lower outer angle of cell; 3 from the angle, approximate to 2; 4 and 5 stalked for approximately half their lengths, approximate (rarely connate) to 3 at base; 6 from below upper angle of cell, straight; 8 and 9 stalked for about half their lengths; 10 from the cell, at base closely approximate to or connate with stalk of 8–9, thence divergent; male with short narrow costal fold. Hind wing with vein 2 from well before lower outer angle of cell; vein 3 from the stalk of 4–5; 4 and 5 long stalked; 7 and 8 anastomosed beyond cell for appreciably more than half their lengths; cell about half the length of wing; discocellular vein curved. Eight abdominal segment of male with a single pair of ventrolateral hair tufts.

Male genitalia with apical projection of gnathos an elongate hook with slightly notched apex. Uncus subtriangulate (hoodlike). Transtilla complete, strongly arched. Harpe with costa strongly sclerotized throughout and projecting at apex beyond apex of cucullus; otherwise simple. Anellus a narrow band with slender lateral arms. Aedeagus simple; penis with some weakly sclerotized wrinklings, otherwise unarmed.

Female genitalia with or without signa, if present, in the form of a row of very small, weak, thornlike spines; bursa very finely scobinate, ductus bursae considerably longer than bursa, simple; genital opening simple; ductus seminalis from anterior (terminal) end of bursa.

A distinct genus with one tropical American species.

76. Anypsipyla univitella Dyar

FIGURES 39, 196, 679

Anypsipyla univitella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 327, 1914.

Forewing fuscous gray with a broad white subcostal streak extending from near base to apex and touching costa near base and at apex; a black streak along midcostal edge and on fresh specimens a fine black line along lower vein of cell and some faint black streaking on the outer veins; a fine powdering of reddish scales on the white subcostal stripe; discal dots faint or absent; transverse lines obsolete. Hind wing hyaline white with a smoky tint along costa and at apex and a fine dark line along termen. Alar expanse, 20–32 mm.

Male genitalia with terminal margin of uncus rather broadly round; apical projection of costa of harpe blunt; transtilla truncately arched. Female genitalia as given for the genus. The signa are usually absent and when present consist of from 2 to 10 very weak spines.

TYPE LOCALITY: Corozal, Canal Zone, Panamá (type in USNM).

FOOD PLANTS: *Cassia brasiliensis*, *Samanea samán* (larva feeding in pods), *Pacae* (larva in fruit).

DISTRIBUTION: CUBA: Victoria de las Tunas, San Blas (Trinidad Mts., May). MÉXICO: Colima (May, Nov.). GUATEMALA: Cayuga (Apr.), Quiriguá (Mar.). PANAMÁ: Corozal (Apr., Nov.), Las Sabanas (Apr.), Porto Bello (May). VENEZUELA: El Valle (Apr.). BRAZIL: "S. E. Brazil," Tapera (*Pernambuco*). PERÚ: Lima (Feb.). ECUADOR. JAMAICA: Kingston (Dec.).

Probably generally distributed in tropical America, where its host plants occur.

20. Apomyelois, new genus

TYPE OF GENUS: *Dioryctria bistriatella* Hulst.

Tongue well developed. Antenna simple and pubescent on both sexes. Labial palpus upturned, slender, reaching to slightly above vertex; third segment slightly shorter than second, acuminate. Maxillary palpus filiform. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 stalked for slightly less than half their lengths, the stalk separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 long stalked (for over two-thirds their lengths); 10 from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; vein 3 from the angle; 4 and 5 stalked for two-thirds of their length, the stalk connate with 3; 7 and 8 anastomosed beyond cell for about half their lengths (the anastomoses slightly longer than the free part of vein 8); cell a trifle more than half the length of the wing; discocellular vein curved. Eighth

abdominal segment with a pair of weak, short, ventrolateral hair tufts.

Male genitalia with apical projection of gnathos an elongate, slender, simple hook. Uncus subtriangulate, apex rounded. Transtilla complete, well sclerotized and strongly arched; produced at middle into a flat, broadly and bluntly forked projection. Harpe with costa sclerotized throughout and projection slightly at apex; otherwise simple. Anellus U-shaped. Aedeagus smooth, slightly flaring at apex; penis with a single, straight, short, weakly sclerotized, spikelike cornutus and a few minute and weak scobinations; otherwise unarmed.

Female genitalia with signa present as an oval cluster of thornlike scobinations; bursa otherwise smooth, large; ductus bursae considerably shorter than bursa, simple; genital opening simple; ductus seminalis from anterior (terminal) end of bursa.

This genus is another subtraction from the composite genus *Myelois* of Authors. Of all the American species that have been referred to that genus it is the nearest to the type of *Myelois* (*medullalis* Hübner, a synonym of *cribrella* Hübner) of any American species, agreeing with *cribrella* in forewing venation, except that the stalking of vein 10 with 8–9 is less consistent in *cribrella* than in *bistriatella*. In *cribrella* 10 is often short stalked (as in fig. 38); but it is as often from the cell, connate with or approximate to or distinctly separated from the stalk of 8–9. In *bistriatella* it is from the stalk of 8–9 on all specimens that I have seen. However, this difference has no more than specific significance and would not of itself justify any separation of *bistriatella* from *Myelois*. There are some other differences that, in my judgment, are of generic character and justify such separation. The hind wing venation and length of cell are similar in *cribrella* and *bistriatella* except for the anastomosis of veins 7 and 8; in *cribrella* this anastomosis is very weak and shorter than it is in *bistriatella* and would place typical *Myelois* in our venational division B, while *Apomyelois* would go definitely into division C. In male genitalia *cribrella* (fig. 203) differs in having apical projection of gnathos developed as a deeply, strongly, and narrowly forked process and the transtilla developed as a simple, strongly arched, narrow band. The female genitalia of *cribrella* (fig. 684) differs in more striking fashion: the ductus bursae being much longer than bursa and strongly granulate and partially sclerotized throughout most of its length; and ductus seminalis is from the bursa between the signum and the junction of bursa and ductus bursae.

The new genus contains one North American species.

77. Apomyelois bistriatella (Hulst), new combination

FIGURES 40, 197, 676

Dioryctria bistriatella Hulst, Ent. Amer., vol. 3, p. 136, 1887.

Myelois bilineatella Ragonot, N. Amer. Phycitidae, p. 3, 1887; Monograph, pt. 1, p. 48, 1893.—Hulst, Phycitidae of N. Amer., p. 117, 1890; U. S. Nat. Mus. Bull. 62, p. 418, 1902.

Myelois bistriatella (Hulst) Hulst, Phycitidae of N. Amer., p. 117, 1890.—Ragonot, Monograph, pt. 1, p. 51, 1893.—Barnes and McDunnough, Contributions, vol. 3, p. 194, 1916.—Forbes, Cornell Mem. 68, p. 613, 1923.—McDunnough, Check list, No. 6067, 1939.

Forewing gray-brown faintly dusted with white on costal half of basal area and in central area from midcosta to lower margin of cell; transverse lines white, rather sharply contrasted, especially towards inner margin and without appreciably contrasted blackish borders; antemedial line transverse, from costa distinctly before middle, straight, except for an occasional slight notch in cell; subterminal line somewhat narrower and less distinct, sinuate; dark discal dots at end of cell often fused into a single spot or line along discocellular vein, usually set off by the surrounding white dusting of the central area; terminal dots very faint, more or less confluent. Hind wing dull smoky white, the veins slightly darkened and a narrow dark line along termen. Alar expanse, 19–22 mm.

Genitalia as given for the genus.

TYPE LOCALITIES: Washington, D. C. (*bistriatella*, type lost?); "America septentrionale" (*bilineatella*, in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Florida* (Mar.); *District of Columbia*, Washington; *New York; Massachusetts*, Framingham (May); *Illinois*, Edgebrook (May); *Wisconsin; Iowa*, Ames (May). CANADA: *Ontario*, Ottawa (June, July), Trenton (May, June).

Probably much more widely distributed throughout eastern and central United States and Canada, nowhere apparently a very abundant species.

The supposed type of *bistriatella* is labeled "Iowa, H. S. Saunders, June 6, 1886." It is definitely that species but, unless it is mislabeled or the type locality given by Hulst in his original description ("Washington, D. C.") is wrong, it could not be the actual holotype. I have seen no specimens anywhere labeled "Washington, D. C." There is a female in the National Museum from the Fernald Collection, bearing a Hulst type label but no locality. This might be the true type. It is a perfect match for the Iowa specimen in the Rutgers Collection. Since there can be no reasonable doubt as to what the name stands for we may as well consider the holotype lost and forget it.

21. Ectomyelois, new genus

TYPE OF GENUS: *Myelois decolor* Zeller.

Tongue well developed. Antenna of male shortly ciliate (cilia about the length of width of shaft or slightly less), otherwise simple; of female simple and pubescent. Labial palpus upturned, reaching to or nearly to apex (not above it); second segment somewhat broadened with scales; third segment short, distinctly shorter than second, acuminate. Maxillary palpus filiform. Forewing smooth; 11 veins; vein 2 from well before angle; 3 from the angle, shortly separated from the stalk of 4–5 at base; 4–5 shortly stalked (very shortly stalked in most specimens and never for more than half the length of the veins);

6 from below upper angle, straight; 8 and 9 long stalked, for over two-thirds of their lengths; 10 from the cell, closely approximate to the stalk of 8–9 for some distance from cell; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle; 4–5 stalked for not over half their lengths (usually for less), the stalk connate with or very closely approximate to 3 at base; 7 and 8 strongly anastomosed for most of their lengths beyond cell (free element of 8 very short); cell half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple or with a weak, short pair of ventrolateral hair tufts.

Male genitalia similar to those of the foregoing genus (*Apomyelois*) except: Apical process of gnathos slightly notched at apex; costa of harpe not produced at apex (except slightly in *muriscis* and *zeteki*); penis without cornutus; vinculum more truncate and less tapering.

Female genitalia with signum sometimes absent, when present consisting of an elongate patch of scobinations; ductus bursae normally longer than bursa, individually variable, simple, except for a weak sclerotization at genital opening; ductus seminalis from bursa near junction of bursa and ductus bursae.

In male genitalia there is little or nothing of a generic character to separate *Ectomyelois* from *Apomyelois*. The two genera are distinguished by the shorter cell and much more extended anastomosis of veins 7 and 8 of hind wing and the different place of departure of ductus seminalis from the bursa of the female.

The genus is erected for another group of species (American and European) removed from *Myelois* of Authors. These species all appear to be of tropical or semitropical origin. They are distinguished from typical *Myelois* by the much stronger anastomosis of veins 7 and 8 of hind wing and the consequent reduction of the free element of vein 8.

78. Ectomyelois decolor (Zeller), new combination

FIGURES 198, 677

Myelois decolor Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 222, 1881.—Ragonot, Monograph, pt. 1, p. 58, 1893.—Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 326, 1914.—Wolcott, Journ. Agr. Univ. Puerto Rico, vol. 20, No. 1, p. 476, 1936.

Nephopteryx ephestiella Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 257, 1901 (new synonymy).

Forewing dark grayish fuscous with some white powdering in basal area and considerably more in the median area from slightly above inner margin and in outer area between subterminal line and termen; transverse lines white, well contrasted, especially the antemedial line which is rather wide, sharply oblique, slightly indented at lower fold and (in some specimens) in the cell, outwardly bordered by a more or less obscure dark shade; subterminal line fainter, narrow, sinuate, obscurely and narrowly dark margined; some faint blackish streaking on the veins; discal dots at end of cell distinct, separated; terminal dots normally well contrasted and separate, blackish. Hind wings smoky white to pale smoky fuscous; the veins darkened and a narrow dark line along termen. Eighth abdominal segment of male with hair tufts. Alar expanse, 19–30 mm.

Male genitalia with outer margin of uncus rather evenly rounded; central area of transtilla produced into a moderately broad plate with notched terminal margin; anellus a broad plate with wide, flattened, incurved, stubby arms; vinculum nearly square in outline, its terminal margin very slightly concave.

Female genitalia exhibiting considerable individual variation in the size of bursa and corresponding length of ductus bursae which is usually considerably longer than bursa; signum patch of variable shape but usually elongate. The female genitalia exhibit no distinctively specific characters.

TYPE LOCALITIES: Honda, Colombia (*decolor*, in BM); Nassau, Bahamas (*ephestiella*, in BM).

FOOD PLANTS: *Annona squamosa, Ceratonia siliqua, Hymenaea courbil;* these records from reared specimens in the U. S. National Museum. Presumably the species has much the same hosts and habits as the closely related *Ectomyelois ceratoniae.* The larvae feed in the fruits and are very difficult to separate from those of *ceratoniae.*

DISTRIBUTION: CUBA: Baracoa (Aug., Oct., Nov.), Havana, Santiago de las Vegas (Mar.), "Santiago Province" (Sept., Oct., Dec.). PUERTO RICO: Arecibo, San Germán (Apr.). JAMAICA. BAHAMAS: Nassau. GUATEMALA: Cayuga (Mar., June, Aug.). PANAMÁ: Porto Bello (Mar., Dec.). COLOMBIA: Honda, "West Slopes" (4,400 ft., Feb.). VENEZUELA: Aroa. BRITISH GUIANA: Tumatumari (June). FRENCH GUIANA: Cayenne, St. Jean Maroni. SURINAM: Surinam River. BRAZIL: Pará (June), Ponte Nova (Rio Xingu, Amazonas), Santa Catarina (July).

Ragonot considered *decolor* as a probable variety of *ceratoniae;* but there is a consistent difference in the shape of the transtilla between the two which indicates more than varietal or racial difference; and in unrubbed and unfaded specimens the color difference is obvious and consistent. *E. decolor* seems to be confined to the New World while *ceratoniae* occurs in both the New and Old World. Hampson's *ephestiella* is nothing more than a rather large example of *decolor.* Like other species in this genus, *decolor* varies greatly in size.

79. Ectomyelois ceratoniae (Zeller), new combination

FIGURES 199, 678

Myelois ceratoniae Zeller, Isis von Oken, 1839, p. 176; 1848, p. 675.—Ragonot, Monograph, pt. 1, p. 57, 1893.—Staudinger and Rebel, Catalog der Lepidopteran des palaearctischen Faunengebietes, vol. 2, No. 787, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 216, 1910.—Forbes, Cornell Mem. 68, p. 614, 1923.—Meyrick, Revised handbook of British Lepidoptera, p. 395, 1928.—Wolcott, Journ. Agr. Univ. Puerto Rico, vol. 20, No. 1, p. 475, 1936.—Corbet and Tams, Proc. Zool. Soc. London, ser. B, vol. 113, p. 68, 1943.

Myelois oporedestella Dyar, Proc. Ent. Soc. Wash., vol. 13, p. 30, 1911.—McDunnough, Check list, No. 6065, 1939. (New synonymy.)

Color and markings similar to *decolor* except: Forewing more uniformly gray, with less of the white dusting, especially on median area; antemedial line narrower and usually more distinctly notched. The chief character, however, is in the transtilla of the male genitalia. The central projection of this organ is more constricted and decidedly narrower on *ceratoniae* than on *decolor*, and this difference seems to be consistent. In several preparations of each species from different rearings and localities I have found no intergrading examples. The female genitalia offer no satisfactory distinguishing characters. As in *decolor*, individual differences (even in the proportional length of the ductus bursae) are greater than any difference between the two species. Alar expanse, 16–24 mm.

TYPE LOCALITIES: Laibach, Austria (*ceratoniae*, in BM); Miami, Fla. (*oporedestella*, in USNM).

FOOD PLANTS: *Carissa grandiflora, Cassia bicapsularis, Ceratonia siliqua, Erisbotyra japonica* (chiefly in mummied fruits), *Livistona chinensis, Robinia, Tamarindus indica, Vachellia insularis*. Also on dried figs, dates, raisins, and nuts in storage. Primarily a leguminous feeder. The favored host seems to be the pods and seeds of the corob (*Ceratonia siliqua*).

DISTRIBUTION: UNITED STATES: *Florida*, Homestead (May), Key West (Apr.), Miami (May, July, Aug., Nov.). PUERTO RICO: Arecibo (May), Trujillo Alto (Mar., July). JAMAICA (July). ARGENTINA: Buenos Aires (Feb.), Catamarca (May, June). Also in the Old World in the Mediterranean areas of Europe, Africa and Asia and (by introduction in dried fruits) extending into Central Europe and England.

Apparently of Mediterranean origin, introduced by commerce and established in some tropical and semitropical areas of the New World. Probably much more widely distributed than indicated by the above records from specimens before me. The species is of minor importance as a feeder on the seeds of the corob. It has been found rather frequently at our port quarantine stations in shipments of English walnuts from Italy.

I have omitted all European synonymy as I have not been able to verify its correctness. This, with further references to European literature will be found in Ragonot's monograph and the Staudinger and Rebel catalog. *Myelois phoenicis* Durrant may be only a color variety or race of *ceratoniae;* a small series before me reared from dates from Algeria has the ground color of forewing white, but the male genitalic characters of *ceratoniae*. Corbet and Tams list *phoenicis* as a synonym.

80. Ectomyelois muriscis (Dyar), new combination

FIGURES 200, 680

Myelois transitella Dyar (not Walker), Proc. U. S. Nat. Mus., vol. 47, p. 326, 1914.

Hypsipyla muriscis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 330, 1914.

Myelois palpalis Dyar, Ins. Insc. Menstr., vol. 7, p. 40, 1919 (new synonymy).

Forewing dull rusty brownish ocherous to reddish brown; costal third to half of wing strongly dusted with white, the white area rather well contrasted against dark ground color; antemedial line angulate, obscure, indicated chiefly by a brown or blackish spot on its outer margin at or just below costa; subterminal line better defined, sinuate, margined inwardly and outwardly by narrow dark lines, the latter especially emphasized at costa; discal spots usually distinct and separated, sometimes one or the other obscured by the white dusting or by an extension of the ground color, rarely fused into a line along discocellular vein, blackish brown; terminal dots more or less distinct. Hind wing dull, translucent white to smoky fuscous (as a rule darker on female than on male); a dark shade toward apex, some dark shading on the veins and a fine dark line along termen. Eighth abdominal segment of male simple. Alar expanse, 16–26 mm.

Male genitalia with apical projection of gnathos slender, very long, extending at least as far backward as apex of uncus (when genitalia are in natural position it extends well beyond the uncus); transtilla a rather narrow, sclerotized band, looped backward in a rounded arch; sclerotized costa of harpe very slightly and bluntly produced at apex.

Female genitalia with or without signa, when present a patch of coarse scobinations, the patch varying in size in different specimens; ductus bursae simple or very weakly sclerotized on ventral surface at genital opening.

TYPE LOCALITIES: Cabima, Panamá (*muriscis*, in USNM); Cayuga, Guatemala (*palpalis*, in USNM).

FOOD PLANTS: *Mammea americana* (larvae feeding in the fruit), *Theobroma cacao* (larvae in the pods).

DISTRIBUTION: HAITI. PUERTO RICO, Mayagüez (July). BRITISH WEST INDIES: *Trinidad*, several examples with no more specific locality, St. Clair (Mar.); *Grenada*, several examples with no more specific locality; *Tobago* (Apr.). GUATEMALA: Cayuga (Jan., Feb., Apr., May, June), Quiriguá (Sept.). COSTA RICA: Esperanza (May, Aug.). PANAMÁ: Alhajuelo (Apr.), Cabima (May), Porto Bello (Apr., Oct.), Río Trinidad (Mar., June). COLOMBIA: La Esperanza (Dec.), no specific locality (June). BOLÍVIA: "East Bolivia" (Oct.). BRITISH GUIANA: "Mazaruni Clearing" (Aug., Oct.). FRENCH GUIANA: Cayenne, St. Jean Maroni, St. Laurent Maroni. BRAZIL: Rio de Janeiro (June).

This species is primarily a feeder in the pods of the cacao and is well distributed in tropical America wherever its host occurs. All specimens in the National Museum (except the holotypes of *muriscis* and *palpalis*) had been identified by Dyar as "*Myelois transitella* Walker." The two species are easily confused on superficial characters, especially among faded and stained tropical specimens; but their genitalia are quite distinct.

Dyar's types of *muriscis* and *palpalis* are males and alike in genitalic and all other characters. It is very probable that *muriscis* eventually will prove to be no more than a variety (or synonym) of *furvidorsella* Ragonot.

81. Ectomyelois furvidorsella (Ragonot), new combination

FIGURE 681

Myelois furvidorsella Ragonot, Nouv. Gen., p. 8, 1888; Monograph, pt. 1, p. 56, 1893.

This is probably the same as *muriscis*. The genitalia of the female type (fig. 681) are somewhat unusual in that bursa and ductus bursae are perfectly smooth, with no trace of signum or sclerotization of the ductus at genital opening. However, I have seen similar genitalia in typical examples of *muriscis* from Central America; but I have seen so few examples of *muriscis* (only males) from Puerto Rico that I prefer to keep the names apart till more material is available.

Alar expanse, 22 mm.

TYPE LOCALITY: Puerto Rico (type in Paris Mus.).

FOOD PLANT: Unknown.

82. Ectomyelois zeteki, new species

FIGURES 201, 682

Forewing pale brownish gray faintly dusted with blackish fuscous; antemedial line obscure, angulate, indicated chiefly by its blackish fuscous outer border, the latter incomplete on many specimens; subterminal line sinuate, rather close to termen, on well-marked specimens consisting chiefly of white spots on the veins, preceded and followed by dark streaks, obscure on many specimens; also on well-marked specimens a median, longitudinal blackish fuscous streak from base of wing to antemedial line; discal dots at end of cell very faint or completely obliterated, when distinguishable more or less confluent; terminal dark dots faint, confluent. Hind wing translucent, white with a faint smoky tint towards apex; a dark line along outer margin and some darkening of the veins. Eighth abdominal segment of male simple. Alar expanse, 17–22 mm.

Male genitalia similar to those of *muriscis* except: Uncus narrower; apical projection of gnathos shorter, not reaching so far backward as apex of uncus; transtilla a narrow band forming a truncated arch with slightly concaved posterior margin; sclerotized costa of harpe projecting somewhat further at its apex. Female genitalia with scobinations of signum patch stouter and sclerotization of ductus bursae at genital opening forewing a larger and more strongly pigmented shield than those of any other species of the genus.

TYPE LOCALITY: Near Capira, Panamá (type in USNM, 61316; paratypes in USNM, Cornell Univ., Transvaal Mus. (Janse Coll.), Paris Mus., BM).

FOOD PLANT: *Cassia moschata*.

Described from male type, and 16 male and 19 female paratypes from the type locality; all reared (May 1941, Zetek No. 4807) by James Zetek, who has contributed much valuable material to the National Collection, and for whom the species is named.

It is easily distinguished from any other American phycitid by its male genitalia.

Genera 22–24: *Paramyelois* to *Protomoerbes*

[Venational division C. Forewing with 11 veins; 4 and 5 stalked for less than half their lengths. Hind wing with veins 7 and 8 anastomosed for most of their lengths (free element of 8 short). Transtilla incomplete; but (except in *Paramyelois*) its free elements well developed.]

22. Paramyelois, new genus

TYPE OF GENUS: *Myelois solitella* Zeller.

Tongue well developed. Antenna of male shortly ciliate (cilia shorter than width of shaft), simple; of female pubescent. Labial palpus oblique, laterally flattened (broad and flat from lateral view); second segment roughly scaled beneath; third segment shorter than second, somewhat roughly scaled. Maxillary palpus squamous (rather heavily and broadly scaled). Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle, well separated from the stalk of 4–5 at base, but nearer to 4–5 than to 2; 4 and 5 shortly stalked; 6 from below upper angle of cell, straight; 8 and 9 long stalked; 10 from the cell, approximate to the stalk of 8–9 for a short distance from base; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, closely approximate to or connate with the stalk of 4–5 at base; 4 and 5 normally stalked for half or slightly less than half their lengths, rarely (in some small specimens) stalked for over half their lengths: 7 and 8 strongly anastomosed for most of their lengths, free element of 8 short; cell slightly over half the length of wing in male (as in European *Myelois*), half the length of wing in female; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos a short, rather broad, blunt hook, slightly notched at apex. Uncus with broad base; narrowed and triangulate just beyond; apex acutely rounded. Tegumen short and broad. Transtilla incomplete. Harpe very broad at base; costa strongly and broadly sclerotized and forming a broad, pointed projection before middle, not appreciably sclerotized beyond; sacculus large and strongly sclerotized; cucullus greatly reduced. Anellus a curved shield with long, strongly sclerotized, smooth, slender, tapering and pointed lateral arms. Aedeagus scobinate on one lateral edge at apex; penis with a few sclerotized wrinklings, otherwise unarmed. Vinculum stout, slightly longer than broad, truncate, scarcely tapering to broad terminal margin.

Female genitalia with weak signum consisting of a cluster of rather coarse scobinations; finer scobinations scattered over the caudal half of bursa. Ductus bursae shorter than bursa, broadened and sclerotized on inner ventral and lateral surfaces towards genital opening; on inner dorsal surface behind the opening a pair of small sclerotized plates. Ductus seminalis from bursa near its junction with ductus bursae.

This genus is easily recognized and is distinguished from other sections of the "*Myelois*" complex by its labial palpi and male genitalia.

In their normal position the palpi are directed in a straight line obliquely from the face; but many specimens show the third segment more or less deflected forward, and some with both the second and third segments more or less porrected, results of the death contortions of the moths. Several European species listed under *Myelois* have oblique palpi but they are all more or less cylindrical and do not have the broadly scaled and flattened lateral aspect of those of *Paramyelois*. The male genitalia with their incomplete transtilla (its elements reduced and well separated) are unique among the groups nearly related to *Myelois* or any of the American species that previously have been referred to that genus.

I have chosen a synonym as type of the new genus advisedly, as the type specimen of the oldest name (*transitella*) is a female, and there may be some question of my application of the name to the species here treated. There can be no such doubt in regard to *solitella*.

83. Paramyelois transitella (Walker), new combination

FIGURES 202, 683

Nephopteryx transitella Walker, List, pt. 27, p. 54, 1863.
Nephopteryx notatalis Walker, List, pt. 27, p. 57, 1863.
Myelois solitella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 217, 1881.—Ragonot, Monograph, pt. 1, p. 55, 1893. (New synonymy.)
Myelois duplipunctella Ragonot, N. Amer. Phycitidae, p. 3, 1887; Monograph, pt. 1, p. 56, 1893.—McDunnough, Check list, No. 6059, 1939. (New synonymy.)
Myelois transitella (Walker) Ragonot, Monograph, pt. 1, p. 42, 1893 (in part).—McDunnough, Check list, No. 6058, 1939 (in part).
Myelois venipars Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 404, 1914.—Mote, Monthly Bull. California Dep. Agr., vol. 11, p. 628, 1922.—Glick, Arizona Comm. Agr. and Hort., Fourteenth Ann. Rep., p. 78, 1922.—Essig, Insects of western North America, p. 708, 1929.—Hixon, Journ. Econ. Ent., vol. 27, p. 547, 1934. (New synonymy.)
Emporia cassiae Dyar, Ins. Insc. Menstr., vol. 5, 91, 1917 (new synonymy).

Similar in color and maculation to *Ectomyelois muriscis* except: Ground color on lower half of wing darker; the dark borders of the transverse lines and the discal dots decidedly darker, blackish; the white areas more strongly contrasted; the dark outer border of antemedial complete in most examples and enlarged below costa into a conspicuous blackish spot. Hind wings a clearer white on the males; more or less smoky on the females. Alar expanse, 15–28 mm.

Genitalia as given for the genus. The male genitalia show little or no individual variation. Among the females, however, there is considerable variability in minor details, namely, the amount of sclerotization about genital opening and the amount of scobination in the bursa, but these are differences of no specific significance.

TYPE LOCALITIES: "United States," probably Florida (*transitella*, in BM); Santo Domingo (*notatalis*, in BM); Colombia (*solitella*, in BM); Florida (*duplipunctella*, in Paris Mus.); Hermosillo, México (*venipars*, in USNM); Georgetown, British Guiana (*cassiae*, in USNM).

FOOD PLANTS: Orange, grapefruit, peach, apple, dates, figs, *Acacia farnesiana, Aesculus glabra, Cassia grandis, Genipa americana, Gleditsia triacanthos, Pithecolobium flexicaule, Robinia, Sapindus drummondii, Yucca*, English walnut. These records from reared specimens in the U. S. National Museum.

DISTRIBUTION: UNITED STATES: *Arizona*, Maricopa County (Dec.), Mesa (Nov.), Phoenix (Aug., Sept., Nov., Dec.), Tempe, Yuma; *Texas*, Anahuac (March), Brownsville (Dec.), Dallas (May), Fort Davis (Oct.), Harlingen (July), Hidalgo County (Apr.), Kerrville, Louise (Feb.), Mercedes (Feb.), Mission, San Antonio (May), San Benito (Sept.); *Oklahoma*, Stillwater (June); *Louisiana*, Forbing (Oct.); *Alabama*, Mobile (Apr.); *Georgia*, St. Simons; *Florida*, Orlando (Oct., Nov.), Vero Beach (Apr., May); *North Carolina*, Durham. CUBA. DOMINICAN REPUBLIC. MÉXICO: Hermosillo, Oaxaca. GUATEMALA: Cayuga (Mar., Apr.), Chejel (June). PANAMÁ: El Cermeno (Apr., June). COLOMBIA. BRAZIL: Tapera (*Pernambuco*). PERÚ: Lima, Río Pacaya (June, July, Aug.).

This species has attracted some attention in the southwest as a minor orchard pest and is known to economic entomologists as the "navel-orange worm." The larvae feed on the nuts, in the seed pods, or on the fruits of numerous trees but they seem to prefer the fallen and mummied fruits or the dry seed pods or injured or diseased fruits. Rarely do they attack sound fruit on the trees. They have been reported as infesting sound oranges, but such behavior is probably an exceptional departure from normal habit.

The foregoing synonymy requires some comment. I have not seen the types of *transitella* or *duplipunctella* (both females), but from the original descriptions and the Ragonot figures they cannot apply to anything else than the species we have hitherto known in the United States as *venipars* Dyar. Of the synonymy of *venipars* and *solitella* there is no possible doubt. The type of the latter is a male (not a female as stated by Zeller) and figures of its genitalia, supplied by Tams and Clarke, show agreement in every detail with those of *venipars*. Clarke has also furnished excellent photographs of the female types of *transitella* and *notatalis* and of the genitalia of *transitella*. The latter show only trifling individual differences from the genitalia of Dyar's female type of *venipars*. Unfortunately, the type of *notatalis* lacks an abdomen; but photographs of the moths and their palpi show no essential differences between the two types; so Ragonot's reference of *notatalis* to synonymy must be accepted. In his specific key to the species of "*Myelois*" Ragonot (Monograph, pt. 1, p. 27) places *transitella* in a group with veins 7 and 8 of hind wing approximate. This characterization was obviously based upon a freak specimen. Dyar found one such freak (a female from Grenada) among the examples of *muriscis* which he misidentified as "*transitella*"; but in over a hundred examples of the true *transitella* before me veins 7 and 8 are strongly anastomosed, and this is

a good character of much more than specific value despite its lapse in individual specimens. Freaks of all kinds can and do turn up anywhere in the Phycitinae. Dyar's *cassiae* was described from stained and faded females; but, even so, it is strange that he did not see their resemblance to his *venipars*, especially in their palpi, and still more strange that he should refer them to the Old World anerastiid genus *Emporia*. They have normal phycitine tongues and their genitalia agree with those of the female type of *venipars*.

Bondar's (Instituto de Cacau da Bahia Boletim 5, p. 72, 1939) identification of a lepidoperon in cacao pods as *duplipunctella* Ragonot (the genus given as "*Myelosis*") is probably incorrect. What he had was presumably *Ectomyelois muriscis*.

23. Genus Pseudodivona Dyar

Pseudodivona Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 405, 1914. (Type of genus: *Pseudodivona commensella* Dyar.)

Tongue well developed. Antenna shortly ciliate on male, cilia about as long as width of shaft (longer on *carabayella*). Labial palpus oblique, broadly scaled and laterally flattened; third segment short, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle; 4 and 5 stalked for slightly less than half their lengths, the shaft separated at base from 3; 6 from below upper angle of cell, slightly curved towards base; 8 and 9 stalked for two-thirds their lengths; 10 from the stalk of 8–9; 11 from cell rather near outer angle and running close to the stalk of 8–9–10; male without costal fold. Hind wing from well before lower outer angle of cell; 2 from very close to the angle, or from the angle (*cispha*), closely approximate to or connate with stalk of 4–5 at base; 4 and 5 stalked for about half their lengths; 7 and 8 anastomosed for most of their lengths (free element of 8 very short); cell less than one-half (but more than a third) the length of wing; discocellular vein curved. Eighth abdominal segment of male with a strong pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos developed as an elongate, stout, flattened hook with forked or notched apex. Uncus subtriangulate, with rounded terminal margin. Transtilla incomplete; its elements well developed, elongate and knobbed at their apices. Harpe simple with outer margin evenly rounded; costa sclerotized for about four-fifths its length; but not produced. Anellus a narrow curved band with slender lateral lobes. Aedeagus moderately slender, nearly straight; penis unarmed. Vinculum stout, decidedly longer than broad, tapering, expanded towards angulate terminal margin.

Female genitalia without signum; bursa, ductus bursae, and genital opening simple; ductus seminalis from bursa near junction of bursa and ductus bursae.

In genitalic and many other characters as well as wing pattern and color, this genus resembles *Moerbes*, to which it is apparently closely related. It differs chiefly in having vein 4 present and well developed in hind wing, a different development of the elements of transtilla, and strong hair tufts on the eighth abdominal segment of the male. Four tropical American species are recognized. How many of these are really distinct species it is impossible to determine from the scanty material available. Nothing is known of their biology or habits.

84. Pseudodivona commensella Dyar

FIGURES 41, 204

Pseudodivona commensella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 406, 1914.

Forewing dull white on area above lower margin of cell; the area from cell to inner margin a glossy vinous brown; a blackish brown smudge on costa at base; antemedial line obscure except where it cuts the brown shade and forms a contrasting white spot at inner margin, bordered outwardly by a blackish brown, outwardly angled line, obscure on all but fresh specimens and frequently broken into two blackish spots, one on costa, the other in the cell; subterminal line indicated by a pair of narrow and narrowly spaced blackish dashes from costa near apex and some inwardly bordering blackish spots or streaks on the veins; the veins otherwise more or less darkly streaked; lower discal spot at end of cell enlarged, blackish, more or less confluent with a smaller, much fainter upper spot; a row of blackish dots along termen. Hind wing pale, glossy, semitranslucent grayish white; veins darkened and clearly outlined; a narrow dark line along termen. Alar expanse, 20–22 mm.

Male genitalia with trifling differences in the shape of the apical projection of gnathos between this and the following species of the genus and some differences in the curve of the outer margin of the harpe, but I suspect that these differences are individual rather than specific in character.

TYPE LOCALITY: Jalapa, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Jalapa, Orizaba.

Known only from the four males of Dyar's type series.

85. Pseudodivona cispha Dyar

FIGURE 205

Pseudodivona cispha Dyar, Ins. Insc. Menstr., vol. 7, p. 53, 1919.

A smaller, less distinctly marked species than the preceding one (*commensella*); the brownish area of forewing narrower and paler (not "reddish" as stated by Dyar); the dark markings fewer, fainter and paler and, except for the spot on base of costa and a short wedge at apex, not blackish; discal dots inconspicuous, light brown, the lower dot much smaller than on *commensella*. Alar expanse, 16–18 mm.

Female genitalia like those of *P. santa-maria*.

TYPE LOCALITY: Volcán Santa María, Guatemala (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: GUATEMALA: Cayuga (Aug.), Volcán Santa María (July, Oct.). COSTA RICA: Tuis (May). BRITISH HONDURAS: Río Grande (Sept.), Punto Gorda (July).

86. Pseudodivona santa-maria Dyar

FIGURE 690

Pseudodivona santa-maria Dyar, Ins. Insc. Menstr., vol. 7, p. 54, 1919.

Known only from the two females of the type series. The coloration and markings are more like those of *commensella* except that the dark striping of the veins is fainter and the discal dots smaller, paler and less conspicuous, like those of *cispha*. It is quite possible that these specimens are only larger, darker, better marked, female examples of *cispha* and equally possible that both *cispha* and *santa-maria* are only varieties of *commensella*. Alar expanse, 21 mm.

TYPE LOCALITY: Volcán Santa María, Guatemala (July; type in USNM). Paratype from Cayuga, Guatemala (May).

FOOD PLANT: Unknown.

87. Pseudodivona carabayella Dyar

FIGURES 206, 691

Pseudodivona carabayella Dyar, Ins. Insc. Menstr. vol. 7, p. 54, 1919.

Larger and more strikingly marked than any of the preceding species. Forewing with pale areas pure white; lower area of wing (between cell and inner margin) vinous brown (not "purplish red" as in Dyar's original description) except for an extension of the white behind the antemedial line where it reaches almost to inner margin; an elongate black patch on costa at base; antemedial line indicated by the usual white spot on inner margin and its black outer border, the latter is rather broad from costa, strongly angled and extends from costa to the lower margin of the cell; a subbasal black spot in the cell; subterminal line indicated above cell only by its widely spaced black inner and outer borders; the inner black border a strong slanting black dash extending from costa almost to the lower discal dot at end of cell (indicating a deep angulation of the subterming line); the outer black border a much shorter, slanting, dash from apex to vein 6; from about vein 5 the subterminal line is indicated by a faint white line through the brownish ground color and is bordered inwardly by a few rather faint blackish spots; discal spots, distinct, black and somewhat enlarged, the lower one particularly. Hind wing white, more or less tinted with grayish on some specimens; veins darkly outlined; a narrow dark line along termen. Alar expanse, 23–28 mm.

Apical process of gnathos of male genitalia figured from type. Another male from Incachaca, Bolivia (in BM), exhibits some variation from the type in the shape of the apical process of gnathos (fig. 206a). It is a small specimen (23 mm.) and seems to have the dark areas and markings of forewing paler, but it is a rubbed and faded example; other specimens from the Schaus Collection in the National Museum and from the same Bolivian locality are typical in all details. The British Museum specimen is probably nothing more than an individual variant.

TYPE LOCALITY: Oconeque, Carabaya, Perú (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PERÚ: *Carabaya*, Oconeque, Tinguri. BOLIVIA: *Cochabamba*, Incachaca. COLOMBIA: San Antonio (Dec.).

All Peruvian examples in the U. S. National Museum, British Museum, and Janse Collection are males. The only female of the species that I have seen is the specimen from Incachaca, Bolivia, from which the genitalia are figured.

The species is undoubtedly a distinct one. The widely spaced, strong, black dashes bordering the subterminal line indicate this as well as the ciliations of the male antenna, which are longer than those of any of the preceding species, being somewhat longer than the width of the antennal shaft.

24. Protomoerbes, new genus

TYPE OF GENUS: *Protomoerbes aberrans*, new species.

Characters of *Pseudodivona* except: Labial palpus upturned (but otherwise as in *Pseudodivona*); forewing with vein 3 closely approximate to the stalk of 4–5 at base, male with narrow costal fold; hind wing with veins 4 and 5 stalked for at least three-fourths of their length, cell one-third the length of wing; eighth abdominal segment of male without hair tufts; transtilla of male genitalia incomplete, its elements elongate-angulate, their apices not knobbed or expanded.

In many details this genus is more like *Moerbes* of Group II than *Pseudodivona*. It differs from both genera in its upturned rather than oblique palpi. The cilia of the male antenna are also shorter (slightly less than the width of the shaft), but this is hardly a generic character. Wing pattern, color, and general habitus are like those of both *Pseudodivona* and *Moerbes*. All three have the contrasting white spot on inner margin of forewing indicating the base of the antemedial line. *Protomoerbes* in every way seems to be an intermediate and connecting link between *Pseudodivona* and *Moerbes*.

It is represented by only two species from Colombia. Their females are unknown.

88. Protomoerbes aberrans, new species

FIGURE 208

Forewing white; basal area, median area below cell and outer area below apex shaded with pale brown; a yellow longitudinal median streak from base to end of cell cutting the antemedial line; antemedial line a conspicuous white spot on inner margin and a fainter white spot on costa, bordered outwardly below costa and on inner margin by blackish scaling and inwardly by a subcostal black streak reaching nearly to base of wing and by scattered black dusting at inner margin; veins and lower fold beyond antemedial more or less streaked or dusted with black, the black streaks especially marked and angulate at inner margin of subterminal line; lower discal dot expanded and extended along lower vein of cell, black; upper discal dot not distinguishable; sub-

terminal white line narrow, faint, sinuate and sharply dentate below costa, bordered at costa by a pair of narrow, short, blackish dashes; a row of separate black dots along termen. Hind wing white, translucent. The veins faintly darkened and a narrow dark shade along termen. Alar expanse, 27–30 mm.

Male genitalia with aedeagus smooth and evenly tapering from base.

TYPE LOCALITY: Colombia (type in USNM, 61317; paratype in BM).

FOOD PLANT: Unknown.

Described from male type and two male paratypes labeled "Colombia, Fassel." The specimens are only in fair condition. Fresher examples would probably show the black longitudinal streakings somewhat more contrasted and extended. The species has the general habitus of *Pseudodivona commensella* but is larger. It is easily separated from *commensella* and all the other similarly colored and marked species of *Pseudodivona* and *Moerbes* by the yellow longitudinal median streak on forewing. This is easily distinguished under slight magnification, even on slightly rubbed specimens.

89. Protomoerbes separabilis, new species

FIGURE 207

Similar to *aberrans* except: Less distinctly and extensively streaked with black; median yellow longitudinal streak missing from forewing, replaced by a narrow extension of the white ground color, extended to the base of the wing; aedeagus with a thornlike projection from underside near apex (similar to the projection from the aedeagus of *Moerbes emendata* but larger and more blunt). The male genitalia also differ from those of *M. emendata* in having a proportionally longer and more evenly tapering vinculum. Hind wing smoky white, semitranslucent; the veins distinctly darkened. Alar expanse, 29 mm.

TYPE LOCALITY: San Antonio, Colombia (type in BM; paratype in USNM, 61318).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality, labeled "San Antonio, W. Colombia, Dec. 07, 5800 feet, M. G. Palmer." The paratype lacks an abdomen.

Genera 25 and 26: *Diatomocera* and *Pseudocabima*

[Venational division C. Forewing with 11 veins; 4 and 5 stalked for less than half their lengths. Hind wing with veins 7 and 8 anastomosed for most of their lengths (free element of 8 short). Transtilla complete but weakly sclerotized. Uncus spoon- or semispoon-shaped.]

25. Genus Diatomocera Ragonot

Diatomocera Ragonot, Monograph, pt. 1, p. 250, 1893. (Type of genus; *Homoeosoma tenebricosa* Zeller.)

Cabima Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 329, 1914. (Type of genus: *Cabima dosia* Dyar. New synonymy.)

Tongue well developed. Antenna of male shortly ciliate (the cilia about as long as width of shaft); the shaft with notch at base; of female simple and pubescent. Labial palpus of male upturned, reaching to or almost to vertex, slender; third segment nearly as long as second, acuminate; palpus of female oblique and slightly longer than that of male. Maxillary palpus filiform. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 shortly stalked (for half or less than half their lengths), the stalk separated from 3 at base; 6 from below upper angle of cell, very slightly bent towards base; 8 and 9 long stalked; 10 from the cell, but approximate to the stalk of 8–9 for some distance; male with an elongate, narrow costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 long stalked; 7 and 8 anastomosed for most of their lengths beyond cell, free element of 8 short; cell about half the length of the cell on male, on female longer; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos U-shaped, consisting of a pair of short, blunt arms. Uncus spoon- or semispoon-shaped. Transtilla complete but weakly sclerotized (except along its lateral edges), consisting of a broad, more or less finely scobinate plate; weakly attached to harpes. Harpe simple; costa sclerotized for most of its length, but not produced. Anellus a curved plate with short lateral lobes. Aedeagus stout, straight (or but slightly bent near middle), more or less tapering to apex, moderately long; penis with a few weakly sclerotized wrinklings and more or less finely spined, otherwise unarmed. Vinculum stout, elongate, constricted towards angulate (or narrowly rounded) terminal margin.

Female genitalia with bursa more or less finely scobinate; signa present, consisting of a cluster of two or more sclerotized disks; ductus bursae unsclerotized; genital opening simple; ductus seminalis from bursa in the neighborhood of the signa (sometimes between them and the junction of bursa and ductus bursae, but not near the junction).

The genus is readily recognized by its combination of male characters, the most striking feature of which is the spoon- or semispoon-shaped uncus which is found in only two other American genera—*Pseudocabima*, which lacks the antennal notch and long costal fold of forewing, and *Entmemacornis*, which has veins 4 and 5 of hind wing completely united. *Diatomocera* is apparently confined to tropical America. Nine species are here recognized. They are represented by scanty and scattered material and nothing is known of their life histories or habits. From the greasy condition of some of the specimens it may be assumed that the larvae are borers.

90. Diatomocera tenebricosa (Zeller)

FIGURES 42, 209, 565, 686

Homoeosoma tenebricosa Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 242, 1881.

Diatomocera tenebricosa (Zeller) Ragonot, Monograph, pt. 1, p. 250, 1893.

I have not seen any specimens from the type locality but have before me a male and female from French Guiana and a somewhat larger pair (20–21 mm.) from Costa Rica compared by Schaus with the type. They are either this species or varieties thereof. The following description is drawn from them.

Ground color of forewing gray shaded with reddish brown between the veins; the veins themselves outlined with black, the blackish streaks broken by a very faint dull whitish antemedial line and by a more distinct subterminal line and more or less interrupted between; at extreme base the vein markings fused into a blackish patch; subterminal line close to outer margin, outwardly angled between the fork of veins 4 and 5; discal dots small, separated, set obliquely, blackish; terminal dots faint. Hind wings grayish brown, paler and semitranslucent on the male; the veins faintly darkened, brown; a narrow brown line along termen. Alar expanse, 16–21 mm.

Male genitalia with uncus but slightly constricted near its middle (wider in this area than in any of the following species); penis finely spined. Female genitalia with signum a small cluster of bluntly rounded, closely appressed disks.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: COLOMBIA: Honda. FRENCH GUIANA: Cayenne. COSTA RICA: Juan Viñas (May), Sixaola River (Mar.).

The species is easily distinguished from anything else in the genus by its smaller size and the shape of its uncus. There are several minor differences between the genitalia of specimens from French Guiana and Costa Rica; in the spacing between the apical prongs of gnathos, in the shape of the terminal margin of vinculum, in the amount of spining on the median area of transtilla, and in the number of disks forming the female signum. These are shown in our figures. Such differences, however, do not seem to be of anything more than individual or (at most) varietal significance. The foldings of the median (membranous) area of the transtilla shown in figure 209 are superficial and result from the manner in which the slide preparation was made.

91. Diatomocera dosia (Dyar), new combination

FIGURES 43, 210, 685

Cabima dosia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 330, 1914.

Forewing dull white; the veins streaked with black broken into short dashes and dots; antemedial line not defined except by the black vein streakings on outer margin; subterminal line faint, angulate, the apex of angle between the fork of veins 4 and 5; discal and terminal dots distinct, separate, black; a faint shading of ocherous fuscous scales above and below vein 1b at middle; costa at base black for most of the length of fold on male. Hind wing dull semitransparent white, slightly darker on female; the veins more or less outlined in pale brown; a smoky shade along costa and a fine, brown line along termen. Alar expanse, 24–31 mm.

Male genitalia with penis finely granulate-scobinate. Female genitalia with signum a chain of bluntly pointed disks.

TYPE LOCALITY: Cabima, Panamá (type in USNM).

FOOD PLANT: Unknown.

Known only from the type series (nine specimens) from the type locality (May).

92. Diatomocera excisalis (Hampson), new combination

FIGURES 211, 687

Crocidomera excisalis Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 4, p. 353, 1929.

Similar to *dosia* Dyar and probably no more than a variety of that species. Distinguished by its generally smaller size, some trifling differences in male genitalia, and a shorter chain of disks forming the signum of the female.

Alar expanse, 23–25 mm.

Male genitalia considerably smaller than those of *dosia* but otherwise similar.

TYPE LOCALITY: Cayenne, French Guiana (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: FRENCH GUIANA: Cayenne, St. Laurent Maroni.

Also before me is a female from the unidentified material of the British Museum from eastern Bolivia ("Aug.–Oct., 1920, T. Steinbach") which is superficially a very good match for the female paratype of *excisalis* and may be a variety of that species. Unfortunately it lacks an abdomen, so positive identification cannot be made.

93. Diatomocera decurrens (Dyar), new combination

FIGURE 212

Cabima decurrens Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 330, 1914.

Forewing "luteous gray" (the ground color of a distinctly yellowish tint); black markings on veins as in *excisalis* but especially strong along vein 1b; the subterminal line somewhat more distinct. Hind wing semitransparent white with a very faint ocherous tint; veins very faintly darkened; a narrow, pale brown line along termen. Alar expanse, 21–28 mm.

Male genitalia distinguished from those of *dosia* and *excisalis* by its much narrower (more constricted) vinculum; penis with a few weak, minute scobinations. The sternite of eighth abdominal segment is also differently shaped from that of *dosia* or *excisalis*.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Corazal (Mar.), La Chorrera (May), Río Trinidad (Mar.).

A distinct species easily distinguished by its male genitalia and ocherous forewing. Known only from males of the original type series. I fail to see the difference

in the antennal notch from that of *dosia* which Dyar mentions. His examination of the material before him was obviously cursory for he refers to three of the La Chorrera specimens as "females."

94. Diatomocera majuscula, new species

FIGURE 213

Forewing pale, dull, brownish gray; the veins outlined by dark brown; entire basal area to antemedial line suffused with blackish brown; antemedial line indicated by three detached dull-white marks, a spot on costa, a smaller one in cell, and a third, somewhat diffused, white smudge on inner margin; subterminal line indicated by a white spot on costa, a white spot on inner margin and a much fainter, pale, outwardly curved line cutting the darkened veins from vein 1 to vein 5; discal spots distinct, separated, black. Hind wing white, transparent; the veins very slightly darkened; a gray brown shade along costa, and a narrow pale-brown line along termen. Alar expanse, 32 mm.

Male genitalia distinguished chiefly by their large size. Eighth segment tufts of abdomen also more robust than those of any other species of the genus.

TYPE LOCALITY: Ponta Nova, Rio Xingu, Amazonas, Brazil (type in USNM, 61319).

FOOD PLANT: Unknown.

Described from male type, from the Dognin Collection in the U. S. National Museum, that had been identified as *Sematoneura atrovenosella*. The species can be easily identified by its large size and the contrasted, blackish basal area of forewing.

95. Diatomocera albosigno, new species

FIGURE 214

Forewing dull ocherous brown; the veins outlined in black; broken outwardly by a faint subterminal line which is indicated by a small white spot on costa, a smaller, much weaker spot on inner margin and a very faint, pale outcurved line between veins 1 and 6; antemedial line replaced by a large white blotch, as broad as long and extending from inner margin to or almost to costa, bordered outwardly by a narrow blackish line; discal spots replaced by a narrow blackish line along the discocellular vein. Hind wing dull, smoky white, semitranslucent; veins faintly darkened; a thin fuscous line along termen. Alar expanse, 21–23 mm.

TYPE LOCALITY: "S. E. Brazil" [probably Paraná] (type in BM; paratype in USNM, 61320).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality labeled "S. E. Brazil, E. D. Jones, 1920–303." Easily recognized by the large white spot on the subbasal area of forewing; the only species of *Diatomocera* so marked.

96. Diatomocera hoplidice (Dyar), new combination

FIGURE 215

Cabima hoplidice Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 330 1914.

Forewing dark gray; unicolorous except for faint darker (blackish) shading on some of the veins and a dark edging to the costa; antemedial and subterminal lines obsolete; discal dots replaced by a very faint dark line along the discocellular vein. Hind wings very dark, smoky gray (almost black). Alar expanse, 26 mm.

Male genitalia with aedeagus broad and abruptly tapered toward apex.

TYPE LOCALITY: Puerto Bello, Panamá (Mar.; type in USNM).

FOOD PLANT: Unknown.

Known only from the male type. Easily recognized because of its nearly uniform dark coloration and lack of any transverse markings on forewing.

97. Diatomocera extracta, new species

FIGURES 217, 688

Ground color of forewing gray with a faint ocherous tint, especially in basal area; veins darkened; antemedial line well out, near middle of wing, vertical, bordered outwardly by a narrow reddish brown line and inwardly by a fainter line of the same color; subtermina line indicated only by breaks in the dark lining of some of the veins; discal spots replaced by an oblique brown line along discocellular vein. Hind wing semitranslucent, white with a very faint grayish ocherous tint, slightly darker on female; veins very faintly darkened; a fine dark (brownish) line along termen. Alar expanse, 21–25 mm.

Male genitalia with harpe narrow, not expanded toward outer margin; aedeagus slightly bent; penis armed with an elongate, dense cluster of slender dark spines and a scattering of fine scobinations. Female genitalia with bursa transversely elongate, weakly scloerotized in the area about the signa and junction of ductus seminalis, also finely scobinate in this area, the scobinations extending into the ductus bursae; signa consisting of two or three very narrow, thin, elongate disks.

TYPE LOCALITY: Tuis, Costa Rica (type in USNM, 61321).

FOOD PLANT: Unknown.

Described from male type from the type locality, collected by W. Schaus ("May 28–June 4"), and one male and one female paratypes, collected by Schaus and Barnes (Nov.).

The species is closest to but quite distinct from *mochlophleps* Dyar. Most nearly resembles pale or faded examples of *Pseudocabima rubrizonalis* (Hampson), with which it was confused in the National Collection.

98. Diatomocera mochlophleps (Dyar), new combination

FIGURES 216, 689

Cabima mochlophleps Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 404, 1914

Forewing purplish gray with faint pale reddish brown shading between the veins; the area from base to near middle slightly paler, its outer margin faintly indicating an antemedial line, somewhat curved and inwardly oblique from costa; subterminal line well inward from

termen, angulate with apex of the angle within the fork of veins 4–5, appears denticulate due to pale interruptions on the veins, preceded by short black dashes on the veins; veins otherwise faintly blackish; a distinct and characteristic discal mark beginning as a black streak or dot at lower outer angle of cell and continued as a curved line along discocellular vein and for a short distance inward along upper vein of cell; a row of black dots along terminal margin. Hind wing translucent, white; the veins darkened, a smoky shade along costa and a narrow blackish line along termen. Alar expanse, 31 mm.

Male genitalia similar to those of *extracta*, except apical part of uncus broader and vinculum stouter. Female genitalia with bursa globular; the signa considerably larger and more triangulate than those of *extracta*.

TYPE LOCALITY: Zacualpan, México (type in USNM).

FOOD PLANT: Unknown.

In addition to the male type and a female from the type locality there is before me a smaller (27 mm.) male from the Janse Collection labeled simply "Mexico." It is more suffused, lacks the pale basal shade on forewing, and shows scarcely any trace of a subterminal line. The black discal mark, however, is present and strongly contrasted. This is the characteristic feature of the species. It resembles an inverted comma with the tail pointed towards the base of the wing.

26. Pseudocabima, new genus

TYPE OF GENUS: *Myelois euzopherella* Dyar.

Characters of *Diatomocera* except: No notch in shaft of male antenna; forewing of male without costal fold; hind wing with vein 3 frequently stalked with the stalk of veins 4–5 (apparently not a constant specific character). In one species (*rubrizonalis*) the apical process of gnathos differs from that of any other species of either *Pseudocabima* or *Diatomocera* in that it is developed as a flattened hook with cleft apex and not as a U- or V-shaped pair of prongs. Such a departure from type is unusual within generic limits, but of no more than specific significance, because the species otherwise is perfectly normal.

The new genus is proposed with great reluctance; for its species are very closely related to the bulk of those in *Diatomocera*, though none has been previously associated with them; but some separation must be made if we are to define our superspecific groups with any exactness. *Pseudocabima*, *Diatomocera*, and *Entmemacornis* are all obviously closely related, but they are separable on consistent, if slight, structural differences.

Ten species are here recognized as belonging to the genus. One of these is North American (*arizonensis*). The remainder are tropical and probably only a fraction of the species inhabiting Central and South America.

Before me are five single examples of what appear to be as many new species. It seems advisable to leave them undescribed until more material is available, their sexes can be associated, and more is known about the individual and local ranges of variability within species of the genus. There seems to be some variability, both in color and in minor details of genitalic structure.

99. Pseudocabima castronalis, new species

FIGURES 218, 696

Forewing gray, the ground color lightened by white dusting over much of the median area; antemedial line distinguishable throughout, whitish, nearly vertical, slightly out-bent from before middle of costa to middle of cell, thence slanting inwardly very slightly to vein 1b and thence outwardly to the inner margin, followed on inner margin by a dark blotch; subterminal line from outer fourth of costa, bluntly angulate at middle (the line more curved than angled between vein 6 and lower fold); discal dots replaced by a pale ocherous brown spot covering the discocellular vein; fainter extension of this brownish shade between some of the veins in outer area, especially near costa beyond and before the subterminal line; some blackish streaking on the veins, conspicuous as three short black streaks following the brownish discal spot; hind wing smoky white, semitranslucent on the male; darker, more brownish on female; the veins but faintly darkened. Alar expanse, 23–27 mm.

Male genitalia with aedeagus tapering to narrow apical end; penis without spining or scobinations. Female genitalia with signum a curved chain of more or less bluntly pointed disks.

TYPE LOCALITY: Castro, Paraná, Brazil (type in USNM, 61322; paratypes in BM).

FOOD PLANT: Unknown.

Described from male type from the type locality, and one male paratype and one female paratype labeled "S. E. Brazil, E. D. Jones, 1920–303," the latter two from unplaced material in the British Museum. They are somewhat discolored and consequently appear more yellowish than the type, which is in better condition, showing no trace of grease. This specimen was deposited in the National Museum in 1905 by Schaus as representative of a Hampson manuscript species. It bears the name label (in Hampson's handwriting): "*Coptarthria castroalis* Hampson, Type ♂." Apparently Hampson never published a description.

The best character for recognition of the species is the ocherous-brown discal spot with its outwardly bordering contrasted black streaks.

100. Pseudocabima fearnella (Schaus), new combination

FIGURE 219

Myelois fearnella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 245, 1913.

Forewing gray, a reddish brown shade along lower fold and some dusting of the same color along inner margin; antemedial line obsolete; subterminal line faint but distinguishable, bent as in *castronalis*, pale gray; veins discontinuously lined with black; discal spots black, separated or (at most) partially fused. Hind wing white, semitransparent; the veins slightly darkened; a darker more distinct line along termen. Alar expanse, 19–23 mm.

Male genitalia differing only in trifling details from those of *castronalis*, apical part of uncus being slightly broader and a trace of fine scobination appearing on the penis. The female is unknown.

TYPE LOCALITY: Avengarez, Costa Rica (July; type in USNM).

FOOD PLANT: Unknown.

In addition to the male type there are before me two males from Cayuga, Guatemala (Feb., June). They are smaller than the type and somewhat rubbed and faded and, as a result, considerably paler. However, they agree in all other details. The species is evidently very close to *castronalis*.

101. Pseudocabima guianalis, new species

FIGURES 220, 697

Forewing pale brownish gray; some darker dusting for a wide area along inner margin; veins very faintly and irregularly outlined by dark scaling thickened at lower angle of cell, the curvation of the line inward; antemedial line obsolete, very faintly indicated on one or two specimens; subterminal line obscure, more sharply angulate than on preceding species. Hind wing translucent white; veins partially and faintly darkened; a pale smoky brown line along termen. Alar expanse, 25–33 mm.

Male genitalia with uncus narrower in middle than that of *castronalis* or *fearnella;* penis armed with a cluster of very fine weak spines and scobinations. Signum of female genitalia a short cluster of blunt, thornlike disks.

TYPE LOCALITY: St. Jean Maroni, French Guiana (type in USNM, 61323; paratypes in BM and Cornell Univ.).

FOOD PLANT: Unknown.

Described from male type and one male and two female paratypes from the type locality, collected by W. Schaus; one female paratype from Rockstone, Essequebo, British Guiana (Schaus); one male paratype from Tumatumari, Potaro River, British Guiana, June 26, 1927 (Cornell Lot 760, sub. 114); one male and one female paratypes from Mackenzie, Demerara River, British Guiana, June 21, 22, 1927 (Cornell lot 760, sub. 102, 104). One of the female paratypes from St. Jean Maroni bears a Hampson "cotype" label inscribed "*Coptarthria guianalis.*" Evidently another example of an undescribed Hampson species.

102. Pseudocabima euzopherella (Dyar), new combination

FIGURES 223, 693

Myelois euzopherella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 326, 1914.

Forewing gray more or less dusted with reddish brown (the specimens inclined to be greasy, giving a distinctly brownish shade to the wing); transverse lines distinct, whitish; antemedial line nearly vertical, a slight bend in cell, a narrow dark, outer, bordering line; subterminal line with a similar dark inner border, slightly and bluntly angled or rounded at vein 5; the distinctive mark a round blackish brown smudge, touching outer margin of cell, consisting of a black discal dot surrounded by blackish or brown smudges; some broken black streaks faintly indicated on the veins. Hind wing pale smoky fuscous, subtranslucent; veins darkened; a fine dark line along termen. Alar expanse, 19–24 mm.

Male genitalia with central area of uncus very narrow; penis armed with numerous fine spines and scobinations. Female genitalia exhibiting no distinctive specific characters; signum a row of rather stout, thornlike disks.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ; Cabima (May), Corozal (May), Tabernilla, Río Trinidad (June).

Vein 3 of hind wing seems to be consistently from the stalk of veins 4 and 5, though the amount of stalking varies in different specimens. In the forewing, 10 is from the cell, approximate to the stalk of 8–9 but not from it as stated by Dyar.

103. Pseudocabima pombra (Dyar), new combination

FIGURE 221

Myelois pombra Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 326, 1914.

Forewing pale ocherous gray; transverse lines faint, whitish, the antemedial near middle of wing, vertical, the subterminal rather well back from termen, slightly angled at middle; no discal markings; some scattered dark (brownish) dusting on the veins. Hind wing concolorous with forewing, semitranslucent; the veins not appreciably darkened. Alar expanse, 17 mm.

Male genitalia similar to those of *euzopherella* except smaller and stem of uncus more slender, differences of doubtful specific value.

TYPE LOCALITY: Cabima, Panamá (May; type in USNM).

FOOD PLANT: Unknown.

Known only from the male type. Evidently close to and possibly only a pale suffused variety of *euzopherella*. The type is somewhat rubbed. On a fresh specimen in better condition the dark shading on the veins of forewing presumably would be more apparent.

104. Pseudocabima nigristrigella (Ragonot), new combination

FIGURES 222, 699

Myelois nigristrigella Ragonot, Nouv. Gen., p. 7, 1888; Monograph, pt. 1, p. 41, 1893.

Forewing white dusted with blackish, giving it an ashy gray color to the naked eye; under magnification some rust colored scaling between the veins especially above and along inner margin; antemedial line near middle of wing, nearly vertical (very slightly convex), thin, white, bordered outwardly by a narrow, strongly contrasted, blackish brown line; subterminal line curving outward from costa to between veins 4–5, thence vertical to inner margin, white, bordered inwardly by a narrow blackish brown line; a black line along discocellular vein and continued for a short distance along

vein 3; a faint concentration of the black dusting on the other veins. Hind wing semitransparent, more or less smoky white; darker on female than on male; the veins darkened, a broad dark shade along costa and a narrow dark line along termen. Alar expanse, 22–24 mm.

Male genitalia figured from type. On another male in the British Museum from the type locality (June) the stem of uncus is broader, the terminal part of vinculum less constricted and its terminal margin less sharply angled. (Another example of the amount of individual variation that may be expected within specific limits in this genus.) Female genitalia figured from specimen in British Museum. The signum consists of three closely grouped, moderately large, bluntly rounded disks.

TYPE LOCALITY: Rio Negro, Amazonas, Brazil (May; type in Paris Mus.).

FOOD PLANT: Unknown.

Known only from the type locality. A distinct species easily identified by the contrasted black transverse lines on the ash gray forewing.

105. Pseudocabima arizonensis, new species

FIGURE 698

Similar in color and markings to the preceeding species (*nigristrigella*) but darker, the black dusting heavier (especially on basal area), giving the wing a coarser, more pepper-and-salt appearance; no rust-colored scaling between the veins; the antemedial and subterminal lines blackish bordered on both sides but the borders (especially of antemedial line) much less contrasted than in *nigristrigella*; subterminal line acutely angled at middle; somewhat expanded black streaking on veins 2, 3, the stalk of 4, 5, and sometimes 6 for a short distance from cell; terminal dots fused into a continuous black line along termen. Hind wing shining white on male, pale smoky white on female; veins very faintly darkened; a fine dark line along termen. Alar expanse, 24–27 mm.

Male genitalia exhibiting no specific characters. Female genitalia with signum a compact cluster of numerous, closely appressed disks.

TYPE LOCALITY: Redington, Ariz. (type in USNM, 61324; paratypes in Paris Mus., Cornell Univ., Transvaal Mus. (Janse Coll.), and BM).

FOOD PLANT: Unknown.

Described from male type and 2 male and 6 female paratypes from the type locality; 8 male and 11 female paratypes from the Baboquivari Mts., Ariz. (June, July, Aug., Sept.); and 4 male and 1 female paratypes from Mohave County, Ariz. (Aug., Sept.).

So far, this is the only species of the genus recovered from the United States. In general habitus it resembles *Euzophera nigricantella* Ragonot, also from Arizona.

106. Pseudocabima expunctrix (Dyar and Heinrich), new combination

FIGURES 224, 692

Myelois expunctrix Dyar and Heinrich, Proc. Ent. Soc. Washington, vol. 31, p. 116, 1929.

Forewing slate gray; some black scaling on the veins and (under magnification) a faint scattering of white scales over outer area; antemedial and subterminal lines and discal spots lacking; a row of black dots at the vein ends along termen. Hind wing semitranslucent white, a smoky shade at apex, along costa, and on the veins (especially of the female, the veins of the male wing not appreciably darkened); a fine dark line along termen. Alar expanse, 22–30 mm.

Female genitalia with signum a long chain of pointed, thornlike disks.

TYPE LOCALITY: Baía, Brazil (type in USNM).

FOOD PLANT: "Stems of leguminous tree."

Known only from the type series. The only reared species of the genus and the only one without any trace of transverse markings. One of the male paratypes proves to be a specimen of *Fundella argentina* Dyar. In the forewing veins 4 and 5 are somewhat longer stalked than in other species of the genus except *perrensiella*, the stalking being for a half to slightly more than half their lengths.

107. Pseudocabima perrensiella (Ragonot), new combination

FIGURE 695

Myelois perrensiella Ragonot, Nouv. Gen., p. 8, 1888; Monograph, pt. 1, p. 52, 1893.

From Ragonot's description and figure the species must be similar to *expunctrix* except for the presence of a distinct pale subterminal line, a trace of an antemedial line, and a thin dark line along discocellular vein. Veins 4–5 are "long-stalked," as in *expunctrix*. Alar expanse, 28 mm.

The female genitalia differ from those of all other described species of the genus in having a sharp, partially sclerotized, deeply wrinkled, and densely scobinate bend in ductus bursae near its junction with bursa copulatrix; the signum consists of a curved band of bluntly rounded, closely impacted, thornlike disks.

TYPE LOCALITY: Goya, Argentina (type in Paris Mus.).

FOOD PLANT: Unknown.

Known only from the female type.

108. Pseudocabima rubrizonalis (Hampson), new combination

FIGURES 225, 694

Crocidomera rubrizonalis Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 4, 353, 1929.

Forewing pale gray; the costal edge and the veins beyond cell purplish brown; the basal area suffused with some faint dark dusting on the male, considerably darker on the female; antemedial line at middle of wing, vertical or nearly so, dull white, bordered on inner and outer sides by reddish brown bands, the outer one the wider and somewhat broadened in cell; subterminal line faint, when distinguishable, grayish white, set well back from outer margin (the space between it and antemedial line correspondingly reduced), sharply outangled, the apex of the angle in the fork of veins 4–5; a black line, slightly curved, along discocellular vein;

terminal dots faint, more or less confluent. Hind wing (of male) translucent white, the veins pale brown in outer area; a fine brown line along termen. Alar expanse, 26–30 mm.

Male genitalia with apical process of gnathos a single, narrow, flattened hook with notched apex.

TYPE LOCALITY: St. Jean Maroni, French Guiana (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: FRENCH GUIANA: Cayenne, St. Jean Maroni. BRAZIL: Paraná, Taperinha.

The foregoing description based on three males in the National Museum. What I take to be a female from Cayenne in the Janse Collection is also before me. It differs from the males in having broader forewing, the antemedial line outwardly oblique from costa, the subterminal line more distinct, and the hind wing a glossy brown. The bursa is large, as long as ductus bursae; the signum a single straight line of rather sharp, spinelike thorns.

Genus 27: *Hyalospila*

[Venational division D. Forewing with 11 veins; 4 and 5 closely approximate for some distance from cell. Hind wing with all veins very long; cell less than one-third the length of wing. Transtilla complete, developed as a narrow, slightly arched band.]

27. Genus Hyalospila Ragonot

Hyalospila Ragonot, Nouv. Gen. p. 11, 1888; Monograph, pt. 1, p. 168, 1893. (Type of genus: *Hyalospila stictoneurella* Ragonot.)

Tongue well developed. Antenna of male simple; shaft very weakly pubescent. Labial palpus upcurved, reaching above vertex; slender; segment 3 as long as or a trifle longer than 2, acuminate. Maxillary palpus subsquamous (scaling more or less dilated). Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, shortly separated from 4 at base; 4 and 5 closely approximate for some distance from cell (not stalked as stated by Ragonot); 6 from below upper angle of cell, straight; 8 and 9 stalked for not more (usually less) than half the length of 8; 10 from the cell, approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, closely approximate to the stalk of 4–5; 4 and 5 stalked for about half their lengths; 7 and 8 contiguous or very weakly anastomosed for not over half their lengths beyond cell; all veins very long; cell less than one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos an elongate, slender hook with slightly notched apex. Uncus triangulate. Transtilla complete, a simple, narrow, slightly arched band. Harpe narrow; costa strongly sclerotized throughout and projecting slightly at apex; otherwise simple. Anellus a small shield with long, slender lateral arms. Aedeagus simple; penis armed with numerous fine scobinations or one or more clusters of slender spines.

Female genitalia with signa present, consisting of a single cluster of bluntly pointed thorns, frequently surrounded by fine scobinations or strongly pigmented granulations; bursa various, strongly granulate over much of one side, weakly sclerotized towards or at junction with bursa, more or less finely scobinate or (except for signum patch) smooth; ductus bursae weakly sclerotized towards genital opening or with genital opening simple; ductus seminalis from bursa near junction of bursa and ductus bursae.

A distinct, easily recognized genus apparently limited to tropical America. The species also are easily identified by their genitalia. It is difficult to place *Hyalospila* satisfactorily in any linear arrangement for it partakes of the characters of two distinct groups. On male genitalia, especially its complete bridgelike transtilla, it should go with the genera of the main *Acrobasis-Myelois* stem having this organ well developed, while on other characters, general habitus, and the long veins and short cell of hind wing it seems more closely related to genera of the *Piesmopoda* group.

109. Hyalospila stictoneurella Ragonot

FIGURES 44, 226, 703

Hyalospila stictoneurella Ragonot, Nouv. Gen., p. 11, 1888; Monograph, pt.1, p. 169, 1893.

Forewing purplish brown, a narrow ocherous-white band along costa, extending from costa to upper vein of cell and showing under magnification a scattered powdering of reddish scales; the extreme costal edge at its middle, darkened; the veins more or less streaked with black scaling; antemedial line indistinct, indicated by an oblique blackish streak from costa, a small whitish dot in cell and another on vein 1b, each followed by a black dot; subterminal line faint but distinguishable, close to and parallel with termen, not dentate; discal dots at end of cell confluent, blackish brown. Hind wing semitransparent whitish; the veins brown, a brown border along costa and a fine brown line along termen. Alar expanse, 19–22 mm.

Male genitalia with transtilla a short, slightly arched bridge, somewhat wider than that of any other known species and with a minute, pointed projection at middle. Penis armed with three small clusters of fine, short spines. Vinculum but slightly longer than greatest width, tapering to its rather broad, rounded terminal margin.

Female genitalia with bursa unsclerotized, weakly scobinate in the area about the signum; the latter a small patch of small, thornlike spines (fig. 703a); ductus bursae considerably longer than bursa, weakly sclerotized for a short distance from genital opening and with a patch of scobinations at its middle, otherwise membranous and simple.

TYPE LOCALITY: Las Mercedes, "Amer. centr. mer." [Guatemala?] (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Jalapa, Misantla (May), Orizaba. GUATEMALA: Las Mercedes [?], Volcán Santa María (Aug., Oct., Nov.). COSTA RICA: Juan Viñas (Nov.). BRAZIL: Campo Bello, Santa Catarina (Oct.), "S. E. Brazil" [Paraná?].

110. Hyalospila celiella Schaus

FIGURES 227, 700

Hyalospila celiella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 248, 1913.

Ground color in outer area between the veins and in entire area between lower margin of cell and inner margin (except for vein 1b) pale ocherous brown; a narrow pale band along costa (fainter than that on *stictoneurella*, less whitish and, under magnification, showing a fine irroration of purplish brown scales, especially on costal edge); upper vein of cell white for a short distance from subbasal area; lower vein of cell white from base to end of cell except for a black spot near middle; a blackish brown line bordering the lower edge of cell from base to middle; a short white streak on vein 1b before middle, preceded and followed by blackish dots (these and the black spot on lower vein of cell all that remain to indicate an obsolete antemedial line); vein 1b otherwise more or less outlined by brown scaling; outer veins shortly streaked with blackish brown; subterminal line indicated only by an interruption of the blackish vein streaks near outer margin; discal spots a pair of short black streaklets at end of cell. Hind wing semihyaline, white with a very faint smoky tint in outer area; veins pale brown; a darker brown line along outer margin. Alar expanse, 19–21 mm.

Male genitalia easily distinguished by the stout, greatly elongated vinculum. The abdominal tuft and sclerotized sternite of eighth segment similar to those of *stictoneurella*.

Female genitalia with a weak sclerotization of bursa in the area surrounding the ductus seminalis and extending for a short distance into the ductus bursae; no spining at middle of ductus bursae; otherwise as in *stictoneurella*. The sclerotization of the ductus bursae at genital opening varies individually in extent and amount as it does in *stictoneurella*.

TYPE LOCALITY: Juan Viñas, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

Represented in the National Collection by the male holotype (Jan.) and two females (June, Nov.), all from the type locality.

111. Hyalospila insequens, new species

Similar to *celiella* except: Larger; ground color of forewing darker, some rosy scaling overlaying most of the pale area between cell and inner margin; dark streaking on veins fainter; hind wing a clearer white, the veins not appreciably darkened. Alar expanse, 23–24 mm.

Male genitalia similar to those of *celiella* except vinculum not greatly elongated, slightly less than twice as long as its greatest width. Female unknown.

TYPE LOCALITY: Incachaca, Cochabamba, Bolivia (type in USNM, 61325; paratype in BM).

FOOD PLANT: Unknown.

Described from male type, collected by J. Steinbach, and one male paratype from San Antonio, western Colombia, 5,800 feet, Nov. 1907, M. G. Palmer, collector.

The species has the same dark streak from base of forewing along the under edge of the cell as *celiella*, but not so strongly accented. The discal spots are slightly more pronounced and more or less confluent. The shorter vinculum at once distinguishes it.

112. Hyalospila majorina, new species

FIGURE 701

Forewing pale gray-brown; costal area to and including the cell dull white, the white shade narrowing gradually beyond cell to apex of costa; lower discal dot at end of cell enlarged, dark brown, completely encircled by white; antemedial line obsolete; subterminal line very faint, close to and parallel with costa, indicated chiefly by short, whitish streaklets on a few of the upper veins and a slight paling of the ground color from vein 4 to inner margin. Hind wing semitranslucent, whitish with a faint brown tint; the veins darker; a fine brown line along termen. Alar expanse, 27 mm.

Female genitalia with ductus bursae considerably broadened for most of its length, wrinkled and weakly sclerotized on one side at junction with bursa; bursa finely scobinate over part of one side, the scobinations extending into ductus; genital opening simple.

TYPE LOCALITY: Misantla, México (type in USNM, 61326).

FOOD PLANT: Unknown.

Described from female type, collected by Robert Müller, Sept. 1914 ("4362"), and one female paratype, the latter from Jalapa, México. The male is unknown. I should not have described a new species from females alone, but in this case a male from México should be easily matched. The females are readily distinguished by their large size and their genitalia.

113. Hyalospila fulgidula, new species

FIGURES 228, 702

Ground color of forewing a clear bright white, clouded by a faint, pale drab shade along inner margin, this shade beyond lower outer angle of cell extending obliquely upward to apex; costa at base reddish; a minute red dot on costal edge at one-third and below it a conspicuous, broad, oblique, black dash crosses the cell; below this one or two black dots on vein 1b; a short, black dash along lower margin of cell at base; some few scattered black scales on edge of inner margin and on

some of the veins and a very sparse and scattered dusting of red scales in the outer white area; discal dots at end of cell separate, black, the lower conspicuous, the upper minute; subterminal line clearly indicated by a row of black dots along its inner border and an outwardly bordering, short, black dash from costa; a row of detached black dots from vein 6 to lower fold along edge of termen. Hind wing glossy, smoky white, darkening outwardly and with a brown shade along outer margin. Abdominal tufts and eighth segment sternite of male as in *stictoneurella*. Alar expanse, 12–13 mm.

Male genitalia with transtilla a very narrow, squarely arched band; penis very finely scobinate for about the length of aedeagus, otherwise unarmed. Female genitalia with ductus bursae somewhat swollen and densely but minutely scobinate towards its junction with bursa, the scobinations extending on one side into bursa; ductus bursae also sclerotized for a short distance from genital opening, on its dorsal surface the sclerotization forming a shield projecting caudally beyond the opening.

TYPE LOCALITY: Santiago Province, Cuba (type in USNM, 61327).

FOOD PLANT: Unknown.

Described from male type (June) and three female paratypes (June, Sept., Nov.) from the type locality, collected by W. Schaus. A distinct species, easily identified by its small size, the squarely arched transtilla, and the bright white ground color and contrasted black spotting of its forewing.

114. Hyalospila egenella (Ragonot), new combination

FIGURE 704

Piesmopoda egenella Ragonot, Nouv. Gen., p. 11, 1888; Monograph, pt. 1, p. 165, 1893.

Forewing grayish brown finely powdered with reddish scales; the costal area white with scattered red scaling; antemedial line not distinguishable; subterminal line indicated chiefly by its slightly darkened inner and outer borders, close to and parallel with termen, not sinuate. Hind wing smoky white, semitranslucent, the veins darkened and a dark line along termen; the smoky tint accented somewhat towards apical area. Alar expanse, 15–20 mm.

Female genitalia distinguished chiefly by the enlarged, wrinkled and scobinate ductus bursae and the enlarged blunt thorns forming the signum (fig. 704a); ductus bursae weakly and narrowly sclerotized at genital opening. The male is unknown.

TYPE LOCALITY: Rio Negro, Brazil (type in Paris Mus.).

FOOD PLANT: Unknown.

A small (15 mm.), somewhat rubbed female in the U. S. National Museum from Santa Catarina, Brazil (July), seems to be this species. It has genitalia similar to those of Ragonot's type, differing only in minor individual details, a somewhat more extended scobination of ductus bursae, and faint traces of pale yellowish sclerotization in some of the folds at junction of bursa and ductus bursae. It also shows traces of a dark discal spot on forewing at lower outer angle of cell which Ragonot states is absent from his type. None of these differences is significant.

115. Hyalospila xanthoudemia (Dyar), new combination

FIGURES 229, 709

Piesmopoda xanthoudemia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 333, 1914.

Forewing olivaceous ocherous; the costal area beyond extreme base and including the cell and the outer area above vein 6, white with a scattered powdering of reddish scales; extreme costal edge red, this shade especially noticeable at base; antemedial line, discal and terminal dots obsolete; subterminal line faint but visible, whitish, very close to termen, not sinuate. Hind wing whitish with a faint ocherous fuscous tint especially in outer area, somewhat darker on female than on male; veins faintly darkened; a fine, pale brown line along termen. Alar expanse, 16–19 mm.

Male genitalia with penis armed with a band (about one-third as long as aedeagus) of fine scobinations. Female genitalia with bursa simple except for the signum patch; ductus bursae much longer than bursa, slender for most of its length, without scobinations and unsclerotized except very weakly at genital opening.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Chiriquí (April), Paraíso (Jan.), Río Trinidad (Mar.). COSTA RICA: Experenza (May), Juan Viñas (Oct.).

Doubtfully distinct from *angulineella* (Schaus).

116. Hyalospila angulineella (Schaus), new combination

FIGURE 707

Piesmopoda angulineella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 246, 1913.

Known only from the female type. Color and markings as on *xanthoudemia* except for faint traces of an angulate dark antemedial line on forewing, and darker (pale smoky brown) hind wing.

Ductus bursae of female genitalia longer than that of *xanthoudemia*. Otherwise the ductus shows but trifling differences which are somewhat exaggerated in the figure.

TYPE LOCALITY: Juan Viñas, Costa Rica (June; type in USNM).

FOOD PLANT: Unknown.

117. Hyalospila clevelandella (Dyar)

FIGURES 230, 705, 706

Oryctometopia clevelandella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 331, 1914.

Hyalospila clevelandella (Dyar) Dyar, Ins. Insc. Menstr., vol. 7, p. 48, 1919.

Forewing gray-brown from lower margin of cell and (in outer area) below vein 5, costal area white sparsely irrovated with red scales; extreme base of costal edge

brown; costal edge beyond more or less reddish; antemedial line indicated only by fragments of its outer border, a couple of red dots or dashes in the white area and a faint, dark, gray-brown dot on lower fold of vein 1b; discal dots at end of cell weak, lower brown, upper red; subterminal line faint but distinguishable, not sinuate, close to and parallel with termen, dull white. Hind wing smoky white with the veins and lower fold distinctly darkened and a dark smoky shade along termen. Alar expanse, 13–16 mm.

Male genitalia with vinculum sharply constricted into a digitate projection slightly beyond base; anellus an elongate, irregularly shaped, curved plate with elongate, very slender (almost threadlike) lateral lobes; penis armed with a single, dense cluster of dark brown, slender spines, the cluster as long or nearly as long as aedeagus.

Female genitalia with ventral surface of half of bursa and ductus bursae covered with a mat of closely placed, pigmented granulations, the granulations extending around partly to dorsal surface; signum patch (on dorsum of bursa) surrounded by a teardrop-shaped mass of granulations (fig. 705a); genital opening simple.

TYPE LOCALITY: Porto Bello, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Porto Bello (Dec.), Taboga Isl. (Feb.), Tabogilla Isl. (Feb.).

The species can be at once identified by its peculiar genitalia. The female paratype has genitalia similar in all but the most trifling details to those of *semibrunneella* Ragonot, and if it is actually conspecific with the males of *clevelandella* the latter name will fall as a variety or synonym of *semibrunneella*. However, there is some doubt that this is the case; for we have in the National Collection a series of four females from Cayuga, Guatemala, and Jalapa, México, of the same size (16–17 mm.) and identical color and maculation as the female paratype of *clevelandella*, but with quite different genitalia (fig. 706). Also in the collection are four other females with the same color and markings and the same size as the males of *clevelandella* (13–14 mm.) but with different female genitalia. Either of these two groups of specimens could be the females of Dyar's species so, for obvious reasons, I am not attempting to name them or to propose any synonymy.

118. Hyalospila semibrunneella Ragonot

FIGURE 708

Hyalospila semibrunneella Ragonot, Nouv. Gen., p. 12, 1888; Monograph, pt. 1, p. 169, 1893.

Color and maculation similar to those of *clevelandella* except antemedial line more distinct. The female genitalia agree substantially with those of the female paratype of *clevelandella*. We shall have to wait discovery of a male of *semibrunneella* from the type locality before the status of the two supposed species can be determined.

TYPE LOCALITY: "New Granada" [Colombia] (Mar.; type in Paris Mus.).

FOOD PLANT: Unknown.

Genus 28: *Fundella*

[Venational division B. Forewing with veins 4–5 connate or approximate at base. Hindwing with vein 3 from the stalk of 4–5 or closely approximate to it for some distance; cell short; on male anal area folded into a pocket. Male genitalia with uncus hammer-clawed (long, curved, constricted at middle and broadly divided at apex); transtilla absent; sacculus of harpe not produced; cornutus present, a single, strong spine. Eighth abdominal segment of male with pair of hair tufts.]

28. Genus Fundella Zeller

Fundella Zeller, Isis von Oken, 1848, p. 866.—Ragonot, Monograph, pt. 1, p. 210, 1893.—Janse, Journ. Ent. Soc. South Africa, vol. 4, p. 163, 1941.—Heinrich, Proc. U. S. Nat. Mus., vol. 96, p. 105, 1945. (Type of genus: *Fundella pellucens* Zeller.)

Ballovia Dyar, Proc. U. S. Nat. Mus., vol. 44, p. 323, 1913; Ins. Insc. Menstr., vol. 7, p. 40, 1919. (Type of genus: *Ballovia cistipennis* Dyar.)

Tongue well developed. Antenna of male weakly pubescent, basal segment somewhat enlarged, shaft laterally flattened and very slightly excavate at base (fig. 231e) (except on *ignobilis* and *ahemora*) and with a very small blackish scale tuft in the excavation (except on *ignobilis*); of female, slender, simple. Front of male head deeply grooved to hold labial palpi; of female, rounded. Labial palpus upcurved, reaching to vertex, clothed with broad appressed scales; on male closely appressed to face, with second segment over three times as long as first and with third segment very short (about one-sixth the length of second); on female with second segment shorter and third about one-third the length of second. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, approximately equidistant from 2 and 4; 4 and 5 connate or approximate at base; 6 from below upper angle of cell, straight; 8 and 9 long stalked, 9 short; 10 from the cell, parallel for some distance but not closely approximate to the stalk of 8–9. Hind wing with vein 2 from close to lower outer angle of cell; 3 from the stalk of 4–5 or closely approximate to it for some distance; 4 and 5 stalked for over half (about two-thirds) their lengths; 7 and 8 closely approximate beyond cell for less than half their lengths; cell short, about one-third the length of wing; discocellular vein curved; on male, anal area (involving veins 1a and 1b) thickened and folded under to form a pocket enclosing enlarged scales and hair tufts. Eighth abdominal segment of male bearing a thin, short pair of ventrolateral hair tufts.

Male genitalia with uncus long, curved, strongly sclerotized, constricted at middle and broadly divided at apex (hammer-clawed); gnathos terminating in a short, stout hook or a short, broad plate (*ahemora*); transtilla absent. Harpe rather short, with clasper. Vinculum narrow, short. Aedeagus stout with long, stout, projecting, curved spine or spines at apex (except in *argentina*); cornutus a single, strong spine.

Female genitalia without signum (*pellucens*) or with signum well developed and consisting of a large oval or pear-shaped cluster of thornlike spines (*argentina, aga-*

pella), or curved sclerotized bands armed with stout, thornlike spines (*ahemora, ignobilis*); bursa large; ductus bursae short, broad (narrowest in *agapella*); area surrounding genital opening strongly sclerotized, the dorsal sclerotization in the form of a band connected with the supporting rods of eighth segment collar, and armed with two or four spinelike projections (except in *ignobilis* and some examples of *argentina*); ductus seminalis from caudal area of bursa.

This genus is easily distinguished by its striking male characters; the strongly sclerotized, long-stemmed, bifurcate (hammer-clawed) uncus; the large pocket on anal area of hind wing; the long, embedded labial palpus with very short third segment; and minute maxillary palpus. A similar bifurcate uncus is not found in any other American genus except *Difundella* Dyar. In the type species of the latter (*corynophora* Dyar) the uncus is somewhat produced and exhibits a slight bifurcation at apex; but other species, which must also be referred to *Difundella*, lack this character. *Difundella* separates readily on other male structures—its strongly hooked, partially free sacculus of harpe, its rounded frons, and the narrow, strongly sclerotized, deeply invaginated pocket of the sternite of the eighth abdominal segment.

In *Fundella* the wing pattern varies so much within any given species that it affords no reliable character for specific identification, and the several species can be separated with certainty only by their genitalia.

119. Fundella pellucens Zeller

FIGURES 6, 231, 713

Fundella pellucens Zeller, Isis von Oken, vol. 41, p. 866, 1848; Horae Soc. Ent. Rossicae, vol. 15, p. 236, 1881.—Ragonot, Monograph, pt. 1, p. 210, 1893.—Heinrich, Proc. U. S. Nat. Mus., vol. 96, p. 107, 1945.

Ballovia cistipennis Dyar, Proc. U. S. Nat. Mus., vol. 44, p. 323, 1913.

Fundella cistipennis (Dyar) Dyar, Ins. Insc. Menstr., vol. 7, p. 40, 1919.—Wolcott, Journ. Agr. Univ. Puerto Rico, vol. 17, pp. 241–255, 1933; Journ. Agr. Univ. Puerto Rico, vol. 18, p. 432, 1934; vol. 20, p. 477, 1936.—Scott, Journ. Agr. Univ. Puerto Rico, vol. 24, pp. 35–47, 1940.

Male antennal shaft with very small black basal tuft (fig. 231e). Forewing grayish fuscous more or less dusted with whitish and with interspersed reddish brown scales (in many specimens the ground color is reddish brown), giving the moth a distinctly gray or gray-brown appearance to the naked eye; a conspicuous, round, darker brown or fuscous spot in the center of the area usually occupied by the antemedian line, this dark spot more or less obscured in some specimens, but in typical examples outlined by whitish areas inwardly and outwardly and not reaching to inner margin or costa of the wing; discal mark at end of cell obscure, often absent; subterminal line (when distinguishable) faint, white, indented at vein 6 and at submedian fold; a row of dark spots along termen (present only in specimens having an appreciable dusting of white scales). Hind wing white, translucent, a faint fuscous border along costa and (in some specimens) a fuscous line on termen for a short distance from apex; cilia white; anal pocket yellowish white. Mid-tibia with a fringe of pale hairlike scales along dorsum. Hind tibia with a rather long and slender tuft of pale (whitish ocherous), hairlike scales from the knee joint (fig. 231f).

Female essentially like the male in color and markings except that the dark spot near the base of the forewing is more diffused, sometimes reaching to the costa. Hind wing usually with a dark shade along termen.

Alar expanse, 19–24 mm.

Male genitalia with a large, strongly sclerotized subanal plate, constricted before and beyond its middle. Harpe with apex notched below costa; clasper short, curved, situated near middle of harpe, and armed with several setae at its knobbed apex. Aedeagus with a cluster of several long, curved spines from apex; cornutus long, straight, stout.

Female genitalia with bursa copulatrix finely scobinate but without signum; ductus bursae flattened, broad, twisted and constricted near genital opening, sclerotized throughout, the sclerotization involving bursa adjacent to ductus bursae and ductus seminalis; sclerotized band behind genital opening armed with four long, stout, projecting spines; collar of eighth segment invaginated at dorsal margin to form a sclerotized pocket (fig. 713a).

TYPE LOCALITIES: St. Thomas, British West Indies (*pellucens*, in BM); Barbados (*cistipennis*, in USNM).

FOOD PLANTS: *Vigna unguiculata* (cowpeas, black-eyed peas, and garden peas), *Bauhinia variagata*, *Canavalia ensiformis* (swordbeans), *Canavalia maritima* (black bean), *Cajan cajan* (pigeon pea), *Phaseolus lunatus* (cultivated and wild limabeans), *Phaseolus* sp. (Brazilian specimens), *Cassia occidentalia* (one reared specimen from McCubbins Mills, Puerto Rico, before me; most records from this last plant are doubtful and probably the result of a misidentification of *Fundella argentina* as *cistipennis*).

According to Scott the favored host in Puerto Rico is the cowpea (*Vigna unguiculata*), and the species, while frequent in limabeans, seldom does serious damage. Potentially it is an insect of economic importance. The larvae are primarily pod borers, but also bore into the stems and feed on the flowers of their hosts. They attack, as far as known, only Leguminosae.

DISTRIBUTION: UNITED STATES: *Florida*, Hobe Sound (May), Miami, (Apr., May), Jupiter (Apr.), Coconut Grove, Marco Isl., Tampa (Mar.), Walton, Jensen (U. S. Dep. Agr. rearings from limabeans, Feb. 1944), Riviera Beach, Vero Beach (J. R. Malloch, Dec. 1941). BARBADOS. HAITI: Damien (Dec., Feb.), Port-au-Prince. MONTSERRAT (Jan.). CUBA: Santiago, Matanzas. VIRGIN ISLANDS: St. Croix (Mar., Oct., Nov.). PUERTO RICO: San Juan, Río Piedras (Mar.–May), Isabella, Catano (July), Vieques Isl. (Apr.). BRAZIL: Baía (May), Ceará. BOLIVIA.

120. Fundella argentina Dyar

FIGURES 234, 711

Fundella pellucens Zeller (in part, "var. b"), Isis von Oken, vol. 41, p. 867, 1848; Horae Soc. Ent. Rossicae, vol. 16, p. 237, fig. 41b, 1881.

Fundella argentina Dyar, Ins. Insc. Menstr., vol. 7, p. 40, 1919.—Heinrich, Proc. U. S. Nat. Mus., vol. 96, p. 109, 1945.

Fundella eucasis Dyar, Ins. Insc. Menstr., vol. 7, p. 40, 1919.

Male antennal shaft with even smaller black basal scale tuft than that of *pellucens*. Forewing gray without the reddish brown, interspersed scaling characteristic of typical examples of *pellucens;* entire basal area to antemedian line dark fuscous gray (with but very slight dusting of whitish scales toward base in some specimens); this dark basal patch contrasted against the paler gray color of the remainder of the wing, extending from costa to inner margin and bordered outwardly by a narrow whitish line. Otherwise not distinguishable, superficially, from *pellucens*.

Female essentially like the male in color and markings except that the basal area of forewing is concolorous with or contrastingly paler than the remainder of the wing. A narrow dark line or a diffused dark shading outwardly bordering the obscure antemedian line.

Alar expanse, 15–23 mm.

Male genitalia without sclerotized subanal plate. Terminal projection of gnathos varying from round to pointed (fig. 234b) at apex. Harpe tapering to bluntly pointed apex; clasper a single, straight, slightly roughened, appressed spine, situated beyond middle of harpe. Aedeagus simple; cornutus a single, straight spine.

Female genitalia with signum well developed and consisting of a large pear-shaped cluster of thornlike spines; sclerotized band behind genital opening, divided in the middle, simple (fig. 711a) in Argentinian and Brazilian specimens, or armed with a pair of median, spinelike projections (fig. 711), rather long in West Indian specimens or short and disappearing in Mexican and Venezuelan specimens.

TYPE LOCALITIES: Tucumán, Argentina (*argentina*, in USNM); Caracas, Venezuela (*eucasis*, in USNM).

FOOD PLANT: *Cassia* spp. (reared examples in National Collection from *Cassia bicapsularis* and *C. corymbosa*), *Poinciana gilliesi*.

DISTRIBUTION: UNITED STATES: *Florida*, Biscayne Bay (May), Coconut Grove (Apr.), Stock Island (Apr.); *Texas*, Brownsville (Nov.). MÉXICO: Several examples reared from pods and blossoms of *Cassia bicapsularis* at Brownsville, Tex., quarantine station. CUBA: Baraguá (Mar.), Habana, Matanzas, Santiago Province. PUERTO RICO: Bayamón (Mar., Sept.), Vieques Isl. (Apr., July), Coamo Springs (Apr.), Aguirre Central (Aug.), San Germán (Aug.), San Juan (Nov.). HAITI: Pétionville (June). VIRGIN ISLANDS: St. Croix (Oct.–Nov.). JAMAICA. VENEZUELA: El Valle (June). BRAZIL: Baía (May). ARGENTINA: Tucumán (Mar.).

In collections this species has appeared most frequently under the name *pellucens*. Both *argentina* and *pellucens* have about the same distribution and are abundant in the West Indies, though, from material at hand, *pellucens* seems to be rarer on the mainland. Throughout its range *argentina* shows considerable variation in female genitalia. West Indian specimens have rather conspicuous spinelike extensions of the sclerotized band behind the genital opening. These are entirely lacking in Brazilian specimens, and if one had only these extremes he would be justified in assuming that they were at least racially distinct. However, Venezuelan and Mexican examples show an intermediate form with very short projections, and Central American specimens, when recovered in sufficient numbers, will probably show all intergradations. The male genitalia are remarkably uniform throughout the range of the species, exhibiting only minor individual variations in the shape of the terminal projection of the gnathos.

121. Fundella agapella Schaus

FIGURE 710

Fundella agapella Schaus, Zoologica, vol. 5, No. 2, p. 47, 1923.—Heinrich, Proc. U. S. Nat. Mus., vol. 96, p. 111, 1945.

Female palpi, head, thorax, and forewing whitish gray; dark markings drab gray; transverse antemedian line of forewing white, defined chiefly by its narrow, dark outer border, sharply sinuate, indented a trifle just below costa, more deeply at top of cell and still more deeply at fold below cell; discal dot at end of cell obscure; white subterminal line indented at vein 6 and at submedian fold, bordered inwardly by a distinct dark shade as broad as the white line itself and outwardly by a similar, fainter, dark shading, the latter conspicuous only at apex. Hind wing as in the other species of *Fundella*. Alar expanse, 12 mm.

Genitalia like those of intermediate examples of *argentina* except that the signum is considerably smaller in proportion to the size of the bursa.

TYPE LOCALITY: Tagus Cove, Albemarle, Galápagos Islands (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type. Superficially a distinct species. The female genitalia, however, would indicate that *agapella* is only a race of *argentina*. A male will be needed for exact placement, and until it is available we shall have to treat *agapella* as a species.

122. Fundella ignobilis Heinrich

FIGURES 232, 712

Fundella ignobilis Heinrich, Proc. U. S. Nat. Mus., vol. 96, p. 112, 1945.

Male antennal shaft without any trace of black basal scale tuft. Otherwise partaking of the pattern markings of both *pellucens* and *argentina;* in some specimens dark basal patch of forewing round and reaching neither costa nor inner margin (as in typical *pellucens*), in majority of specimens, however, basal patch occupying whole basal area (as in typical *argentina*); median and outer areas of wing averaging a trifle paler than in *argentina* and without the reddish brown scaling of *pellucens*.

Female superficially similar to *argentina* except a trifle paler, on the average.

Alar expanse, 13–22 mm.

Male genitalia with gnathos terminating in a short, stout hook. Harpe with apex truncate; clasper moderately long, curved, and weakly haired at apex. Aedeagus with a single, long, strong, curved spine from below apex; cornutus a short, stout, curved thorn.

Female genitalia without spines adjacent to genital opening. Bursa copulatrix with signa consisting of a pair of partially fused bands, each armed with a row of short, stout, thornlike spines; ductus bursae short and broad, with median area unsclerotized; eighth segment collar completely sclerotized except for a small, round, transparent spot on midventer, sclerotization extending to and over area behind genital opening.

TYPE LOCALITY: Oaxaca, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Córdoba (May), Guadalajara, Jalapa, Oaxaca, Orizaba, Tehuacán (May, June, July). GUATEMALA: Cayuga. COSTA RICA. CUBA: Santiago (June), Sierra Miestra (May). PUERTO RICO: Aguirre Central (Aug.). HAITI: Pétionville (June).

123. Fundella ahemora Dyar

FIGURES 233, 714

Fundella ahemora Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 403, 1914.—Heinrich, Proc. U. S. Nat. Mus., vol. 96, p. 113, 1945.

Antenna of male with small black scale tuft at base of shaft. Forewing with no or a very faint dark basal patch (when present covering basal area to antemedian line); antemedian line whitish, very faint; subterminal line white, faint but less obscure than antemedian, without dark borders except for an inner and an outer dark spot at inner margin of wing; veins from cell rather strongly outlined by dark scaling (the most conspicuous superficial character of the species). A thick, dark (brownish) hair tuft covering outer surface of male foretibia, a character not found in other species of the genus. Alar expanse, 18–23 mm.

Male genitalia with gnathos terminating in a broad tongue-like plate. Harpe somewhat tapering but with apex truncate; a strong tuft of long scales from costa; clasper long, curved, slender, with a few hairs at apex. Aedeagus with a pair of long, curved, flattened spines from apex; cornutus a long, straight, slender spine.

Female genitalia with a pair of long, widely spaced, basally curved spines from sclerotized area immediately behind genital opening. Bursa copulatrix with signa consisting of two rather short bands, each armed with a row of long spines. Ductus bursae bulged in the middle and with a strongly sclerotized median collar. Collar of eighth segment partially sclerotized and fused ventrally.

TYPE LOCALITY.—Orizaba, México (type in USNM).

FOOD PLANT.—Unknown.

DISTRIBUTION: MÉXICO: Orizaba, Jalapa, Teapa (Dec.), Córdoba (Apr., Dec.), Cuernavaca (July). GUATEMALA: Quiriguá (Mar.), Cayuga (Jan., May), Parulhá (July). COSTA RICA: Juan Viñas (Nov.).

Superficially the most easily distinguished species in the genus. The large foretibial tuft at once identifies the male, and both sexes can be separated by the rather conspicuous dark outlining of the veins. The veins are similarly dark scaled in the other species, but the contrast of the dark veins against the pale intervenular area is more marked in *ahemora*.

Genus 29: *Difundella*

[Venational division B. Forewing with veins 4–5 connate or closely approximate at base. Hind wing with vein 3 from stalk of 4–5 or closely approximate to it for a short distance; on male, anal area folded into a pocket. Male genitalia without transtilla; sacculus of harpe strongly sclerotized and produced (free or partially free); penis without cornutus or other armature. Abdomen of male with lateral pockets and hair tufts between segments 2 and 3; eighth abdominal sternite developed as a narrow pocket; no hair tufts.]

This genus shows affinities to *Fundella* but in many characters resembles more closely *Rampylla* and *Coptarthria*. In general habitus (wing pattern, color, and maculation) the moths of *Difundella*, *Coptarthria*, and *Rampylla* are strikingly similar, but the three genera are different on structural characters. *Rampylla* differs from the other two in the free length of vein 3 of male hind wing; *Coptarthria* in its notched male antenna; and *Difundella* in its anellus (a simple plate without the long free spine of *Rampylla* and *Coptarthria*) and in the possession of scaled pockets between the second and third segments of the male abdomen.

The species of *Difundella* differ considerably from each other on structural details, falling into two distinct groups which divide as follows:

—Labial palpus reaching above vertex in both sexes. Hind wing with cell less than one-third the length of wing; vein 1b of male bent before middle and with a tuft of yellow hairlike scales on its under side (within the bend). Gnathos greatly reduced, its apical projection fine, needlelike. Costa of harpe without projections.

—Labial palpus not reaching vertex on males, barely reaching vertex on females. Hind wing with cell more than one-third (but less than half) the length of wing; vein 1b of male not bent; rough sex-scaling bordering 1c on under side of wing beyond base. Gnathos with apical process enlarged and strongly sclerotized. Costa of harpe with strongly sclerotized projection or projections.

The second group probably deserves a separate generic designation; but the material before me representing its two species is too scanty and not in good enough condition, and the association of the females with their proper males too uncertain, to permit proper evaluation of generic characters for separation at this time.

29. Genus Difundella Dyar

Difundella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 327, 1914. (Type of genus: *Difundella corynophora* Dyar.)

Tongue well developed. Antenna of male weakly pubescent. Labial palpus ascending, recurved, slender, smooth scaled; third segment acuminate. Maxillary

palpus with second segment slightly thickened with scales. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, nearly equidistant from 2 and 4; 4 and 5 connate or closely approximate at base and approximate for a short distance beyond base; 6 from below upper angle of cell, slightly bent towards base; 10 from the cell, more or less approximate to the stalk of 8–9. Hind wing with vein 2 from close to lower outer angle of cell; 3 from the stalk of 4–5 or closely approximate with it for a short distance from angle of cell; 4 and 5 long stalked (for over one-half their lengths); 7 and 8 closely approximate beyond cell, or shortly and weakly anastomosed; cell short, less than one-half the wing length; discocellular vein curved, partially obsolescent; on male, anal angle folded under to form a pocket enclosing a long hair-pencil. Eighth abdominal segment of male with sternite developed as a narrow, sclerotized pocket; on each side between abdominal segments 2 and 3 a shallow pocket containing a modified scale tuft.

Male genitalia with uncus stout, but variously shaped. Transtilla absent. Harpe with sacculus very strongly sclerotized, free or partially free and curved. Aedeagus with strongly sclerotized and pointed apex; penis unarmed. Vinculum stout. A long hair tuft from intersegmental area adjacent to base of sacculus of harpe.

Female genitalia with bursa copulatrix membranous; signum, if present, a small patch of weak scobinations; ductus bursae membranous (unsclerotized) except about genital opening; ductus seminalis from bursa near junction of bursa and ductus bursae.

The characteristic pattern features of the species of *Difundella* (as of *Coptarthria* and most species of *Rampylla*) are: The strongly contrasted, fine, blackish, transverse lines forming the outer border of the antemedial and the inner border of subterminal lines of forewing; the almost straight, oblique or vertical antemedial line, set well out from base of wing; the oval, pale discal spot covering the discocellular vein; and the black streaks on veins 2 to 6 just beyond it.

Genus *Difundella*, Species 124 and 125: *D. corynophora* and *D. subsutella*

[Labial palpus reaching above vertex in both sexes. Hind wing with cell less than one-third the length of wing; vein 1b of male bent before middle and with a tuft of yellow hairlike scales on its under side (within the bend). Gnathose greatly reduced, its apical projection fine, needlelike. Costa of harpe without projections.]

124. Difundella corynophora Dyar

FIGURES 7, 235, 715

Difundella corynophora Dyar, Proc. U. S. Nat. Mus., vol. 47' p. 327, 1914.

Forewing with basal area (to antemedial line), and upper median area beyond antemedial line and from lower margin of cell to costa, blackish fuscous; some extension of this dark shade extends narrowly to inner margin along the outer dark border of the antemedial line; ground color of remainder of wing a ruddy ocherous; some extension of this ocherous shade invades the dark basal area along the lower fold and forms the centers of the transverse lines; beyond the cell the ocherous shade is broken by black streaks on veins 2 to 6 and beyond subterminal line it is more or less clouded by blackish fuscous; discal spot ruddy ocherous, covering discocellular vein; antemedial line oblique; its narrow dark borders black shading to reddish; the dark borders of subterminal line also more reddish brown than black; all the dark transverse lines less contrasted and conspicuous than those of other species in the genus. Hind wing dark smoky fuscous; the veins and terminal edge black and (on the female) a blackish shade at apex. Alar expanse, 15–16 mm.

Male genitalia with uncus produced and slightly bifurcate at apex. Free projection of sacculus curved back towards lower margin of harpe. Aedeagus forked; the longer element of the fork spined at apex. Female genitalia with signum a small round patch; genital opening surrounded by an oblong, strongly sclerotized plate; in intersegmental area behind this plate a pair of ventrolateral pockets (fig. 715b).

TYPE LOCALITY: La Chorrera, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: GUATEMALA: Cayuga (Aug.), Chejel (June). PANAMÁ: La Chorrera. FRENCH GUIANA: Cayenne.

Easily identified by its genitalia.

125. Difundella subsutella (Schaus), new combination

FIGURE 236

Ulophora subsutella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 248, 1913.

Rampylla subsutella (Schaus) Dyar, Ins. Insc. Menstr., vol. 7, p. 84, 1919.

The only representative of this species is the male type which is somewhat rubbed and the markings consequently obscured. It differs from *corynophora* in having the pale ground color of the outer areas of forewing more reddish than ocherous; the black outer margin of antemedial line more sharply defined, black throughout, outwardly oblique to lower fold and thence slightly curved inward to lower margin. Hind wing semihyaline white with a faint brownish ocherous tint; veins not appreciably darkened; a fine brown line along termen. Alar expanse, 17.5 mm.

Male genitalia with uncus triangulate. Gnathos reduced even more than that of *corynophora*, the lateral arms represented by mere stubs. Projecting part of sacculus curving away from harpe. Aedeagus sickle shaped; its apical half sharply curved, very strongly sclerotized, and tapering to a sharp point.

TYPE LOCALITY: Juan Viñas, Costa Rica (Jan.; type in USNM).

FOOD PLANT: Unknown.

Genus *Difundella*, Species 126 and 127: *D. distractor* and *D. tolerata*

[Labial palpus not reaching vertex on males, barely reaching vertex on females. Hind wing with cell more than one-third (but less than half) the length of wing; vein 1b of male not bent; rough sex-scaling bordering 1c on underside of wing beyond base. Gnathos with apical process enlarged and strongly sclerotized. Costa of harpe with strongly sclerotized projection or projections.]

126. Difundella distractor, new species

FIGURES 237, 716

Dark areas of forewing dark brownish gray; the pale outer areas dull whitish; antemedial line well out towards middle of wing, nearly vertical, slightly notched at vein 1b, red-brown with a fine black line along its outer edge and preceded by a rather broad whitish blotch, extending from just below costa, nearly to inner margin; a short black streak along lower fold for a short distance from base of wing; the discal spot whitish; blackish lining on the veins beyond cell very weak; subterminal line very slightly bent between veins 4 and 6 otherwise nearly vertical, outwardly bordered by a narrow shade of the dark ground color and inwardly by a fine black line. Hind wing semihyaline white; a blackish brown line along termen; the veins not darkened; the male wing on the undersurface rather loosely and coarsely covered with yellowish scales, especially along the veins. Alar expanse, 14.5–15.5 mm.

Male genitalia with uncus semispoon-shaped. Apical projection of gnathos large, triangulate, strongly sclerotized. Harpe with subtriangulate cucullus; a single, long, stout, flat, curved, tapering projection from midcosta. Aedeagus long, slender, smooth, tapering to a point. Vinculum about twice as long as greatest width. Female genitalia without signum; genital plate large, medially notched and supported by strongly sclerotized, involuted seventh abdominal segment.

TYPE LOCALITY: Palmas Abajas, Puerto Rico (type in Cornell Univ., paratype in USNM, 61328).

FOOD PLANT: Unknown.

Described from male type labeled "Palmas Abajas (near Guayama), P. R., 1900 ft., [date unreadable], W. A. Hoffman"; and one female paratype from Aguirre Central, Puerto Rico, "Apr. 2–3, 31," M. D. Leonard, collector. The female is in good condition and served for the foregoing color and pattern description. The male is badly rubbed and has the palpi and antennae broken off; but enough of the markings remain to show that they were the same as those of the female.

127. *Difundella tolerata*, new species

FIGURES 238, 717

Similar to the foregoing species (*distractor*) except that pale areas of forewing are much more restricted, limited to an irregular area bordering inner margin of subterminal line (extending back to cell above and nearly to antemedial line below); some diffused pale shading along the lower fold in basal area; the pale areas very dull ocherous white, not as well contrasted as in *distractor;* discal spot ocherous. Hind wing translucent, white with a very faint ocherous tint on male; a faint dark line along termen. Alar expanse, 19 mm.

Male genitalia with uncus strongly sclerotized and stout (longer than basal width), broadened and rounded towards apex. Apical projection of gnathos a long, broad, strongly sclerotized, obliquely bent band. Harpe with narrow, spatulate cucullus; two projections from costa, the first a double thornlike projection from near middle, the second a rather slender spine from outer third. Aedeagus with a couple of short spines at apex. Vinculum no longer than greatest width.

Female genitalia with signum a narrow, elongate patch of scobinations; genital opening simple; ductus bursae about three times as long as bursa. From the dorsocaudal margin of seventh segment an invaginated, sclerotized shield supports at each lateral margin a short, blunt, weakly pigmented hornlike process.

TYPE LOCALITY: East Bolivia (type in BM).

FOOD PLANT: Unknown.

Described from two specimens from the British Museum Collection labeled "Ost Bolivia, Aug.–Oct., 1920, T. Steinbach," the male type and a female matching the male in size, color, and markings. I do not make this female a paratype (although the foregoing description of the female genitalia is made from it) because there is a slight doubt that it is the true female of the species. Its genitalia are similar in all but the most trifling details to those of a series of females from Cayuga, Guatemala, associated in our collection with males of *Coptarthria dasypyga*. One or the other of our identifications of females (or both of them) may be in error. We shall not know until more material is available.

Genera 30–33: *Coptarthria* to *Dasypyga*

[Venational division B. Male genitalia with transtilla a sinuate, sclerotized, more or less scobinate band involved with gnathos; a long, free spine associated with anellus. Eighth abdominal segment of male with sternite developed as a narrow sclerotized pocket.]

30. Genus Coptarthria Ragonot

Coptarthria Ragonot, Monograph, pt. 1, p. 251, 1893. (Type of genus: *Myelois dasypyga* Zeller.)

Tongue well developed. Antenna of male with basal segment of shaft considerably elongated, flattened and deeply notched at outer extremity; shaft pubescent. Labial palpus upturned, slender, barely reaching vertex; third segment about half the length of second, bluntly pointed. Maxillary palpus filiform. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, closer to 4 at base than to 2; 4 and 5 short stalked or connate and closely approximate for a short distance from base; 6 from below upper angle of cell, bent towards base; 10 from the cell; male without costal fold. Hind wing with vein 2 from close to lower outer angle of cell; 3 from middle of stalk of 4–5, or closely approximate to it; 4 and 5 stalked for slightly more than half their lengths; 7 and 8 closely approximate beyond cell; cell short, about one-third the length

of wing; discocellular vein curved. Eighth abdominal segment of male with sternite developed as a narrow, sclerotized pocket.

Male genitalia with uncus moderately stout; deeply concaved apically (probably only a specific character). Transtilla a sinuate, sclerotized band involved with and fusing into gnathos. Gnathos proper identifiable only by its rather weak lateral arms. Harpe with apex of cucullus slightly hooked; sacculus simple, not produced. Anellus a small plate with greatly reduced lateral lobes, the latter indicated chiefly by their short hair tufts; dependent from near base of anellus plate and associated with it a long, slender U-shaped band supporting from the bottom of the U a long, strongly sclerotized, free spine, the latter lying dorsad of the aedeagus. Aedeagus small, simple; penis with a few weak scobinations, otherwise unarmed.

The genus is distinguished from its nearest allies by the notched shaft of its male antenna. Female characters could not be included in the foregoing description, as examples of this sex have not been satisfactorily associated with males of the type species, the only known representative of the genus.

128. Coptarthria dasypyga (Zeller)

FIGURES 10, 239, (?) 718

Myelois dasypyga Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 215, 1881.

Coptarthria dasypyga (Zeller) Ragonot, Monograph, pt. 1, p. 251, 1893.

I have seen no Colombian examples, but there are six males in the National Museum from Guatemala which Dyar identified as *dasypyga*. There is no reason to question his identification; for the specimens have the typical *Coptarthria* antenna, are the right size, and agree in color and maculation with Ragonot's description of the Zeller type.

Forewing gray-brown with a very slight intermixture of ocherous shading above inner margin; the basal area a trifle paler than remainder of wing; branches of median vein (veins 2 to 5) faintly streaked with brown or blackish brown; transverse lines pale with dark borders and faintly tinged with reddish scaling at middle and near costa; antemedial line well out near middle of wing, nearly vertical, straight except for a slight inward angulation at vein 1b, its inner border a weak brown line, its outer bordering line black; subterminal line well back from termen, vertical to vein 4, thence oblique to inner margin, its inner border a black line; a rather large, oval, ochraceous spot on discocellular vein, margined by faint black scaling; along termen a row of conspicuous, more or less confluent black spots. Hindwing semitranslucent white; the veins faintly darkened (pale, ocherous brown) and a faint dark line along termen. Alar expanse, 14–17 mm.

Male genitalia as given for the genus.

TYPE LOCALITY: Honda, Colombia (type, ♂, in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: COLOMBIA: Honda, GUATEMALA: Cayuga (Apr., May), Quiriguá (Mar.), Volcán Santa María (July).

Associated with the males in the National Collection are five females from Cayuga (Apr., May) identical with the males in all superficial characters. Their genitalia are like those of the Bolivian female I have associated tentatively with the type of *Difundella tolerata* (fig. 717). However, there is also a female with the same color and markings from Juan Viñas, Costa Rica (Feb.), which has different genitalia (fig. 718), similar to those of *Anadelosemia*. From the limited material available and the few and scattered distributional records it is impossible to determine which females go with which males.

31. Genus Promylea Ragonot

Promylea Ragonot, N. Amer. Phycitidae, p. 5, 1887; Monograph, pt. 1, p. 207, 1893.—Hulst, Phycitidae of N. Amer., p. 139, 1890. (Type of genus: *Promylea lunigerella* Ragonot).

Tongue well developed. Antenna pubescent; shaft of male without notch or other modifications. Labial palpus upturned, slender, reaching vertex; third segment about half the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before, but rather near lower outer angle of cell; 3 from the angle, closer to 4 than to 2 at base; 4 and 5 closely approximate for a short distance from base; 6 from below upper angle of cell, straight; 8 and 9 long stalked, the free element of 9 short; 10 from the stalk of 8–9, or from the cell, connate with or closely approximate with it for a short distance beyond base (definitely stalked with 8–9 in most of the specimens of *lunigerella*); male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, connate with 4; 4 and 5 closely approximate or anastomosed for half their lengths beyond cell; 7 and 8 approximate or partially anastomosed for less than half their lengths beyond cell; cell nearly half the length of wing; discocellular vein curved. Eighth abdominal segment of male with sternite developed as a narrow sclerotized pocket.

Male genitalia as in *Coptarthria* except: Apical margin of uncus rounded; lateral arms of gnathos more strongly developed; penis sometimes with a weak cornutus.

Female genitalia with bursa and ductus bursae membranous, bursa small, considerably shorter than ductus; signum present but weak, a patch of scobinations or a small plate supporting a very small thorn; genital opening simple; ductus seminalis from ductus bursae. Collar of eighth abdominal segment with a broad, flaring, sclerotized apron projecting from center of anterior dorsal margin; in the intersegmental area between collar and seventh segment a sclerotized and coarsely granulate pocket (fig. 721a).

The genus is close to both *Coptarthria* and *Anadelosemia* but distinct, differing from the former in its simple male antenna and from the latter and all the genera of this immediate group having the sinuate, involved transtilla and the free spine associated with anellus by its peculiarly developed, female, eighth-segment collar.

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In habitus the moths of *Promylea* differ strikingly from those of *Coptarthria*; the transverse lines of forewing being more widely separated and the antemedial line decidedly oblique.

129. Promylea lunigerella Ragonot

FIGURES 9, 240, 721

Promylea lunigerella Ragonot, N. Amer. Phycitidae, p. 5, 1887; Monograph, pt. 1, p. 20, 1893.—Hulst, Phycitidae of N. Amer., p. 139, 1890.—McDunnough, Check list, No. 6146, 1939.

Forewing gray or brownish gray, pale in median and most of basal areas and (in many specimens from Vancouver and Washington State) with a faint rosy tint; antemedial line indicated chiefly by its blackish outer border, strongest towards costa and oblique from costa before one-third to inner margin, preceded by reddish brown or ocherous brown patch, broad and inwardly dark-margined on inner margin, attenuated and paling out towards costa; subterminal line pale gray, bordered inwardly by a blackish brown line and outwardly by a much fainter dark line (grayish or reddish brown), outwardly curved between veins 8 and 1b; discal dots rarely separated, normally fused into a thin blackish lunule on the discocellular vein; terminal dots obscure, when distinguishable more or less fused into a line along terminal margin. Hind wings pale smoky fuscous; the veins little if any darkened; a very faint brownish line along termen. Alar expanse, 20–24 mm.

TYPE LOCALITY: Vancouver Isl., British Columbia (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: CANADA: *British Columbia*, Fitzgerald (June), Duncans (Vancouver Isl.), Victoria (June, July, Aug.), UNITED STATES: *Washington*, Bellingham (Aug.), Friday Harbor (July, Aug.), Mt. Constitution (July); *California*, Glen Alpine (Lake Tahoe, July).

130. Promylea lunigerella glendella (Dyar)

FIGURES 241, 720

Myelois glendella Dyar, Journ. New York Ent. Soc., vol. 14, p. 30, 1906.

Promylea glendella (Dyar) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5584, 1917.—McDunnough, Check list, No. 6147, 1939.

There is nothing to distinguish this from many of our specimens of *lunigerella* from Washington and British Columbia except some slight differences in genitalia of very doubtful significance, and the name should probably go into synonymy; but until material is available from intervening areas and something is known of the life history, *glendella* may be retained as a possible local race. It certainly is nothing more than that.

TYPE LOCALITY: Glenwood Springs, Colo. (type in USNM).

FOOD PLANT: Unknown.

Represented in the National Museum by two males and three females from the type locality (Aug., Sept., Oct.). In addition to the foregoing there are before me five examples of another variety of *lunigerella* from Fallen Leaf Lake, Calif., Aug. 8 and 12, 1932, H. H. Keifer, collector. They are quite different in color, having paler gray forewings with much fainter transverse dark markings and more whitish hind wings than our other examples of *lunigerella*. They are probably nothing but a color form and for obvious reasons are going without a name at present.

131. Promylea dyari, new name

FIGURE 243

Dioryctria zimmermani Druce (not Grote), Biologia Centrali Americana, Lepidoptera Heterocera, vol. 2, p. 564, 1899.

Dioryctria drucei Dyar, Ins. Insc. Menstr., vol. 7, p. 44, 1919 (preoccupied).

Similar to *lunigerella* except: Larger and darker; the paler areas of forewing a dark ashy gray; outer black border of antemedial line broader, forming a small triangle on costa; inner border of subterminal line also slightly stronger, black; the subterminal line itself is more sharply angled below costa and from about vein 6 proceeds to inner angle in a slanting almost straight line (a difference that strikes the eye but is hardly significant; for on some examples of *lunigerella* the subterminal line is similarly shaped); terminal dots confluent, forming a conspicuous black line along termen. Alar expanse, 30 mm.

Male genitalia with tegumen and vinculum somewhat stouter (broader in proportion to their width) than those of *lunigerella;* penis armed with a weak cornutus.

TYPE LOCALITY: Rinconada, Vera Cruz, México (type in USNM).

FOOD PLANT: Unknown.

The species is known only from the male type which both Druce and Dyar mistook for a female. The reference to *Dioryctria* is difficult to understand in Dyar's case; for vein 3 of hind wing is appreciably too short for that genus. The transfer of "*Dioryctria drucei* Dyar" and "*Nephopteryx druceii* Ragonot" to the genus *Promylea* makes the former a secondary homynym and necessitates the new name. It is possible that the two "*drucei*" represent only different sexes of one species; but this cannot be determined without more material of each, so for the present they must be treated as separate species.

132. Promylea druceii (Ragonot), new combination

FIGURE 722

Nephopteryx druceii Ragonot, Nouv. Gen., p. 15, 1888; Monograph, pt. 1, p. 301, 1893.

I have not seen any specimens matching Ragonot's description or figure (Monograph, pl. 9, fig. 17); but I have before me an excellent photograph of the type supplied by Tams. This shows a moth similar to *dyari* but with the dark markings (especially the dark borders of the transverse lines) much more expanded, the outer border of the antemedial line forming a large triangle on costa. According to Ragonot these dark areas have a decided purple tint, rather than the dull black or blackish brown of *dyari*. The spot on the inner margin before the antemedian line is also purplish black rather than orange (as

in *dyari*) and there is considerable purplish dusting on the paler areas of the wing. The moth is also smaller than Dyar's type. Alar expanse, 24 mm.

TYPE LOCALITY: Totonicapán, Guatemala (type in BM).

FOOD PLANT: Unknown.

Represented only by the type.

133. Promylea mindosis Dyar

FIGURES 242, 723

Promylea mindosis Dyar, Ins. Insc. Menstr., vol. 10, p. 172, 1922.

A narrow-winged, suffused, dark species. Ground color of forewing very dark gray-brown; the blackish transverse lines narrow and faint; antemedial line obsolete except for its faint outer border; subterminal line distinguishable but faint; discal spots at end of cell weak but apparently separated. Hind wing very pale smoky fuscous, translucent. Alar expanse, 25–26 mm.

Male genitalia with penis with weak cornutus. Female genitalia with signum developed as a small plate bearing a minute, knoblike projection.

TYPE LOCALITY: Mexico City, Mexico (Aug.; type in USNM).

FOOD PLANT: Unknown.

Known only from the type series of two males and one female from the type locality.

134. Promylea dasystigma Dyar

FIGURE 724

Promylea dasystigma Dyar, Ins. Insc. Menstr., vol. 10, p. 172, 1922.

Similar to *mindosis*, differing only in slight details: The forewing is a trifle darker, more blackish than brownish gray; the subterminal line ends on inner margin in a small but distinct white spot; discal spots fused into a thin, blackish lunule on discocellular vein. The apron from the eighth-segment collar is differently shaped and larger and the intersegmental pocket between seventh segment and collar proportionally wider than those of *mindosis* (compare figs. 723a and 724a). Alar expanse, 25–26 mm.

Female genitalia with signum a very weak patch of scobinations.

TYPE LOCALITY: Mexico City, Mexico (Aug.; type in USNM).

FOOD PLANT: Unknown.

Known only from the two females of the type series.

32. Genus Anadelosemia Dyar

Anadelosemia Dyar, Ins. Insc. Menstr., vol. 7, p. 51, 1919. (Type of genus: *Nephopteryx senesciella* Schaus).

Characters of *Promylea* except: Forewing with vein 10 always from the cell and not closely approximate to the stalk of 8–9. Hind wing with vein 2 from close to lower outer angle of cell; 3 from the stalk of 4–5 or at least anastomosed with it for a short distance; 4 and 5 stalked for over half their lengths beyond cell; cell about one-third the length of wing. Female abdomen with eighth-segment collar simple; no dorsal pocket between seventh and eighth segments. On male a hair-pencil from lower, outer side of metathorax near base of leg.

Very close to *Promylea* but apparently distinct enough. The general habitus of the moths is similar except that the species of *Anadelosemia* (except for *obstitella*) are decidedly smaller.

135. Anadelosemia senesciella (Schaus)

FIGURES 11, 244

Nephopteryx senesciella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 251, 1913.

Anadelosemia senesciella (Schaus) Dyar, Ins. Insc. Menstr., vol. 7, p. 52, 1919.

Forewing ashy white, the basal area to antemedial line stained with pale brown; costal edge at base black; antemedial line white, broad and oblique from costa to lower fold, thence crescentiform to inner margin, on upper half bordered by a broad blackish spot, diffused on costa and continued below fold as a narrow line to inner margin, a weaker dark inner border on lower half; a dark (brownish) shade extending obliquely across the wing from costa just before subterminal line to near middle of inner margin, irregular and more or less diffused over remainder of outer area; discal spots distinct, blackish (on this and most other species of the genus different on opposing forewings, separated or fused into a line); subterminal line sinuate-dentate, rather close to termen, bordered inwardly by a few blackish dots and outwardly by a black line which begins as a strong dash on costa; a row of blackish dots along termen. Hind wing semihyaline tinted with brown; the veins darkened and a narrow dark shade along termen. Alar expanse, 15 mm.

Male genitalia distinguished chiefly by the shapes of uncus, harpe, and vinculum (fig. 244); penis armed with an elongate, narrow, flattened, bladelike cornutus.

TYPE LOCALITY: Juan Viñas, Costa Rica (Jan.; type in USNM).

FOOD PLANT: Unknown.

Known only from the male type.

136. Anadelosemia tecmessella (Schaus)

Ceracanthia tecmessella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 251, 1913.

Anadelosemia tecmessella (Schaus) Dyar, Ins. Insc. Menstr., vol. 7, p. 52, 1919.

Forewing dull ashy white; an oblique blackish shade at base; antemedial line narrow, white, a broken narrow inner black border indicated; bordering the antemedian line on costal half, a rather large triangular bronzy brown spot; this color diffused outwardly along costal edge; the oblique dark shade across wing beyond cell extended to include the remainder of the outer area; subterminal line but slightly paler than the brownish color of outer area, otherwise as in *senesciella;* discal dots distinct, blackish brown, well separated. Hind wing pale smoky brown, veins and terminal margin darker. Alar expanse, 14 mm.

TYPE LOCALITY: Avangarez, Costa Rica (July; type in USNM).

FOOD PLANT: Unknown.

Known only from the female type. It lacks an abdomen so genitalia could not be studied. However, the coloration of forewing suggests a species distinct from anything else in the genus.

137. Anadelosemia fifria Dyar

FIGURE 726

Anadelosemia fifria Dyar, Ins. Insc. Menstr., vol. 7, p. 52, 1919.

Forewing similar to that of *senesciella* except: Whitish ground color more extended filling most of outer area; a dark brown shading at extreme base; dark shadings fuscous brown rather than blackish; antemedial white line narrow, its dark borders also narrower; the post media, transverse dark shade also narrower; terminal dots more or less confluent. Alar expanse, 15 mm.

Female genitalia with signum, developed as a narrow, small, shallow, granulate cup.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

Represented only by the female type and one other female from the type locality (May).

138. Anadelosemia base Dyar

FIGURE 727

Anadelosemia base Dyar, Ins. Insc. Menstr., vol. 7, p. 52, 1919.

Similar to the foregoing species (*fifria*) except: Dark markings a paler brown; the outer dark border of costal half of antemedian line a small triangulate spot with some extension outward on costal edge; terminal dots rather weak but not confluent. Alar expanse, 15 mm.

Female genitalia without signum; ductus bursae proportionally much longer than that of *fifria;* ductus seminalis from near middle of ductus bursae. (In the other species it branches off from the ductus bursae very near its junction with the bursa copulatrix.)

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type and one other female from the type locality. Superficially hardly distinguishable from *fifria*. However, the differences in their female genitalia suggest two distinct species.

139. Anadelosemia obstitella (Schaus), new combination

FIGURE 728

Nephopteryx obstitella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 251, 1913.

The largest and most strikingly marked species in the genus; the antemedial and subterminal lines shining white; the inner, black bordering line of the former continuous from costa to inner margin and strongly contrasted against the ashy gray ground color of the basal area of the forewing; outer black border on costal half of antemedial line and the black dashes preceding and following the subterminal line enlarged and well contrasted. Hind wing semihyaline white with a very faint brownish tint; veins faintly darkened; a narrow, pale fuscous shading along termen, especially towards apex. Alar expanse, 22 mm.

Female genitalia with signum present as a narrow, weak, elongate, irregular scobinate patch (see enlargement). The shape and development of signum is a character of very doubtful value in this genus and probably subject to considerable individual variation.

TYPE LOCALITY: Mount Poás, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type.

140. Anadelosemia texanella (Hulst), new combination

FIGURES 246, 729

Myelois texanella Hulst, Canadian Ent., vol. 24, p. 60, 1892.
Myelois dulciella Hulst, Canadian Ent., vol. 32, p. 176, 1900.
Tacoma texanella (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 193, 1916; vol. 4, p. 174, 1918.—McDunnough, Check list, No. 6143, 1939.

Forewing ashy white (due to a fine, sparse peppering of fuscous scales on the white ground color); costal edge at extreme base black; antemedial line not differentiated except by the narrow, curved, black line forming its outer border from costa to inner margin and by a preceding brown spot on inner margin; subterminal line sinuate, narrow, bordered inwardly by a continuous black line and outwardly by a faint, narrow, brownish shade continued from a blackish dash on costa; discal spots black, separated. Hind wing smoky white, darkening outwardly; a fine brown line along termen. Alar expanse, 13–16 mm.

Male genitalia figured from type of *dulciella*. They exhibit several specific characters: a long, slender, strongly sclerotized, spinelike, apical projection from gnathos (the other species whose males are known show no such structure, the only elements attached to the lateral arms of gnathos at their junction being the transtilla and the base of the more or less sclerotized subanal plate); tegumen considerably elongated in proportion to the vinculum; harpe short and broad; penis finely spined at apex. Female genitalia without signum; ductus seminalis from ductus bursae near junction of bursa copulatrix. The distinctive female structural character is the shape of the eighth-segment collar (fig. 729).

TYPE LOCALITIES: Blanco County, Tex. (*texanella*, in AMNH, ex Rutgers); Hastings, Fla. (*dulciella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Texas*, Blanco County, San Benito (Apr., Sept.); *Florida*, Hastings (Oct.). PUERTO RICO: San Germán (Apr.); CUBA: Santa Clara, Central Soledad ("E. E. A. Cuba, Ento. no. 10234," May).

The Puerto Rican and Cuban examples are males which agree in every detail with the type of *dulciella*. The type of *texanella* lacks an abdomen, so its genitalia could not be checked (the other Texas examples are females); but careful study of the two types discovered

no difference that would justify any doubt of the synonymy proposed by Barnes and McDunnough (1918).

141. Anadelosemia condigna, new species

FIGURES 245, 730

Forewing similar to that of *texanella* except: Outer black border of antemedial line nearer middle of wing, nearly vertical and more denticulate; subterminal line with a discontinuous, blackish outer border; some reddish spotting in the postmedial area near inner margin; costa at base not black, but a transverse black marking at extreme base; discal spots confluent, forming a blackish or reddish brown line along discocellular vein. Hind wing semihyaline white with a narrow fuscous shade along termen. Alar expanse, 15–18 mm.

Male genitalia similar to those of *senesciella*, but differing in the shapes of uncus, harpe, and vinculum; penis armed with a narrow, flat, bladelike cornutus similar to that of *senesciella*. Female genitalia without signum, similar to that of *texana* except for the shape of the eighth-segment collar (fig. 730).

TYPE LOCALITY: Prescott, Ariz. (type in USNM, 61329; paratypes in Cornell Univ. and BM).

FOOD PLANT: Unknown.

Described from male type from the type locality (July) and seven male and four female paratypes from the Baboquivari Mts., Pima County, Ariz., collected by O. C. Poling, May 1–15, 1924.

33. Genus Dasypyga Ragonot

Dasypyga Ragonot, N. Amer. Phycitidae, p. 5, 1887; Monograph, pt. 1, p. 206, 1893.—Hulst, Phycitidae of N. Amer., p. 138, 1890.

Tongue well developed. Antenna weakly pubescent. Labial palpus upcurved, reaching to vertex (female) or nearly to it (male); third segment half as long as second, acuminate. Maxillary palpus small, squamous. Forewing with some raised scaling on basal area (probably only a specific character); 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle, closer to 4–5 than to 2; 4 and 5 shortly stalked; 6 from below upper angle of cell, straight; 10 from the cell, closely approximate for some distance with the stalk of 8–9; male without costal fold. Hind wing with vein 2 from near lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 long stalked (for about two-thirds of their lengths); 7 and 8 closely approximate or contiguous for a short distance beyond cell; cell one-third the length of wing; on male with anal angle folded into a thickened pocket containing a hair tuft. Eighth abdominal segment of male with sternite developed as a narrow, sclerotized pocket.

Male genitalia similar to those of *Anadelosemia* except: Sacculus of harpe strongly sclerotized and for half its length developed as a free arm extending across harpe; cornutus well developed; a pair of hair tufts from intersegmental area adjacent to outer surfaces of the sacculi at their bases.

Female with signum a small patch of scobinations; ductus bursae considerably longer than bursa, tubular and strongly sclerotized for about one-fifth its length from genital opening, and for over half its remaining length sclerotized, slightly flattened and bent (sinuate); ductus seminalis from bursa near its junction with ductus bursae.

A distinct genus distinguished from the other genera with similar transtillae and venation by its stout, greatly produced sacculus and sclerotized ductus bursae. Contains one North American species.

142. Dasypyga alternosquamella Ragonot

FIGURES 12, 247, 719

Dasypyga alternosquamella Ragonot, N. Amer. Phycitidae, p. 5, 1887; Monograph, pt. 1, p. 206, 1893.—Hulst, Phycitidae of N. Amer., p. 138, 1890.—Heinrich, Proc. U. S. Nat. Mus., vol. 57, p. 84, 1920 (larva, pupa, life history).—Essig, Insects of western North America, p. 709, 1926.—McDunnough, Check list, No. 6145, 1939.

Dasypyga alternosquamella stictophorella Ragonot, N. Amer. Phycitidae, p. 5, 1887; Monograph, pt. 1, p. 206, 1893.

Forewing pale salmon pink; basal area black dusted with white, this black area (from the upper vein of cell to inner margin) extending almost to middle of wing; the black and white scaling coarse and more or less raised in base and along outer margin of antemedial line which cuts the black areas as a narrow, pale (ochraceous red), obliquely curved line; subterminal line absent, but along termen a rather broad border of coarse black and whitish scales; on most specimens a clear white line extends outward from lower angle of cell along vein 5 towards and sometimes to the dark terminal border and usually enclosing a detached patch of black scales forming a discal spot at end of cell; above this (below vein 6) a fine red line runs to near outer dark margin and thence angles sharply to apex; on well marked and fresh specimens traces of a similar red line on the lower fold in outer area. Hind wing very pale, shining, smoky fuscous with a faint dark line along termen. Alar expanse, 19–24 mm.

Genitalia as given for the genus; figured from reared examples; cornutus of male penis about half as long as aedeagus, somewhat flattened, twisted, and bluntly pointed; penis also minutely scobinate towards apex.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: *Razamofskya cryptopoda*.

DISTRIBUTION: UNITED STATES: *California*, Lake Arrowhead (May); *Arizona*, Mohave County (Sept.), Williams (June); *Colorado*, Glenwood Springs, Monument (May, June, Aug.); *Washington*, Bellingham (June), Seattle. CANADA: *British Columbia*, Kaslo (June).

A species that can be at once recognized by its peculiar markings and coloration. The white longitudinal line on forewing is of varying length on different specimens but is present on all that I have seen, though sometimes weak. Its presence is the characteristic feature given by Ragonot for his variety *stictophorella*. It is presumably absent from the type of *alternosquamella*. I suspect that the latter is an individual variant. Notes on the life history and descriptions of larva and pupa are given in my paper.

Genus 34: *Rampylla*

[Male: Venational division D. Transtilla present but variously modified. Harpe with apex of sacculus produced, strongly sclerotized and pointed. Hind wing triangulate; anal angle folded and produced; sex tufts and scalings on lower surface. Female: Venational division B. Bursa and ductus bursae simple; ductus seminalis from bursa. Hind wing with cell one-third the length of wing.]

34. Genus Rampylla Dyar

Rampylla Dyar, Ins. Insc. Menstr., vol. 7, p. 84, 1919. (Type of genus: *Rampylla orio* Dyar).

Tongue well developed. Antenna pubescent; shaft of male slightly thickened. Labial palpus upturned, not reaching vertex in male, a trifle longer in female; second segment slightly rough scaled beneath; third segment bluntly acuminate, about half the length of second (shorter on male than female). Maxillary palpus squamous, small. Forewing smooth except for a slight, projecting scale tuft from inner margin near base on male; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, well separated from 2; 4 and 5 approximate at base and for a very short distance beyond; 6 from below upper angle of cell, straight; 10 from the cell; male without costal fold. Hind wing with vein 2 from before the lower outer angle of cell; 3 from the angle and in the male almost as long as vein 2; in the female considerably shorter; 4 and 5 very shortly stalked or contiguous for a short distance from cell, connate with 3; 7 and 8 contiguous or closely approximate for a short distance from cell; cell in male one-fourth the length of wing, in female approximately one-third; discocellular vein curved; on male anal area (involving vein 1a) thickened and folded, forming a produced pocket, enclosing a long hair pencil; underside of male wing with roughened scale or hair tufts on some of the veins. Eighth abdominal segment of male with sternite developed as a narrow, sclerotized pocket. Metathorax of male with a stout pencil of spatulate scales from just above base of leg.

Male genitalia with transtilla present, variously modified (greatly reduced in *lophotalis*). Harpe with sacculus produced into a strong free hook at apex. A long free spine associated with anellus (as in the four preceding genera).

Female genitalia with bursa more or less finely scobinate and with some concentration of these fine scobinations but no definable signum; ductus bursae simple, short (shorter than bursa except in *lophotalis*). An invaginated, sclerotized, dorsal pocket at apical end of seventh abdominal segment or (in *lophotalis*) a sclerotized, granulate, dorsal pocket between ovipositor and eighth-segment collar.

The length of vein 3 in proportion to 2 of hind wing places the males in our venational division D and, in conjunction with their decidedly triangulate hind wings and the sex-scalings and tuftings on their under surfaces, readily distinguishes the genus. The females on hind wing venation fall into division B. The four species here recognized are all tropical American. They exhibit distinct specific differences in genitalia, color, and maculation. The transverse lines of forewing, in their rather close approximation and narrow black borders, are similar to those of *Coptarthria* to which *Rampylla* seems most nearly related.

143. Rampylla orio Dyar

FIGURES 45, 248

Rampylla orio Dyar, Ins. Insc. Menstr., vol. 7, p. 84, 1919.

Forewing violaceous gray; under magnification extreme base and a rather broad area along inner margin to beyond middle tinted with purplish red; antemedial line obsolete; subterminal line narrow, blackish, rather close to and nearly parallel with termen, vertical from costa to vein 8, inwardly angled between veins 8 and 5, thence oblique to inner margin, bordered inwardly by a faint ocherous shade and outwardly by a narrow ocherous line; discal dots at end of cell separate, ocherous; a thin dark line along terminal margin. Hind wing translucent white with a fuscous shade at apex and anal area yellow; veins not appreciably darkened; terminal margin darkened only towards apex; on underside of hind wing (male) a yellow hair tuft at origin of veins 4 and 5 from cell; a white fringe continuing outwardly on these veins and a similar white fringe on vein 7 above the yellow hair tuft. Alar expanse, 22 mm.

Male genitalia with lateral portion of uncus on each side produced into a broad, strongly sclerotized, projection armed at apex with a cluster of long, slender, strong, black spines. Transtilla produced caudally into a bilobed, scobinate process fusing with reduced arms of gnathos. Tegumen with a long, stout, curved, free arm arising from base at each ventrolateral angle. Harpe with produced sacculus developed as a long, stout, tapering hook, curved across face of harpe. Anellus heart-shaped; associated spine straight. Aedeagus partially sclerotized; penis with some faint, sclerotized wrinklings and a few microscopic scobinations, otherwise unarmed.

TYPE LOCALITY: Zacualpán, México (type in USNM).

FOOD PLANT: Unknown.

Known only from the male type.

144. Rampylla polydectella (Schaus)

FIGURE 732

Salebria polydectella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 250, 1913.

Rampylla polydectella (Schaus) Dyar, Ins. Insc. Menstr., vol. 7, 1919.

Forewing brownish gray with a faint purplish tint; a narrow border along inner margin between the transverse lines and a somewhat broader area along termen dusted with dull, grayish white; antemedial line narrow, faint, pale gray, indicated chiefly by its narrow, black outer-bordering line, the line well out towards middle of wing and slightly sinnous, nearly vertical; subterminal line equally thin and pale gray with a similar black inner border, angled outward slightly at middle and nearly parallel with termen; a black line along terminal margin; discal spots small, confluent, ocherous; faint indication

of black streaklets on veins 2, 3, and 4 just beyond cell. Hind wing glossy brown-gray; the veins faintly darkened and a fine dark line along termen. Alar expanse, 20 mm.

Female genitalia distinguished chiefly by the shape of eighth-segment collar and the invaginated, sclerotized pocket from seventh segment.

TYPE LOCALITY: Juan Viñas, Costa Rica (June; type in USNM).

FOOD PLANT: Unknown.

Known only from the female type.

145. Rampylla subcaudata (Dyar), new combination

FIGURES 249, 733

Cerocanthia subcaudata Dyar, Ins. Insc. Menstr., vol. 7, p. 42, 1919.

Forewing ocherous gray, the basal area to antemedial line purplish tinted; a similar purplish shade along outer border of the subterminal line; a large, somewhat darker (fuscous) patch surrounding the discal spot and extending from antemedial almost to subterminal line and from vein 2 to costa, darkest on veins 2 to 4; antemedial line faint, narrow, ocherous, indicated by a thin blackish brown line forming its outer border, the latter near middle of wing, slightly sinuate and nearly vertical; subterminal line with a narrow, blackish brown, inner border, slightly outbent or angled at middle; discal mark a narrow ocherous spot along discocellular vein; a narrow blackish line along terminal margin. Hind wing of male subpellucid white with a faint yellowish tint, decidedly ocherous along inner margin; of female with pale smoky tint; underside of male hind wing with a yellowish scale tuft covering the bases of veins 2 to 5. Alar expanse, 16 mm.

Male genitalia with margins of uncus evenly rounded, lacking any sclerotized projections. Harpe with apical projection of sacculus a slender, upcurved hook; a long, stout, hair and scale tuft from a pad adjacent to base of sacculus. Penis armed with a narrow, weakly sclerotized, bladelike cornutus. Female genitalia similar to those of *polydectella*, differing only in slight details in the shape of the eighth-segment collar and the sclerotized pocket from seventh segment (fig. 733a).

TYPE LOCALITY: Cayuga, Guatemala (May; type in USNM).

FOOD PLANT: Unknown.

In addition to the male type there is one other specimen in the National Collection from Quiriguá, Guatemala (May), a female with slightly darker hind wings whose genitalia are here figured. In addition there are before me two somewhat larger specimens (19 mm.), a male in the Janse Collection from San José, Costa Rica ("H. Schmidt, 8–11"), and a female from the British Museum labeled "S. E. Brazil, E. D. Jones, 1920–303." The genitalia of the latter are almost identical with those of *polydectella*. The genitalia of the male are like those of the type of *subcaudata*. The two specimens are identical in size, color, and markings. Except for size (which is not significant) they agree superficially with the type of *subcaudata*. Despite the differences in fore and hind wing coloration I suspect that *subcaudata* may not be specifically distinct from *polydectella*.

146. Rampylla lophotalis, new species

FIGURES 250, 731

Similar to *subcaudata* except: Ground color of forewing more yellowish; the dark areas, especially just preceding the antemedial line and in the dark area surrounding the discal spot, blackish; dark lines bordering the transverse lines blackish rather than blackish brown; antemedial line farther out on wing, extending from midcosta to inner margin beyond middle, narrowing the area between antemedial and subterminal lines. Hind wing with the scale tuft on underside blackish rather than yellow, the blackish shade extending to the costa and visible through the wing from above. Alar expanse, 17.5–18 mm.

Male genitalia with two pairs of strongly sclerotized, curved, lateral projections from triangulate uncus. Gnathos entirely absent (unless the lower pair of projecting arms from uncus can be interpreted as lateral arms of a gnathos, which is very doubtful, as there is no separation whatever between them and the uncus). Transtilla reduced to a shortened and slender, transverse, centrally bent band. Tegumen with a short, two-pronged projection from each ventrolateral angle. Anellus and harpe as in *subcaudata*. Female genitalia with a thick, sclerotized roll on the back of ovipositor; a broad, coarsely granulate pocket between ovipositor and collar; eighth-segment collar narrow; ductus bursae slightly longer than bursa.

TYPE LOCALITY: Jalapa, México (type in USNM, 61330).

FOOD PLANT: Unknown.

Described from male type and one female paratype from the type locality and one male paratype from Volcán Santa María, Guatemala (Nov., Schaus and Barnes, collectors). The male holotype bears a label in Hampson's handwriting "*Cerocanthia lophotalis* Hampson, ♂ type." As far as I know Hampson never published a description of the species.

Genus 35: *Fulrada*

[Venational division D. Hind wing with veins 4 and 5 contiguous or closely approximate beyond cell (not stalked); cell one-fourth the length of wing; discocellular vein incomplete. Eighth abdominal segment of male with broad ventral tuft. Transtilla vestigial. Harpe with apex of sacculus not produced.]

35. Fulrada, new genus

TYPE OF GENUS: *Dasypyga querna* Dyar.

Tongue well developed. Antenna weakly pubescent; shaft of male simple. Labial palpus upturned, slender, reaching to vertex; third segment slightly shorter than second, acuminate. Maxillary palpus squamous, small, appressed to face. Forewing smooth; 11 veins; vein 2

from before but near lower outer angle of cell; 3 from the angle, nearly equidistant from bases of 2 and 4; 4 and 5 closely approximate or connate and contiguous, for a short distance beyond base; 6 from below upper angle, straight or very slightly bent towards base; 10 from the cell, approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, long (its free length slightly shorter than 2); 4 and 5 contiguous and closely approximate for slightly less than half their distances from angle of cell (not stalked); 7 and 8 closely approximate beyond cell; cell one-fourth the length of wing; discocellular vein incomplete. Eighth abdominal segment of male with a broad, ventral hair or scale tuft and sternite developed as a narrow sclerotized pocket.

Male genitalia with uncus subtriangulate, its apical margin truncate. Gnathos represented only by its lateral arms, to which (at their junction) is attached the base of subanal plate. Transtilla represented only by a bilobed central vestige behind (above) the anellus. Harpe with sacculus not produced. Anellus semitubular (*querna*) or a broad slightly curved plate with a greatly reduced, associated, free spine (*carpasella*). Vinculum stout, as broad or nearly as broad as long; terminal margin broad and slightly rounded.

The foregoing description is incomplete, as females are unknown. The genus is apparently close to both *Anadelosemia* and *Rampylla*, differing from the former chiefly on hind wing venation and from the latter on secondary male characters.

147. Fulrada querna (Dyar), new combination

FIGURE 251

Dasypyga querna Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 331, 1914.

Forewing ocherous gray with a faint dusting of reddish scales on basal area and a very faint reddish tint over the area below the discal spots; a scattered blackish powdering in costal areas; antemedial line oblique, indicated only by a row of (4 or 5) well separated black dots forming its inner border and an outer black spot on costa; discal dots at end of cell, small, separated, black; a row of small but distinct black dots along termen. Hind wing translucent, smoky white, darker towards apex; veins faintly darkened and a narrow dark line along termen. Alar expanse, 11 mm.

Male genitalia with anellus semitubular, oblong, bottle shaped, more or less involved with the vestigial hairy-lobed transtilla. Harpe with a strongly haired, transverse, sclerotized ridge extending from near base of costa to lower outer angle of cucullus. Aedeagus short; penis armed with a very weak, flattened cornutus. Tuft on eighth abdominal segment a row of very fine, hairlike scales.

TYPE LOCALITY: La Chorrera, Panamá (May; type in USNM).

FOOD PLANT: Unknown.

Represented only by the male type.

148. Fulrada carpasella (Schaus), new combination

FIGURE 252

Piesmopoda carpasella Schaus, Zoologica, vol. 5, No. 2, p. 47, 1923.

Forewing white finely irrorated with black and brown; some pale tawny shading on the white antemedial line along the inner margin of its black outer border, also postmedially below vein 2 and on discocellular vein; base black, this shade expanding obliquely to inner margin and outwardly edged by some pale tawny scaling; antemedial line oblique, indicated chiefly by its black outer border, the latter strongly contrasted from costa to lower margin of cell, very faint from cell to inner margin, slightly outcurved from costa; subterminal line parallel with termen, slightly sinuous and with well-contrasted dark outer and inner borders, the inner one a narrow black line, the outer a black, angulate costal dash continued as a rather broad brownish shade to tornus; discal dots separated, small black dots on the outer angles of cell; a row of well-contrasted black dots along termen. Hind wing whitish towards base, shading to fuscous outwardly, a rather broad brownish shade along termen. Alar expanse, 12 mm.

Male genitalia with a vestigial free spine associated with the broad, large, slightly curved plate of anellus. Harpe with rather long, slender, erect clasper. Aedeagus rather long, slender, straight. Eighth abdominal tuft consisting of long, spatulate scales.

TYPE LOCALITY: Conway Bay, Indefatigable, Galápagos Islands (Apr.; type in USNM).

FOOD PLANT: Unknown.

Known only from the male type.

Genus 36: *Scorylus*

[Venational division B. Male antenna with shallow sinus in shaft at base. Hind wing with veins 4 and 5 stalked for about two-thirds; cell about one-third the length of wing; discocellular vein complete, curved. Eighth abdominal segment of male with broad, ventral scale tuft. Metathorax with stout scale and hair tuft near base of leg. Transtilla vestigial. Anellus without trace of associated free spine. Harpe with apex of sacculus produced.]

36. Scorylus, new genus

TYPE OF GENUS: *Scorylus cubensis*, new species.

Tongue well developed. Antenna finely pubescent; the male shaft with a shallow sinus at base (a slight excavation covering several basal segments); within the sinus and extending slightly past it a thin layer of modified appressed scales. Labial palpus upturned, reaching vertex, second segment slightly rough scaled; third segment slightly shorter than second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, nearer to 4 than to 2; 4 and 5 closely approximate for a short distance from cell; 6 from below upper angle of cell, slightly bent towards base; 8 and 9 stalked for slightly more than half their lengths; 10 from the cell,

approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before, but close to lower outer angle of cell; 3 from the angle, contiguous to the stalk of 4–5 for nearly half the length of the stalk, the free length of 3 decidedly shorter than vein 2; 4 and 5 stalked for about two-thirds their lengths; 7 and 8 closely approximate for some distance beyond cell; cell about one-third the length of wing; discocellular vein curved. Eighth abdominal segment with broad, stout ventral scale tuft and sternite developed as a narrow sclerotized pocket. A stout scale and hair tuft from metathorax at base of leg.

Male genitalia with uncus hoodlike. Gnathos well developed, its apical projection a long, tapering spike. Transtilla represented by a modified central vestige. Harpe with sacculus produced at apex into a sclerotized hook; a strong hair tuft from lobe near base of sacculus; anellus a triangulate plate with short, blunt, broad lateral lobes; aedeagus moderately stout, slightly swollen and bent towards base; penis armed with an elongate, narrow cluster of short, thin spines. Vinculum stout, slightly tapering and somewhat longer than basal width.

Female genitalia without signum but with a concentration of fine granulations in bursa near its junction with ductus bursae; ductus bursae and its genital opening simple; ductus seminalis from ductus bursae.

This genus shows affinities to both *Fulrada* and *Anadelosemia* but is distinct from both. Its venation is similar to that of *Anadelosemia*, to which it appears to be most closely allied.

149. Scorylus cubensis, new species

FIGURES 253, 725

Forewing white with blackish fuscous and reddish markings; basal area strongly irrorated with red and some scattered reddish scaling in the median white area; antemedial line indicated only by a blackish outer line from costa, expanding into a black spot in cell, continued thence as a very thin blackish fuscous line to inner margin, bordered outwardly (from cell to inner margin) by an olivaceous patch; a faint triangulate olivaceous-fuscous shade over outer area from just beyond middle of inner margin to subterminal line at costa; a small black spot on midcosta; subterminal line sinuate, bordered inwardly by a strong, rather broad, blackish line and outwardly by a fainter reddish line continued from a strong black spot on costa; discal dots black, more or less confluent along discocellular vein; below them on the olivaceous fuscous shade a patch of reddish scaling; a row of black dots along termen. Hind wing translucent white; veins very faintly darkened near outer margin; a narrow dark shade along termen. Alar expanse, 12–13 mm.

Male genitalia with outer margin of uncus evenly rounded. Transtilla fragment in the shape of two short, oblong, pointed plates weakly joined at their bases. Apical projection of sacculus sharply upturned, moderately long, thornlike. Terminal margin of vinculum truncate. Female genitalia with bursa large, as long as ductus bursae.

TYPE LOCALITY: Santiago Province, Cuba (type in USNM, 61331).

FOOD PLANT: Unknown.

Described from male type and one male and one female paratypes from the type locality (June, Dec., Schaus and Barnes, collectors).

Genera 37–39: *Davara* to *Piesmopoda*

[Venational division D. Forewing with veins 4 and 5 approximate for a short distance from cell. Hind wing with cell less than one-third the length of wing. Male genitalia with uncus bifid (divided to base); harpe with strong, hooked clasper from near apex of sacculus.]

37. Genus Davara Walker

Davara Walker, List, pt. 19, p. 1020, 1859.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 530, 1901. (Type of genus: *Davara azonaxsalis* Walker.)

Homalopalpia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 332, 1914. (Type of genus: *Homalopalpia dalera* Dyar. New synonymy.)

Eucardinia Dyar, Ins. Insc. Menstr., vol. 6, p. 138, 1918; vol. 7, p. 50, 1919. (Type of genus: *Ulophora caricae* Dyar.)

Tongue well developed. Antenna of male (except in *rufulella*) with basal segment enlarged, deeply notched and with a brush of short fine bristles in the notch (fig. 254d); male shaft simple or flattened and dilated towards base, pubescent. Labial palpus upcurved; on male (except in *rufulella*) reaching well above vertex; broadly scaled; third segment considerably shorter than second. Maxillary palpus squamous. Forewing more or less rough scaled at base on male; 11 veins; vein 2 from before, but near lower outer angle of cell; 3 from the angle, nearer to 4 at base than to 2; 4 and 5 approximate for a short distance from cell; 6 from below upper angle of cell, straight or very slightly curved towards base; 8 and 9 long stalked; 10 from the cell, approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before the angle of the cell; 3 from the angle, long (its free length slightly shorter than 2); 4 and 5 anastomosed for slightly less than half their lengths beyond angle of cell; 7 and 8 contiguous or shortly anastomosed beyond cell; cell less than one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with sternite developed as a narrow, sclerotized pocket.

Male genitalia with uncus bifid (divided to base). Gnathos weak, a thin narrow band. Transtilla absent (except in *interjecta*). Harpe with strong, hooked clasper from near apex of sacculus; a long hair tuft from lobe near base of sacculus. Anellus a narrow curved plate with long, lateral arms; a stout, free spine associated with anellus. Penis armed with a thin, narrow, curved, flattened, bladelike cornutus.

Female genitalia with two signa, developed as small, granulate depressions; ductus bursae shorter than bursa, with paired cuplike plates behind genital opening or with genital opening simple (*interjecta*); ductus seminalis

from bursa near its junction with ductus bursae. Collar of eighth segment complete.

Davara and the two following genera (*Sarasota* and *Piesmopoda*) form a compact group distinguished from all other American phycitid genera by the peculiar bifid development of their unci. *Davara* was described by Walker on the basis of a single female which he mistook for a male; it was referred as a synonym of the Old World *Phycita* by Hampson (1903). Dyar did not recognize it. His *Homalopalpia* was erected on male antennal and palpal structures which normally should be of generic value, but in this particular instance do not seem to hold as separating *Davara* from *Piesmopoda*. They fall down in the case of *rufulella*, which on genitalic characters of both male and female must be referred to *Davara*. In my opinion *Davara* and *Piesmopoda* should be retained as separate genera. Their species differ in habitus as well as in genitalic structure. In *Davara* the male transtilla is absent and the female bursa always has two signa. In *Piesmopoda* the transtilla is present and developed as two long, slender, curved free arms and the female bursa has a single signum or none. Unfortunately an anomalous species (*interjecta*) seems to upset the division. It has the female and all the secondary male characters of typical *Davara* but male genitalia of the *Piesmopoda* type. However, there are some minor differences in its male and female genitalia which may eventually allow its separation from both *Davara* and *Piesmopoda* under a separate generic designation. For the present I am referring it tentatively to *Davara*. Its distinctive characters are discussed more fully under the specific description.

150. Davara caricae (Dyar), new combination

FIGURES 46, 254, 735

Ulophora caricae Dyar, Proc. Ent. Soc. Washington, vol. 14, p. 218, 1913.

Homalopalpia dalera Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 332, 1914. (New synonymy.)

Eucardinia caricae (Dyar) Dyar, Ins. Insc. Menstr., vol. 6, p. 139, 1918; Ins. Insc. Menstr., vol. 7, p. 50, 1919.—McDunnough, Check list, No. 6119, 1939.

Antenna of male with the brush in notch of basal segment black; the basal segment itself a very pale buff; basal segments of shaft decidedly flattened and broadened and with black serrations on upper edge. Labial palpus of male very broadly scaled, the second segment reaching well above vertex; less broadly scaled and somewhat shorter on female; reddish brown with a peppering of pale buff scaling on outer side and on male more or less shaded with blackish brown on inner side. Forewing tan-gray shaded with reddish brown; basal area (on male) blackish brown and rough scaled; a whitish or pale buff shade precedes the antemedial line and a similar transverse shade crosses the disk and includes the discocellular mark; the space between this transverse pale shade and antemedial line suffused with reddish brown (on some female examples almost purplish fuscous); a similar reddish brown suffusion over outer area; antemedial line oblique, slightly angled between cell and inner margin, faint, ocherous, bordered inwardly and outwardly by narrow dark lines; subterminal line indistinct except for its brown inner and outer borders, sinuate; discal spots fused into a narrow lunulate line on the discocellular vein. Hind wing soiled white, with a narrow fuscous shade along termen. Alar expanse, 14–18 mm.

Male genitalia with a cluster of fine, long, hairlike spines surrounding the strong, free, forked spine associated with anellus; lateral arms of anellus considerably shorter than in other species of the genus. Female genitalia with a pair of strong ventrolateral ridges on the invaginated portion of the eighth-segment collar.

TYPE LOCALITIES: Miami, Fla. (*caricae*, in USNM); LaChorrera, Panamá (*dalera*, in USNM).

FOOD PLANT: *Carica papayae* (larvae in the fruit).

DISTRIBUTION: UNITED STATES: *Florida*, Florida City (Apr., May), Fort Pierce (May), Miami (Apr., Dec.), Royal Palm State Park. PUERTO RICO: Bayamón (June, Dec.), El Yunque (Apr.), Jajoma Alta (June), Lares (June, Sept., Nov.). CUBA: Baracoa (July, Aug.) Santiago de las Vegas (Feb., Már.), Santiago Province (Jan., June, Oct.). HAITI: Damien (Aug.). DOMINICAN REPUBLIC: San Francisco Mts. (Aug., Sept.). TRINIDAD: Mt. Harris. GUATEMALA: Cayuga (Apr., May), Chejel (June, Aug.), Purulhá (June, July). COSTA RICA: Guapiles (May), Juan Viñas (Feb., May, June), Silio (May). ECUADOR: Quevedo ("Nov.-Dec.").

The types of both *caricae* and *dalera* are males. Dyar (1919) recognized the generic synonymy of *Eucardinia* and *Homalopalpia* but never admitted the specific identity of their types, although he had every reason to suspect it. His designation of new Cuban types for *caricae* in 1918 is obviously invalid, for he had previously (1913) designated Florida types for what he admitted was the same species under the same name. I believe he was correct in his surmise that *caricae* is the same as *columnella* Zeller, but as I have never examined any Colombian examples of any *Davara* species I hesitate to propose the synonymy.

151. Davara columnella (Zeller), new combination

FIGURE 736

Myelois columnella Zeller, Horae Soc. Ent. Rossicae, vol. 16, pp. 209, 210, 1881.

Piesmopoda columnella (Zeller) Ragonot, Monograph, pt. 1, p. 161, 1893.

Homalopalpia columnella (Zeller) Dyar, Ins. Insc. Menstr., vol. 7, p. 49, 1919.

I have seen no specimens from the type locality but have before me a photograph of the female type which agrees with the females of a series from Costa Rica identified by Schaus as *columnella* and correctly referred by Dyar to his *dalera*, and I have little doubt that the names *columnella* and *caricae* (=*dalera*) stand for the same species. The female genitalia of Zeller's type (here figured) show some trifling differences in the size of the plates behind genital opening and in the eighth-segment collar from those of typical *caricae;* but these

are probably only individual differences. Variations as great are exhibited among reared examples of *caricae* from different localities. Alar expanse, 15 mm.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown (presumably papaya).

152. Davara nerthella (Schaus), new combination

FIGURE 738

Piesmopoda nerthella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 247, 1913.

Homalopalpia euthales Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 403, 1914.

Homalopalpia nerthella (Schaus) Dyar, Ins. Insc. Menstr., vol. 7, p. 49, 1919.

Similar to *caricae* except averaging somewhat larger; brush in notch of basal segment of male antenna ocherous, the segment itself smaller; the subbasal pale shade before the antemedial line more extended on the male and much more so on the female, reducing considerably the blackish brown shading of the basal area and forming with the slightly paler antemedial line a broad pale pinkish ocherous band; antemedial line straight, not angled below cell, its inner and outer bordering lines very faint and narrow, reddish brown; discal dots separate (never fused) and often only the lower one distinguished; on females more or less of an ocherous tint over the brownish median shade following the antemedial line, especially towards costa. Alar expanse, 19–22 mm.

Male genitalia like that of the following species (*paranensis*) except tuft from near base of sacculus pale yellow. Eighth-segment collar without ridges on the invaginated portion; narrower on venter than in other species; posterior ventral margin without notch or but slightly notched. The extent of this notching is individually variable in all the species and is not a reliable character for specific separation.

TYPE LOCALITIES: Juan Viñas, Costa Rica (*nerthella*, in USNM); Orizaba, México (*euthales*; in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Jalapa, Orizaba. GUATEMALA: Volcán Santa María (June, July). COSTA RICA: Juan Viñas (Jan.); other Costa Rican females without further locality designation in Janse Collection.

Doubtfully distinct from *paranensis*. The chief differences between the males are in coloration and between the females in the width and notching of the eighth-segment collar. There is the same amount of individual variation in wing color and maculation as in other species, some specimens generally paler than others, some with the subterminal line distinct, others with it almost obsolete.

Dyar (1919) recognized the synonymy of his *euthales* with *nerthella*. The type of the former is a male, of the latter a female.

153. Davara paranensis (Dyar), new combination

FIGURE 255

Homalopalpia paranensis Dyar, Ins. Insc. Menstr., vol. 7, p. 49, 1919.

Similar to *nerthella* except brush in notch of basal segment of male antenna brownish; subbasal pale shade before antemedial line of forewing much narrower, restricted (especially on females) by a greater extension of the black basal scaling; median area along costa rather strongly tinted with ocherous drab or reddish ocherous (on the type and one female). Alar expanse, 18–19 mm.

Male genitalia with no fine spine cluster surrounding the free, forked spine associated with anellus. Tuft from near base of sacculus black. Female genitalia similar to those of *azonaxsalis*.

TYPE LOCALITY: Castro, Paraná, Brazil (type in USNM).

FOOD PLANT: Unknown.

At first glance Dyar's type seems quite distinct from males of *nerthella*, its palpi and antennae being much darker and the pale transverse antemedial shade less contrasted against the ground color. However the specimen is stained and none of the other examples of the species before me is in very good condition. Besides the type, I have before me a female from the type locality, another female from Santa Catarina, Brazil, and a male from the British Museum collection from São Paulo, Brazil, that is without abdomen but a good match for Dyar's type. Both it and the type had been originally identified by Hampson as *columnella* Zeller.

I suspect that when additional South American material is available *paranensis* will prove to be nothing more than a variety of *nerthella*, and that eventually both *nerthella* and *paranensis* will fall to *azonaxsalis* of Walker.

154. Davara azonaxsalis Walker

FIGURE 737

Davara azonaxsalis Walker, List, pt. 19, p. 1020, 1859.

Phycita azonaxsalis (Walker) Hampson, *in* Ragonot, Monograph, pt. 2, p. 531, 1901.

I have seen no specimens of *Davara* from the type locality and none from anywhere of the size of Walker's type (30 mm.). A photograph of the type and its genitalia supplied by Tams are before me. The antemedial line of forewing shows an angulation between cell and inner margin similar to that on typical *caricae*. The subterminal line is rather distinctly marked and the basal area much like that of females of *nerthella*, but not so strongly contrasted. None of these features, however, is enough for specific separation.

The female genitalia show an appreciably wider eighth-segment collar than that of *nerthella* and a distinct notch in its ventroposterior margins. The much smaller female of *paranensis* from Castro has similar but somewhat smaller genitalia.

TYPE LOCALITY: Rio de Janiero, Brazil (type in Oxford Univ. Mus.).

FOOD PLANT: Unknown.

155. Davara (?) interjecta, new species

FIGURES 256, 734

Male antenna with basal segment enlarged and notched as in *caricae*, but the usual brush of fine bristles

in the notch here replaced by smooth, appressed, silvery and ocherous scales; first segment of shaft broadly flattened, the shaft shortly ciliate (the cilia about as long as width of shaft). Labial palpus broadly scaled, the second segment reaching well above vertex, deep red-brown to blackish brown on outer side, the third segment black scaled, at least on inner surface. Thorax deep brown mixed with blackish and buff scaling. Forewing reddish brown more or less shaded with black in median area, the raised scaling at base mixed black and dark red-brown; antemedial line obsolete or very faintly indicated on the paler specimens, when distinguishable oblique, straight, narrow, pale buff; lower discal spot at end of cell usually distinct, blackish; subterminal line obscure or obsolete; an interrupted row of partially confluent black dots along termen. Hind wing translucent, white, the veins more or less darkened, a narrow fuscous shade along termen.

Female generally paler than the male. Palpi, head, thorax, and forewing light reddish brown with a faint sprinkling of whitish scales, especially bordering termen; ground color darkened in median area along costa; usually a broad, olivaceous shade along inner margin at base; no defined transverse markings.

Alar expanse, 17–19 mm.

Male genitalia of the *Piesmopoda* type with incomplete transtilla developed as a pair of opposed, long, slender, curved, strongly sclerotized arms, their apices curved towards each other; anellus a narrow, broadly V-shaped band, with long, curved, slender, haired lateral arms, their apices bulbed. Female genitalia with genital opening simple, no sclerotized plates behind the opening.

TYPE LOCALITY: El Yunque, Luquillo Mts., Puerto Rico (type in Cornell Univ.; paratypes in Cornell and USNM, 61332).

FOOD PLANT: Unknown.

Described from male type and two male and five female paratypes from the type locality (1,500–2,000 ft., Apr. 22, 23, and Mar. 29, 1930, Cornell lot 795, sub. 38, 40, and 9, W. T. M. Forbes, collector) and two male paratypes from San Francisco Mts., Santo Domingo (Sept. 1905, A. Busck, collector). The males, with the exception of the holotype and one paratype, are badly rubbed. The females are in better condition.

This species is referred with reservations to *Davara*. In its structural characters it straddles both *Davara* and *Piesmopoda* and fits comfortably in neither genus. Its female genitalia are those of *Davara* except that the usual sclerotized plates behind genital opening are lacking. Its male genitalia are those of *Piesmopoda* except that the apices of the elements of transtilla point toward (rather than away from) each other; and the apices of the lateral arms of anellus are swollen (bulbed). In all known species of *Piesmopoda* the apices of the elements of transtilla point away from each other and the apices of the lateral arms of transtilla are pointed. The male antenna of *interjecta* also is abnormal for *Davara* in that there is no brush of fine spines in the notch of the basal segment. In my opinion these differences could permit generic separation of *interjecta* from both *Davara* and *Piesmopoda;* but they are so slight that, without further evidence from biology or the early stages, a new generic designation does not seem justified at this time.

156. Davara rufulella (Ragonot), new combination

FIGURES 257, 739

Piesmopoda rufulella Ragonot, Bull. Soc. Ent. France, 1888, p. cxxxix; Monograph, pt. 1, p. 165, 1893.

Male antenna simple. Labial palpus upturned, not broadly scaled, cylindrical; reaching to slightly above vertex on male, nearly to vertex on female; terminal segment acuminate. Forewing pale red-brown; the basal area a trifle paler with some faint olivaceous shading in inner margin; antemedial line oblique, straight, obscure, indicated chiefly by its outer dark margin, which begins as a blackish smudge on costa and continues to inner margin as a slight darkening of the ground color; more or less blackish dusting in the cell beyond antemedial line; on paler specimens some peppering of white scales in median and outer areas, especially on midcosta; subterminal line obsolete or very faintly indicated; discal spots obscure, confluent along discocellular vein. Hind wing translucent white; the veins darkened; a faint, narrow fuscous shade along termen. Alar expanse, 13–16 mm.

Male genitalia without cluster of fine spines surrounding free spine associated with anellus, the free spine itself short, stout, broadly forked. Lateral arms of anellus straight. Harpe with apex of cucullus pointed; clasper long, stout, strongly curved. Female genitalia with two pairs of contiguous sclerotized plates behind genital opening; ductus bursae sclerotized at genital opening.

TYPE LOCALITY: Puerto Rico (type in Zool. Mus. Univ. Berlin).

FOOD PLANT: Unknown.

DISTRIBUTION: PUERTO RICO: Bayamón (Apr., Sept.), Comerio (Nov.), Jajoma Alto (June), Lares (Dec.), La Sardinera (Dorado, June), Palmas Abajas (June), San Germán (Apr.).

I have seen no specimens from any but Puerto Rican localities. As mentioned in the discussion of the genus, *rufulella* is aberrant in that it lacks the modified basal segment of male antenna and the characteristic broad scaling of the male labial palpi. However, the genitalia, both male and female, are characteristic of the genus, showing only specific differences from other species of *Davara*.

38. Genus Sarasota Hulst

Sarasota Hulst, Journ. New York Ent. Soc., vol. 8, p. 222, 1900. (Type of genus: *Sarasota plumigerella* Hulst).

Cuba Dyar, Ins. Insc. Menstr., vol. 7, p. 50, 1919. (Type of genus: *Cuba furculella* Dyar. New synonymy.)

Tongue well developed. Antenna simple in both sexes, shaft weakly pubescent. Labial palpus upturned, reaching to slightly above vertex; third segment slightly over half the length of second, acuminate. Maxillary palpus small, squamous. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle

of cell; 3 from the angle, approximately equidistant at base from 2 and 4, 4 and 5 approximate for a short distance from cell;.6 from upper angle of cell, slightly bent towards base, connate with the stalk of 8–9; 10 from the cell, well separated from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, nearly as long as 2, connate with 4; all veins long; 4 and 5 contiguous or weakly anastomosed for about half their lengths from cell; 7 and 8 weakly anastomosed beyond cell, their free elements long; cell slightly less than one-fourth the length of wing; discocellular vein curved for a short distance from lower angle, thence vertical. Eighth abdominal segment of male with sternite developed as a narrow, sclerotized pocket.

Male genitalia similar to those of typical *Davara* except: Free spine associated with anellus entirely lacking; harpe with two-pronged clasper and apical end of sacculus produced; penis with a pair of curved, flattened, bladelike cornuti. Female genitalia with ductus bursae sclerotized for a short distance from genitalia opening; a single, angulate, projecting plate behind genital opening; otherwise as in *Davara*.

157. Sarasota plumigerella Hulst

FIGURE 258

Sarasota plumigerella Hulst, Journ. New York Ent. Soc., vol. 8, p. 222, 1900.—Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, p. 128, 1917.—McDunnough, Check list, No. 6120, 1939.

Basal segment of antenna red spotted with black. Prothorax wine red; mesothorax and metathorax black. Forewing black at base followed by a whitish ocherous shade; antemedial line oblique, straight, ocherous white, preceded by more blackish scaling, followed (especially on costa) by a strong black shade; remainder of wing blackish fuscous stained with wine red, the costa on outer half distinctly reddish; subterminal line very faint, sinuate; discal spots obscure or absent; terminal dots more or less confluent, blackish; cilia red. Hind wing dull, translucent white; a dark shade at apex and a narrow dark line along termen. Midtibia with a strong yellow hair tuft. Alar expanse, 11–14 mm.

Male genitalia with terminal margin of vinculum not produced at the edges but exhibiting no other specific characters. Female genitalia slightly smaller but otherwise not distinct from those of *furculella*.

TYPE LOCALITY: Palm Beach, Fla. (type in USNM).

FOOD PLANTS: *Laguncularia racemosa*, *Coccolobis uvifera* (larvae feeding under a light silk webbing on the leaves and flower buds).

DISTRIBUTION: *Florida*, Palm Beach, Ramrod Key (Apr.), Stock Isl. (Apr.), Sugar Loaf Key (Apr.).

158. Sarasota furculella (Dyar), new combination

FIGURES 48, 259, 740

Cuba furculella Dyar, Ins. Insc. Menstr., vol. 7, p. 50, 1919.

Larger and paler than *plumigerella*. Thorax and forewing violaceous gray more or less tinted with reddish; the blackish shade of *plumigerella* replaced in *furculella* by red; antemedial line dull white with a strong ocherous tint, especially towards inner margin, its dark outer border red; some white dusting in median costal area; discal dots more distinct, separate, red or fuscous; subterminal line more distinct, narrow, sinuate, dull white; terminal dots few, but distinct and separated, blackish. Hind wings white with a faint smoky tint; the veins very slightly darkened. Midtibial hair tuft as in *plumigerella*. Alar expanse, 14–16 mm.

Male genitalia with terminal margin of vinculum slightly produced at the sides; otherwise as in *plumigerella*. Female genitalia a trifle larger than those of *plumigerella* but showing no specific characters.

TYPE LOCALITY: Santiago, Cuba (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: CUBA: Baracoa, Matanzas, Santiago (June). PUERTO RICO: Dorado (May), Puerto Real (Vieques Isl., Apr.). DOMINICA (Dec.). VIRGIN ISLANDS: Kingshill (St. Croix, June, Dec.).

Very close to *plumigerella* but apparently a distinct species, separable chiefly on color.

159. Sarasota ptyonopoda (Hampson), new combination

Phycita ptyonopoda Hampson, Ann. Mag. Nat. Hist., ser. 6, vol. 16, p. 347, 1895.

Hyalospila ptyonopoda (Hampson) Hampson, *in* Ragonot, Monograph, pt. 2, p. 530, pl. 56, fig. 9, 1901.

I have seen no examples of this species. From the description and the figure in the Ragonot Monograph the coloration and markings must be similar to those of *furculella*. According to Hampson the male has a strong, long tuft of scales from the hind femur. Clarke has reexamined the type and tells me that there is a large expanded dorsal tuft from the base of the hind femur and that there is no tuft on the midtibia. These differences in tufting distinguish the species easily from either *plumigerella* or *furculella*. A fine photograph of the male genitalia, taken by Clarke, is before me. They are like those of *furculella* Dyar. Unfortunately the abdomen had been glued on the type so there will remain some question of placement for the species until another male from the type locality and with tufted hind femora is recorded. Alar expanse, 16 mm.

TYPE LOCALITY: St. Vincent, Windward Islands, British West Indies (type in BM).

FOOD PLANT: Unknown.

In the U. S. National Museum is a rubbed male from Jalapa, México, labeled in Hampson's handwriting "*Phycita ptyonopoda* Hampson," but it cannot be that species. What remain of the legs show a yellow hair tuft on midtibia and no trace of tuft on the hind femur (the hind tibiae are missing). This specimen is an *Atheloca* sp., close to *bondari*.

39. Genus Piesmopoda Zeller

Piesmopoda Zeller, Isis von Oken, 1848, p. 863.—Hulst, Phycitidae of N. Amer., p. 132, 1890.—Ragonot, Monograph, pt. 1, p. 158, 1893. (Type of genus: *Piesmopoda rubicundella* Zeller.)

Discopalpia Ragonot, Monograph, pt. 1, p. 167, 1893. (Type of genus: *Myelois flavicans* Zeller. New synonymy.)
Amphycitopsis Dyar, Ins. Insc. Menstr., vol. 7, p. 45, 1919. (Type of genus: *Amphycitopsis isabella* Dyar. New synonymy.)

Tongue well developed. Antenna pubescent or shortly ciliate (the cilia no longer than width of shaft); on male, shaft simple, notched at base or with curved excavation (a long sinus) towards base; basal segment of male sometimes swollen but not notched or otherwise modified. Labial palpus upturned, of varying length, not reaching vertex (*isabella, fratella*) or extending to or above vertex; third segment acuminate or (*ragonoti*) broadly dilated with scales. Maxillary palpus minute (folded over tongue), filiform or subsquamous (third segment slightly dilated with scales). Forewing smooth; venation as in *Sarasota* except vein 3 normally considerably closer to 4 at base than to 2; male without costal fold. Hind wing as in *Sarasota*. Eighth abdominal segment with sternite developed as a narrow, sclerotized pocket.

Male genitalia with uncus bifid. Gnathos incomplete, represented by its broad lateral arms, separated at their apices, between which lies a rather well sclerotized subanal plate. Transtilla well developed but incomplete, consisting of a pair of long, very slender, curved arms whose sharply pointed apices are directed away from each other. Harpe with a strong, hooked clasper from near apex of sacculus; a strong hair tuft from lobe near base of sacculus. Anellus a curved plate (U- or V-shaped) with long, slender, haired and bluntly pointed lateral arms. Penis armed with a narrow, flattened and more or less curved, bladelike cornutus; sometimes with two such cornuti.

Female genitalia with single signum or none, signum when present developed as a small granulate depression; ductus bursae with genital opening simple or more or less sclerotized, but without the paired cuplike plates found in *Davara;* ductus seminalis from bursa near its junction with ductus bursae. Eighth-segment collar more or less invaginate (except in *apocerastes* and *montella*).

A distinct genus defined and easily recognized by its male and female genitalia. As used by Ragonot and subsequent authors the name covered a composite of disparate elements. The antennal and palpal characters upon which *Piesmopoda, Discopalpia,* and *Amphycitopsis* were distinguished are in this instance of no more than specific significance. They are discussed more fully under their type species.

The genus is apparently limited to tropical America. Nothing is known of the life history or host association of any of the species.

160. Piesmopoda rubicundella Zeller

FIGURE 260

Piesmopoda rubicundella Zeller, Isis von Oken, 1848, p. 864.—Ragonot, Monograph, pt. 1, p. 160, 1893.

Antenna of male with basal segment swollen, triangulate; shaft notched at base. Labial palpus slender, third segment acuminate, reaching well above vertex.

Forewing pale (olivaceous ocherous) at base and for some distance along inner margin; the median costal area broadly white, heavily dusted with red scaling; more or less of this red dusting also on costal half at base; antemedial line not distinguishable; subterminal line distinct, straight, oblique, pale reddish or ocherous gray bordered by dark purplish fuscous lines; the entire outer fourth of wing more or less suffused with purplish fuscous; discal dots more or less distinct, separated, red or reddish fuscous. Hind wing pale smoky fuscous, lighter towards base and semitransparent; veins distinctly darkened. Alar expanse, 13 mm.

Male genitalia having harpe with cucullus narrowly elongate, evenly tapering. Anellus a broadly sclerotized, V-shaped band.

TYPE LOCALITY: Brazil (type in Mus. Univ. Berlin).

FOOD PLANT: Unknown.

I have examined the male type but have seen no other examples from Brazil. The type is not distinguishable from males of the following species (*xanthomera*) except for minor differences in male genitalia, which may or may not be significant.

161. Piesmopoda xanthomera Dyar

FIGURES 266, 745

Piesmopoda xanthomera Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 332, 1914.
Piesmopoda xanthozona Dyar, Ins. Insc. Menstr., vol. 7, p. 45, 1919 (new synonymy).

With the same male characters as *rubicundella* and superficially not distinguishable from it. I suspect that *xanthomera* is nothing more than a synonym or variety of *rubicundella*, but this cannot be proven until females of the latter from Brazil are available. Dyar's two names apply only to the sexes (*xanthomera* to the females and *xanthozona* to the males). Alar expanse, 13–17 mm.

Male genitalia, figured from type of *xanthozona*, differ from those of *rubicundella* chiefly in the stronger tufting from the base of the harpe, a character of very doubtful specific value. Female genitalia, figured from type of *xanthomera* and checked with those of females from all localities here cited, distinguished chiefly by the shape of the eighth-segment collar and its sclerotized invaginate portion and the pair of corrugate patches on the ventral surface of the latter. Bursa with signum. Genital opening simple.

TYPE LOCALITIES: La Chorrera, Panamá (*xanthomera*, in USNM); St. Jean Maroni, French Guiana (*xanthozona*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: GUATEMALA: Cayuga (Apr., May). COSTA RICA: San José (July). PANAMÁ: La Chorrera (May), Porto Bello (Oct.). FRENCH GUIANA: Cayenne, St. Jean Maroni.

162. Piesmopoda trichomata (Zeller)

FIGURE 744

Myelois trichomata Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 194, 1881.

Ragonot (Monograph, pt. 1, p. 160) makes this a synonym of *rubicundella*, considering it merely the female of the latter. This is a very dubious placement. The Zeller type material in the British Museum consists of two female cotypes (photographs of which are before me) alike in all details and similar to *rubicundella* except that the antemedial line is indicated by broken remnants of its outer border, a dark dash from costa, and a more or less diffused dark spot on lower margin of cell. The lower half of wing is somewhat suffused into dark shading and contrasted against the whitish midcostal area, as in *rubicundella*. Zeller's figure is misleading in that it shows much of the wing bright yellow, as in *floricans*. Alar expanse, 13 mm.

The genitalia of the female cotype here figured, according to Tams and Clarke, agree in all details with those of the other cotype. The latter should be considered the holotype, as it is the better preserved specimen. Bursa with signum. Genital opening simple. The narrow eighth-segment collar easily identifies the species. It is unlike any other in the genus that I have seen.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

Known only from the type specimens.

163. Piesmopoda flavicans (Zeller)

FIGURES 262, 746

Myelois flavicans Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 193, 1881.

Discopalpia flavicans (Zeller) Ragonot, Monograph, pt. 1, p. 167, 1893 (in part, ♀).

Piesmopoda flavicans (Zeller) Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 333, 1914.

Piesmopoda fratella Dyar, Ins. Insc. Menstr., vol. 7, p. 45, 1919 (new synonymy).

Antenna of male simple. Labial palpus slender; on male not reaching vertex; on female extending slightly above vertex (as in *isabella*).

Forewing bright yellow; outer third purple dusted with blackish towards apex; the yellow ground color extended further outward on costa and inner margin than at middle; antemedial line obsolete; subterminal line faint, narrow, whitish, straight, oblique and close to outer margin. Hind wing whitish, stained with smoky fuscous towards apex and on the outer parts of the veins. Alar expanse, 14–15 mm.

Male genitalia like those of *xanthopolys* except that elements of transtilla are stouter, lateral arms of anellus are bent sharply away from each other, and terminal margin of vinculum is acutely rounded (rather than straight). Female genitalia similar to those of *xanthopolys* except for slight differences in the structure of eighth-segment collar.

TYPE LOCALITIES: Honda, Colombia (*flavicans*, in BM); St. Jean Maroni, French Guiana (*fratella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: FRENCH GUIANA: Cayenne, St. Jean Maroni (Mar.). COLOMBIA: Honda.

Specimens of five different species in the U. S. National Collection had been identified by Hampson, Dyar, and Schaus as *flavicans*. Among them was one female from French Guiana which Hampson identified (correctly) as *flavicans* and which Dyar later included in his series of *fratella*. Clarke and Tams have checked our genitalic figures of the several *Piesmopoda* species with the female type of *flavicans* in the British Museum and inform me that the genitalia of *fratella* agree in all details with those of *flavicans*. Ragonot also misidentified Zeller's species (at least as far as males are concerned) and on the strength of their peculiar male palpi erected the genus *Discopalpia*, with *flavicans* as type. Dyar (1914) noted the misidentification and renamed the males of *flavicans* Ragonot (not Zeller) as *Discopalpia ragonoti*. Later evidence from genitalia justifies the new specific name; but nomenclatorily the type of *Discopalpia* must remain *flavicans* Zeller, and Dyar's citation of a new type (*flavicans* Ragonot=*ragonoti* Dyar) is not justified, despite Ragonot's misidentification and the characters derived therefrom for his genus. Fortunately these characters (as far as *Piesmopoda* are concerned) are of specific significance only, so *Discopalpia* would fall, however we interpreted its type; but I for one hold that when a specific name is cited as type of a new genus, that species remains the type of the genus regardless of what specimens were before the author of the genus or how he described his generic concept. The decision is one of nomenclature and not of zoology.

164. Piesmopoda ragonoti (Dyar), new combination

FIGURES 265, 747

Discopalpia ragonoti Dyar, Ins. Insc. Menstr., vol. 7, p. 44, 1919.

Discopalpia flavicans Ragonot (in part, ♂; not Zeller), Monograph, pt. 1, p. 167, 1893.

Antenna of male simple; basal segment cylindrical; shaft without notch or other modification. Labial palpus very long, the second segment reaching well above vertex in both sexes; on male the third segment broadly expanded with long scales, fan shaped; a strong admixture of black scaling on outer sides of the palpi of both sexes.

Forewing as in *flavicans*. Alar expanse, 14–16 mm.

Male genitalia distinguished chiefly by the very heavy, black, broad-haired tuft from base of sacculus of harpe. Female genitalia with signum; genital opening simple; distinguished from those of other yellow-winged species by minor differences in the configuration of the eighth-segment collar; closest to those of *xanthopolis* Dyar.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: *Distrito Federal*. GUATEMALA: Cayuga (Feb., Apr., May). COSTA RICA: Juan Viñas (Jan.).

165. Piesmopoda isabella (Dyar), new combination

FIGURES 264, 749

Amphycitopsis isabella Dyar, Ins. Insc. Menstr., vol. 7, p. 45, 1919.

Male antenna simple. Labial palpus short, hardly reaching vertex on male and but a trifle beyond vertex on female.

Forewing as in *flavicans*. Alar expanse, 18–20 mm.

Male genitalia with cucullus of harpe subtriangulate, harpe wider in proportion to its length and less evenly tapering than in other species except *apocerastes* which has similar male genitalia. Female genitalia with signum; genital opening simple; distinguished by the configuration of the eighth-segment collar.

TYPE LOCALITY: Juan Viñas, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

Represented by the male type and a slightly larger female from the type locality (Jan.). The latter had been identified by Schaus as "*Piesmopoda flavicans* Zeller." The species served as type for Dyar's genus *Amphycitopsis*, erected solely on the basis of the short labial palpi of the male.

166. Piesmopoda xanthopolys Dyar

FIGURES 261, 748

Piesmopoda xanthopolys Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 332, 1914.

Male antenna simple. Labial palpi slender, extending above vertex in both sexes, somewhat longer on female than on male.

Forewing as in *flavicans*. On the female from the type locality the purplish shading on the outer area of the forewing is somewhat more extended and the yellow area of the wing proportionally more restricted than in *flavicans;* but this difference seems to be individual rather than specific. In *xanthopolis* as well as the other species with coloration similar to *flavicans* the extent of purple shading is variable between the sexes and even among individuals of one sex. Alar expanse, 13–16 mm.

Male genitalia figured from specimen from La Chorrera, Panamá. Their most obvious feature seems to be the rather short arms of the bifid uncus (proportionally shorter than those of any other *Piesmopoda* except *flavicans* which has stouter transtilla and differently shaped anellus and vinculum). Female genitalia with signum present. Genital opening simple. Very close to those of *flavicans*, with incurvation of posterior-ventral margin of eighth-segment collar similar and exhibiting only minor differences in the collar otherwise.

TYPE LOCALITY: Porto Bello, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Corozal (July), La Chorrera (May), Porto Bello (Sept., Dec.).

Known only from the original type series. Dyar in 1919 (Ins. Insc. Menstr., vol. 7, p. 44) placed *xanthopolys* in the synonymy of *flavicans*. The two species are very close, but apparently distinct.

167. Piesmopoda parva, new species

FIGURES 263, 750

Male antenna simple except for a very slight incurvation of the shaft towards base. Labial palpus slender, reaching vertex; terminal segment acuminate.

Forewing yellow with a slight olivaceous tint; costa rather broadly margined from base to near apex with white faintly peppered with red scaling; a few red and black scales at extreme base and for a short distance from base along inner margin; no antemedial line; subterminal line straight, oblique, close to termen, with narrow purplish fuscous borders and preceded by a fuscous shade which extends, triangularly, almost to the cell. Hind wings translucent white with a faint smoky tint, darkening slightly towards apex. Alar expanse, 10–11 mm.

Male genitalia distinguished by the slender arms of the divided uncus and the slender, naillike spine associated with anellus. Female genitalia with signum; genital opening simple. Distinguished by the broad and deep excurvation in posteroventral margin of the eighth-segment collar.

TYPE LOCALITY: La Chorrera, Panamá (type in USNM, 61333).

FOOD PLANT: Unknown.

Described from male type from the type locality (May), one male paratype from Cabima, Panamá (May 1911), and one female paratype from Taboga Isl., Panamá (Feb. 1912), all collected by A. Busck. These specimens had been included by Dyar among his paratypes of *Piesmopoda xanthomera*. They are somewhat rubbed but otherwise in good condition. The species is the smallest of the *Piesmopoda*.

168. Piesmopoda semirufella (Zeller)

FIGURE 752

Myelois semirufella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 196, 1881.

Piesmopoda semirufella (Zeller) Ragonot, Monograph, pt. 1, p. 160, 1893.—Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 332, 1914; Ins. Insc. Menstr., vol. 7, p. 46, 1919.

Several different species have been identified as *semirufella*. I have seen but one example that can be definitely placed to Zeller's name, a female from Cayuga, Guatemala, collected by Schaus and Barnes (Jan.). The genitalia of this specimen have been checked by Clarke with the genitalia of the type of *semirufella* and he finds them identical. They have the signum present and a broad, strongly sclerotized plate at genital opening. The latter structure at once identifies the female. Males of the species have not been properly associated.

Superficially, *semirufella* is not distinguishable from females of *apocerastes* Dyar. Indeed, several females of the latter in both the British Museum and U. S. National Collections had been identified as Zeller's species. Alar expanse, 16 mm.

TYPE LOCALITY: Colombia (type, ♀, in BM).

FOOD PLANT: Unknown.

169. Piesmopoda apocerastes Dyar

FIGURE 751

Piesmopoda apocerastes Dyar, Ins. Insc. Menstr., vol. 7, p. 45, 1919.

Male antenna with basal segment cylindrical, slender; shaft with a long sinus (involving about eight of the basal segments) lined by flattened blackish scales which terminate in a slight tuft at the outer extremity of the sinus. Labial palpus cylindrical, slender, reaching to slightly above vertex.

Forewing, except for a whitish border along costa, suffused reddish brown to the naked eye, very slightly darkened towards outer margin (under magnification the ground color shows a strong under tinting of olivaceous ocherous); whitish costal border peppered with scattered red scaling, a concentration of these along extreme costal margin; discal dots separate, red; antemedial line obsolete or, at most, faintly indicated on some specimens by an obscure, narrow, dark, transverse shade; subterminal line faint, weakly bordered by narrow dark (reddish fuscous) lines. Hind wings smoky white to pale smoky fuscous, darkening towards apex and outer margin; the veins darkened. Alar expanse, 15–16 mm.

Male genitalia similar to those of *isabella* Dyar. Female genitalia without signum; a narrow, strongly sclerotized plate at genital opening with weakly sclerotized, anterior, lobelike projection.

TYPE LOCALITY: Juan Viñas, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Jalapa. COSTA RICA: Juan Viñas (May, Nov.). DOMINICA (British West Indies, Feb.). FRENCH GUIANA: St. Jean Maroni. BRAZIL: Paraná, Castro.

A distinct species easily identified by its female genitalia. Several of the females before me in the National Collection had been identified by Hampson as *Piesmopoda semirufella*. The genitalia of female specimens from all the above-mentioned localities have been checked.

170. Piesmopoda montella Schaus

FIGURE 743

Piesmopoda montella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 247, 1913.

Labial palpus of female slender, reaching slightly higher than vertex.

Forewing light olivaceous brown; costal margin to subterminal line broadly white irrorated with red-brown, the extreme costal edge black at base, reddish brown at middle; no trace of any antemedial line; subterminal line slightly outcurved below vein 6, bordered inwardly and outwardly from costa to vein 2 by blackish bands into which some reddish scales are intermixed; discal dots separated, reddish brown; a few blackish dots on terminal margin. Hind wing pale, semihyaline brown, darkening towards outer margin; the veins darkly outlined. Alar expanse, 24 mm.

Female genitalia without signum; bursa copulatrix small, oblong; ductus bursae very short and broad, almost as broad at middle as the bursa, weakly sclerotized at genital opening, finely sclerotized otherwise. Eighth-segment collar simple, not fused ventrally.

TYPE LOCALITY: Mount Poás, Costa Rica (May; type in USNM).

FOOD PLANT: Unknown.

A distinct species easily identified by its large size and distinctive genitalia; represented only by the female type.

Genus 40: *Atheloca*

[Venational division C. Forewing with veins 4 and 5 connate and contiguous or partially anastomosed for one-third their lengths from cell; 6 from upper angle of cell, connate with the stalk of 8–9, bent towards base. Hind wing with cell less than one-fifth the length of wing; discocellular vein oblique, straight. Male genitalia with uncus hoodlike; lateral arms of gnathos fusing into anellus; harpe broadly angled at base of cucullus.]

40. Atheloca, new genus

TYPE OF GENUS: *Nephopteryx subrufella* Hulst.

Tongue well developed. Antenna of male simple, shaft pubescent. Labial palpus slender, upturned, reaching to or a trifle above vertex; third segment shorter than second, acuminate. Maxillary palpus filiform. Forewing smooth; 11 veins, vein 2 from before lower outer angle of cell; 3 from the angle, much nearer to 4 at base than to 2; 4 and 5 connate, contiguous or partially anastomosed beyond base for one-third of their lengths; 6 from upper angle of cell, curved towards base and connate with the stalk of 8–9; 10 from the cell, approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, nearly as long as vein 2, closely approximate to the stalk of 4–5 at base; 4 and 5 stalked for half their lengths; 7 and 8 anastomosed for most of their lengths beyond cell, the free element of vein 8 very short; cell less than one-fifth the length of wing; discocellular vein oblique, straight. Abdomen of male with a pair of invaginated hair tufts at base; sternite of eighth segment developed as a sclerotized digitate pocket.

Male genitalia with uncus hoodlike, triangulate, densely haired on outer surface. Gnathos represented only by its lateral arms which fuse into anellus at their apices. Transtilla absent. Harpe broadly angled at base of cucullus. Anellus a stout, triangulate plate with strongly sclerotized, sharply out-curved, smooth lateral arms (these latter may possibly represent elements of a divided transtilla fused with the anellus, but this is extremely doubtful). Aedeagus and penis simple. Vinculum longer than greatest width, but slightly tapering to truncate terminal margin.

Female genitalia with signa present in the form of two small scobinate patches; ductus bursae with a small, weakly sclerotized collar near the junction with bursa copulatrix; genital opening simple, ductus seminalis from bursa near the junction of bursa and ductus bursae; eighth-segment collar completely fused ventrally.

171. Atheloca subrufella (Hulst), new combination

FIGURES 267, 741

Nephopteryx subrufella Hulst, Ent. Amer., vol. 3, p. 132, 1887.
Nephopteryx filiolella Hulst, Ent. Amer., vol. 4, p. 117, 1888 (new synonymy).
Piesmopoda subrufella (Hulst) Hulst, Phycitidae of N. Amer., p. 133, 1890.—Ragonot, Monograph, pt. 1, p. 166, 1893.—Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, p. 129, 1917.
Piesmopoda filiolella (Hulst) Hulst, Phycitidae of N. Amer., p. 133, 1890.—Ragonot, Monograph, pt. 1, p. 166, 1893.
Sarasota subrufella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5558, 1917.—McDunnough, Check list, No. 6121, 1939.
Sarasota filiolella (Hulst) Barnes and McDunnough, Check List of the Lepidoptera of Boreal America, No. 5559, 1917.—McDunnough, Check list, No. 6122, 1939.
Hyalospila ptychis Dyar, Ins. Insc. Menstr., vol. 7, p. 49, 1919 (new synonymy).

Forewing ocherous fuscous shaded with reddish or purplish red except along costa; costa at extreme base edged with black, between the transverse lines rather broadly bordered by dull white sprinkled with red scales; antemedial line sometimes obsolete, when present indicated by a transverse black band interfused with reddish and preceded by a narrow dusting of white scales; subterminal line faint, pale, bordered inwardly and outwardly by narrow blackish or purplish red bands; discal spots usually distinct (at least the lower one), well separated, blackish (rarely with a touch of red); a more or less distinct row of blackish dots along termen. Hind wing smoky white, translucent; the veins darkened and a distinct dark shade along termen. Midtibia of male with strong hair tuft from base on inner side. Hind tibia of male without appreciable hair tuft. Alar expanse, 12–19 mm.

Male genitalia as given for the genus. Female genitalia with sclerotized portion of ductus bursae very narrow.

TYPE LOCALITIES: Florida (*subrufella*, in AMNH, ex Rutgers); "Texas" (*filiolella*, in AMNH, ex Rutgers); Cuba (*ptychis*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Florida*, Chokoloskee, Christmas Harbor (Mar.), Duardia (May), Fort Drum, Hastings (Aug., Sept.), Lake Alfred (May), Paradise Key (Mar.), Royal Palm State Park (June, Sept.), Stemper (May, July, Aug.), Vero Beach (Apr.), Winter Park (July, Aug.). CUBA: Pinar del Río, no specific locality (type of *ptychis*). VIRGIN ISLANDS: Kingshill (St. Croix, "Nov.–Dec.").

The types of both *subrufella* and *filiolella* are females, neither of which bears a locality label; *subrufella* bears a label containing only the number "61"; *filiolella* only a date label "March." The latter is without abdomen and in very poor condition; but exhibits no difference from the type of *subrufella* except its somewhat larger size. In the National Museum there is a female from Christmas Harbor ("March") labeled by Hulst "*Nephopteryx filiolella*, type." It is an exact match for the type in the Rutgers Collection, as are three other large females from Florida in the National Collection, obviously the same as *subrufella*. We have a large series of the species but no Texas examples, and I doubt very much the correctness of Hulst's citation as the type locality of his *filiolella*. The species is obviously a tropical one which has extended its range to Florida. Dyar's *ptychis* is merely a Cuban example, differing in no wise from typical *subrufella*.

172. Atheloca bondari, new species

Hyalospila ptychis Bondar (not Dyar), Rev. de Ent., Brazil, vol. 11, p. 199, 1940.—Lepesme, Les insectes des Palmier's, p. 343, 1947 (Paris).

Similar to *subrufella* except that the pale costal area of forewing is less contrasted and conspicuous. The genitalia male and female exhibit no essential differences from those of *subrufella*. The one distinguishing character, seems to be a strong, dorsal, yellow hair tuft from the base of the male hind tibia. This is lacking from all specimens of *subrufella* and is an addition to the similar tuft on male midtibia, present on both *subrufella* and *bondari*. Alar expanse, 15–16 mm.

TYPE LOCALITY: Baía, Brazil (type in USNM, 61335).

FOOD PLANT: *Cocos nucifera* (Lepesme also records *C. coronata*, *C. vagans*, *Attalea funifera*, and *A. piassabossu*).

Described from male type and three male and five female paratypes all from the type locality and reared (June and July 1939, under Bondar Nos. 2521 and 2561) from larvae feeding in the seeds and at the base of the fruits of *Cocos nucifera*. These were received from Dr. Gregorio Bondar, for whom the species is named. He gives a good account of the habits of the species in the above-cited paper. I am responsible for the misidentification to *ptychis*, for at the time I overlooked the difference in leg tuftings between *ptychis* and the Brazilian specimens.

Genera 41 and 42: *Praedonula* and *Peadus*

[Venational division D. Forewing with veins 4 and 5 closely approximate for a short distance from cell; vein 6 straight; 10 from the cell. Hind wing with cell one-fourth to one-fifth the length of wing; discocellular vein more or less curved. Male antenna with a shallow sinus in shaft involving the first half dozen segments. Male genitalia with a stout hair tuft from near base of sacculus.]

41. Praedonula, new genus

TYPE OF GENUS: *Phycita almonella* Dyar.

Tongue well developed. Male antenna with a shallow sinus in shaft at base (involving the first six segments), the sinus containing a scattering of minute papillalike setae and a narrow ridge of scales along its outer edges, otherwise pubescent. Labial palpus very slender, upturned, reaching to or slightly above vertex; third segment slightly shorter than second, acuminate. Maxillary palpus subsquamous (the scales on second segment expanded, on third rather long and drawing to a point). Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell (nearer the angle in male than in female); vein 3 from the angle;

4 and 5 closely approximate at base and for a short distance beyond; 6 straight, from slightly below upper angle of cell (male) or from the angle (female); 10 from the cell, closely approximate to the stalk of 8–9 (male) or slightly separated from it (female); male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, nearly as long as 2, approximate at base to the stalk of 4–5; 4–5 stalked for at least half their lengths (female), somewhat longer stalked on male; 7 and 8 contiguous or weakly anastomosed for a short distance beyond cell, the free element of 8 long; cell short, about one-fifth the length of wing; discocellular vein oblique, very slightly curved. Eighth abdominal segment with sternite developed as a narrow (digitate) sclerotized pocket.

Male genitalia with uncus hoodlike, rounded. Gnathos strongly developed, the lateral arms broad, expanded and curled at their extremities and supporting a sclerotized subanal plate with a short thornlike spur at its base. Transtilla absent. Harpe stout, simple, slightly broadened at middle; at base of cucullus a stout hair tuft. Anellus a heart-shaped plate with stubby lateral lobes. Penis unarmed. Vinculum stout (but sclerotized narrowly along its margins); slightly longer than broad; scarcely tapering.

Female genitalia with signa present in the form of two small granulate patches; ductus bursae with genital opening surrounded by a sclerotized plate; ductus seminalis from bursa near junction of bursa and ductus bursae. Eighth-segment collar completely fused ventrally.

This genus is obviously closely related to the preceding genus (*Atheloca*) and that which follows (*Peadus*). From the former it differs in the male antennal character and the weak anastomosis of veins 7–8 of hind wing. From *Peadus* it differs chiefly in the simple (undivided) harpe and the much more strongly developed uncus and tegumen of its male genitalia. It has no close relationship to the Old World *Phycita* to which Dyar referred its type species.

173. Praedonula almonella (Dyar), new combination

FIGURES 47, 268, 742

Phycita almonella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 333, 1914.

The type series (a male and two females) are somewhat rubbed and the coloration and markings of forewing consequently obscured. Superficially the species resembles *Atheloca subrufella;* the ground color of forewing a gray brown, darkening in outer area and shading to ocherous brown along inner margin at base; the costal margin broadly margined with white rather heavily dusted with red scales; antemedial line not distinguishable; subterminal line faint, oblique and close to outer margin; discal dots very faint, separated. Hind wing translucent white shaded with fuscous at apex; the veins slightly darkened; on underside of male a coarse yellow sex-scaling between costa and cell, along lower margin of cell, extending for a short distance along veins 2 and 3, and along vein 1b from base for nearly half its length. Alar expanse, 12–14 mm.

Male genitalia with terminal margin of vinculum evenly rounded; aedeagus slightly bulged at middle, a row of short teeth along lateral edge towards apex. Female genitalia simple and membranous except for a fine sprinkling of minute scobinations and the two small signa.

TYPE LOCALITY: Porto Bello, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: La Chorrera (May), Porto Bello (May).

Known only from Dyar's original type series.

42. Peadus, new genus

TYPE OF GENUS: *Piesmopoda burdettella* Schaus.

Tongue well developed. Male antenna with a shallow sinus in shaft at base (as in *Praedonula* except here the hollow of the sinus is overlaid with rather coarse, appressed scales and without any indication of a tuft or lateral scale ridge), pubescent. Labial palpus slender, upturned, reaching vertex; third segment shorter than second, acuminate. Maxillary palpus subsquamous (as in *Praedonula*). Forewing smooth; venation as in *Praedonula* except vein 2 further from lower outer angle of cell, and 6 from below upper angle. Hind wing with cell one-fourth the length of wing; discocellular slightly but evenly curved. Eighth abdominal segment with sclerotized pocket of sternite long and needlelike and with a large, flattened, fanlike tuft of long slender scales.

Male genitalia with uncus and tegumen greatly reduced; the uncus a narrow, weakly sclerotized angulate band. Gnathos indistinguishable (*burdetellus*) or represented only by a very weakly sclerotized, transverse band (*dissitus*). Transtilla absent. Harpe short, stout; sacculus broad and broadly produced at apex; giving the harpe a partially divided appearance; the free costal half of harpe strongly recurved and bearing two very stout spines, one on outer lower margin near the angle produced by the projection of sacculus and another at lower angle of cucullus; the cucullus itself narrow and greatly reduced; a strong hair tuft from intersegment adjacent to base of sacculus. Anellus a shallow, curved plate with stubby lateral arms. Aedeagus spined at apex; penis armed with a couple of more or less curved and crinkled sclerotized bands and a cluster of short, stout spines. Vinculum long, stout and evenly tapering; considerably longer than greatest width.

Female genitalia with signum developed as a short, slender thorn; area of bursa immediately surrounding ductus seminalis scobinate and weakly sclerotized; ductus bursae much shorter than bursa, broad and more or less sclerotized; behind genital opening a pair of narrow elongate plates extending backward and fusing into the ventrally divided eighth-segment collar (except in *subaquilellus*); ductus seminalis from bursa near junction of bursa and ductus bursae.

The genus is quite distinct from any other on male genitalia. Its closest relatives seem to be *Praedonula* and *Hyalospila*. On many genitalic characters it resembles the following genus (*Gabinius*), especially in the development of uncus and harpe; but separates from it on hind wing venation, especially the length and position of vein 2.

174. Peadus burdettellus (Schaus), new combination

FIGURES 269, 754

Piesmopoda burdettella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 247, 1913.
Discopalpia semproniella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 249, 1913.
Hyalospila burdettella (Schaus) Dyar, Ins. Insc. Menstr., vol. 7, p. 48, 1919.

Forewing pale brown shaded with red and blackish scales; the costal border white sparsely dusted with red scales and with medial costal edge reddish; antemedial line obscure except on lower half, far out, oblique from costa to cell and below cell inwardly concave, white, bordered outwardly on costa by a faint reddish streak; some black scaling along basal half of vein 1b; a distinct black dot on lower vein of cell at middle, and on the vein 1b on the outer edge of the antemedial line; subterminal line sinuous, bordered inwardly by a narrow, dark brownish shade and followed in outer area (especially towards apex) by some white dusting; discal dots distinct, separated, black, the lower one somewhat elongated; an irregular black line along terminal margin reaching almost to apex. Hind wings translucent, smoky white, darkening outwardly; the veins slightly darkened and a fine dark line along termen. Alar expanse, 19.5–20 mm.

Male genitalia with no trace of sclerotized gnathos; aedeagus with apex bluntly pointed, bearing a line of short, coarse spines along its edge. Female genitalia with ductus bursae weakly sclerotized near genital opening; sclerotized plates behind genital opening narrow, bladelike; sclerotization of bursa near ductus seminalis slight.

TYPE LOCALITIES: Mount Poás (Juan Viñas), Costa Rica (*burdettella*, in USNM); Juan Viñas (*semproniella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: COSTA RICA: Juan Viñas (Jan.), Mount Poás (May). GUATEMALA: Volcán Santa María (July).

Dyar established the above synonymy of Schaus' species. The genitalia of their male types are identical.

175. Peadus dissitus, new species

FIGURES 270, 755

Similar to *burdettellus* in color and markings except for a distinct whitish longitudinal shade through the cell of forewing and a stronger accentuation of the black scaling; a thin black streak from base along half the lower fold and a similar, shorter black streak on it just before the subterminal line; outer margin of antemedian line indicated by strong black dots on upper and lower veins of cell and on vein 1b; inner dark margin of subterminal line broadened by black streak. Alar expanse, 20–22 mm.

Male genitalia with gnathos a weakly sclerotized transverse band; aedeagus with an expanded, flangelike, densely and finely spined apex. Other minor differences from *burdettella* (especially in the shapes of *cucullus* and the projecting part of *sacculus* of the harpe) are shown in the figures. Female genitalia with ductus bursae much shorter than in *burdettella*, strongly sclerotized; sclerotized plates behind genital opening broadened at their bases; sclerotization of bursa near ductus seminalis appreciably stronger.

TYPE LOCALITY: "S. E. Brazil" [Paraná?] (type in BM; paratypes in BM and USNM, 61334).

FOOD PLANT: Unknown.

Described from male type and three male and three female paratypes from the type locality, "E. D. Jones, 1920—303".

176. Peadus subaquilellus (Ragonot), new combination

FIGURE 753

Hyalospila subaquilella Ragonot, Nouv. Gen., p. 11, 1888; Monograph pt. 1, p. 170, 1893; pt. 2, p. 38, fig. 24, 1901.

This species is known only from the female type. A drawing of its genitalia made by Clarke is figured. I have seen nothing to match Ragonot's figure and description which indicate a form with dark reddish brown forewing shaded somewhat with black at base and on the costa but without other markings; hind wing "transparent," smoky, the veins and terminal margin appreciably darkened. Alar expanse, 20 mm.

The generic placement is tentative, pending discovery of a male. The female genitalia are not typical, lacking the sclerotized plates behind genital opening, but seem to indicate a closer relationship to *Peadus* than to any other genus.

TYPE LOCALITY: "Cerro Zunil," Guatemala (type in BM).

FOOD PLANT: Unknown.

Genus 43 : *Gabinius*

[Venational division B. Forewing with veins 4 and 5 connate; 2 from near lower outer angle of cell. Hind wing with 2 from close to lower outer angle of cell; 3 from the stalk of 4–5; cell less than one-third the length of wing. Uncus reduced, weakly sclerotized, triangulate. Tegumen greatly reduced but with strong, projecting lateral arms. Transtilla incomplete. Harpe reduced; apex of costa spined. Vinculum short, stout.]

43. Gabinius, new genus

TYPE OF GENUS: *Promylea paulsoni* Ragonot.

Tongue well developed. Antenna of male simple, pubescent. Labial palpus upturned, reaching above vertex; second segment somewhat broadly scaled; third segment shorter than second, bluntly acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell, nearly as close to 3 at base as 3 is to 4; 3 from the angle;

4 and 5 connate; 6 from below upper angle of cell, straight; 8 and 9 long stalked, the free element of 9 very short; 10 from the cell, approximate to the stalk of 8–9 for a short distance; male without costal fold. Hind wing with vein 2 from close to lower angle of cell; 3 from the stalk of 4–5; 4 and 5 very long stalked; 7 and 8 closely approximate beyond cell; cell less than one-third the length of wing; discocellular vein curved. Eighth abdominal segment with sternite developed as a short (stubby) sclerotized pocket with thin, curved lateral arms extending into a slender U-shaped plate, fringed with moderately long scales.

Male genitalia with uncus reduced, broader than long, triangulate and weakly sclerotized. Tegumen supporting a pair of long, broad, pointed, strongly sclerotized, backwardly projecting arms; otherwise greatly reduced. Gnathos absent. Transtilla incomplete; its elements pointed towards each other, their apices expanded and nearly touching. Harpe short, nearly as broad as long; costa broadly sclerotized, but shorter than remainder of harpe, bearing a stout, rather long, projecting spine at apex; cucullus much reduced, bearing a similar, stout but shorter spine on costal edge at apex; sacculus broadly sclerotized, but not produced. Anellus a broad crescentiform plate; its lateral lobes reduced to weakly haired knobs. Aedeagus smooth, straight; penis armed with a pair of curved, more or less wrinkled, sclerotized plates. Vinculum stout, as broad as long; its terminal margin evenly rounded.

Female genitalia with signum developed as a thin, keellike blade on a narrow, elongate plate; ductus bursae shorter than bursa and with a sclerotized collar near simple genital opening; ductus seminalis from bursa near junction of bursa and ductus bursae.

A distinct genus, apparently most closely related to *Peadus* but falling into a different venational division (B). The shape and structure of the uncus, the reduced tegumen, and the short harpe with its stout projecting spines suggest the relationship to *Peadus*. The very short cell of hind wing separates it from most genera of division B. It is only remotely related to *Promylea*, to which Ragonot referred its type species.

177. *Gabinius paulsoni* (Ragonot), new combination

FIGURES 271, 756

Promylea paulsoni Ragonot, Nouv. Gen., p. 12, 1888; Monograph, pt. 1, p. 208, 1893.

Ground color of forewing olivaceous gray strongly tinted with vinous brown in the dorsal area, this latter shade extending obliquely almost to apex; costal area from base to subterminal line, including the cell and tapering to costa beyond it, white with a scattered peppering of red-brown scales; costal edge from antemedial line to above end of cell edged with blackish brown; antemedial line distinct on lower half of wing, vertical with a slight inward concavity, followed outwardly by a narrow blackish brown band and inwardly by a blotch of the same shade; the antemedial line indistinct and oblique on upper area of wing; subterminal line, narrow, faint, sinuate, whitish, followed and preceded for a short distance from costa by blackish brown shadings; a scattering of white scaling in the terminal area below apex; lower discal spot blackish brown, more or less distinct, the upper very small and faint; a blackish irregular line along terminal margin, not reaching to apex. Hind wing translucent, yellowish white with a smoky tint towards apex and along terminal margin. Alar expanse, 20–23 mm.

Male genitalia with characters as given for the genus.

TYPE LOCALITY: Quillota, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

The female in the National Collection matches in every detail Ragonot's description and figure of the male type (Monograph, pl. 10, fig. 6). It is labeled "Chile, Silva." Superficially, the maculation and color resemble those of the *Honora* species.

Genera 44-46: *Ceracanthia* to *Drescoma*

[Venational division B. Forewing with veins 4 and 5 slightly separated at cell. Hind wing with cell less than half the length of wing (sometimes very short); 4 and 5 strongly stalked. Eighth sternite of male developed as a digitate pocket, sometimes the latter flattened and distorted. Male genitalia with vinculum very long, sclerotized only along its margins, arched dorsally (like a bent hairpin), its terminal margin broad; harpe with tufts on a projecting arm from base of sacculus.]

44. Genus Ceracanthia Ragonot

Ceracanthia Ragonot, Monograph, pt. 1, p. 230, 1893. (Type of genus: *Ceracanthia vepreculella* Ragonot.)

Procandiopa Dyar, Ins. Insc. Menstr., vol. 7, p. 50, 1919. (Type of genus: *Procandiopa mamella* Dyar. New synonymy.)

Tongue well developed. Antenna pubescent; basal segment elongate, cylindrical (longer and more heavily scaled in male than female); shaft of male with an elongate, shallow sinus at base, from middle of sinus a short, sharp, sclerotized spine, a similar, shorter spine at apical end of sinus. Labial palpus upturned, reaching above vertex, cylindrical; third segment nearly as long as second, acuminate. Maxillary palpus subsquamous (scaling of second segment somewhat expanded); folded across base of tongue. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle, about equidistant from 2 and 4; 4 and 5 slightly separated at base, thence divergent; 6 from slightly below upper angle of cell, straight; 10 from the cell, approximate to the stalk of 8–9 for a very short distance from cell; male without costal fold Hind wing with vein 2 from before, but near lower outer angle of cell; 3 from the stalk of 4–5; 4 and 5 stalked for half their lengths; 7 and 8 closely approximate for a short distance from cell; cell slightly over one-third the length of wing; discocellular vein curved. Eighth abdominal segment with sternite developed as a strongly sclerotized, digitate pocket.

Male genitalia with uncus hoodlike (not tapering). Apical process of gnathos a simple, elongate, slender hook. Transtilla absent. Harpe broad, stout, sacculus

partially divided towards apex and with a projecting arm from its base supporting a heavy hair tuft. Anellus a rather narrow band with short, stubby, lateral arms. Aedeagus somewhat curved and with a slightly more sclerotized bulge from outer third; penis with a few minute scobinations or some fine sclerotized wrinkles, otherwise unarmed. Vinculum elongate (considerably longer than greatest width), U-shaped, sclerotized only (and narrowly) along its margins, arched dorsally (like a bent hairpin).

Female genitalia with signum; ductus bursae and genital opening simple; ductus seminalis from bursa near junction of bursa and ductus bursae.

This genus is uncomfortably close to the genus following (*Megarthria*), from which it differs chiefly in the closer approximation of vein 2 of hind wing to the lower outer angle of cell, the decided stalking of 3 with 4–5, and the slightly longer cell. The male antennal character on which Ragonot and Dyar erected their genera is probably here (as in *Megarthria*) of specific rather than generic significance.

178. Ceracanthia mamella (Dyar), new combination

FIGURES 13, 272, 278, 757

Procandiopa mamella Dyar, Ins. Insc. Menstr., vol. 7, p. 51, 1919.

Forewing yellowish white along costa; remainder of wing a purplish shade with a scattered peppering of blackish scales especially along base of median fold; antemedial line obscure, far out on wing and outwardly angled in cell, indicated chiefly by a discontinuous, narrow, blackish outer bordering line; subterminal line somewhat more distinct, sinuate, yellowish white, followed on costa by a short blackish dash and bordered inwardly by a black line which expands into patch at middle; discal dots blackish; terminal dots confluent forming a blackish line along the outer margin. Hind wing pale smoky brown; the veins faintly darkened and a distinctly smoky shade along termen. Alar expanse, 15–16 mm.

Male genitalia with outer margin of harpe evenly rounded. Female genitalia with signum a flat, somewhat granulate plate, bearing a short thorn near its center.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Río Trinidad (Mar., May). GUATEMALA: Cayuga (May).

Represented only by the original type series, a male and female from the type locality and a male and female from Guatemala.

The sinus in the male antenna (fig. 278) appears smoothly scaled to the naked eye but under magnification shows several minute, erect, papillalike scales, similar to those on *Megarthria peterseni* but less conspicuous.

179. Ceracanthia vepreculella Ragonot

FIGURE 273

Ceracanthia vepreculella Ragonot, Monograph, pt. 1, p. 230, 1893.

I have seen no examples of this species but from Ragonot's description and figure it appears to be similar to *mamella* except that the general color is a more uniform yellowish gray without the contrastingly paler costa and the purplish shade on the remainder of the wing, characteristic of *mamella*. It is also a larger species. Alar expanse, 23 mm.

Male genitalia with outer margin of harpe angulate.

TYPE LOCALITY: Loja, Ecuador (type in Paris Mus.).

FOOD PLANT: Unknown.

45. Genus Megarthria Ragonot

Megarthria Ragonot, Monograph, pt. 1, p. 156, 1893. (Type of genus: *Myelois peterseni* Zeller.)

Characters similar to those of *Ceracanthia* except: Vein 2 of hind wing further removed from lower outer angle of cell; the cell itself shorter, less than one-third the length of wing; vein 3 connate with the stalk of 4–5 or contiguous with it for a short distance from the angle of cell, but not from the stalk; eighth abdominal segment of male with sternite developed usually as a laterally flattened, more or less bent, digitate pocket, the supporting lateral arms of the sternite bearing a pair of scale tufts.

Male genitalia with anellus an elongate shield; transtilla absent (except in *schausi*).

Female genitalia with or without signum; ductus seminalis from bursa adjacent to junction of bursa and ductus bursae.

The shaft of the male antenna has a rather broad sinus at base (as in *Ceracanthia*) but is specifically variable. The lower outer angle of cell in the hind wing is as far out as in *Ceracanthia*, but the discocellular vein curves inward more deeply, making the cell itself appreciably shorter than that of *Ceracanthia*.

In the National Collection all the specimens except the male type of *cervicalis* Dyar had been identified as *peterseni* Zeller. They are strikingly similar in color and maculation, but their structures show that four species are present among the males and at least two among the females. With our present knowledge the sexes cannot be associated with any certainty; so until something is known of their host association and the species are reared it seems a safer procedure to anticipate later synonymy and give separate names to the males and females rather than to link the females nomenclatorily to any of the male types.

180. Megarthria peterseni (Zeller)

FIGURES 14, 274, 279

Myelois peterseni Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 198, 1881.

Megarthria peterseni (Zeller) Ragonot, Monograph, pt. 1, p. 157, 1893.

Ground color of forewing white on costal half of wing, olivaceous brown on lower half, this brown shade extending upward to costa at extreme base and obliquely upward from lower outer angle of cell to costa at apex; an oblique blackish brown band from costa at about one-third extends to the paler brown ground color on

lower half of wing, dividing the white costal area into two strongly contrasted white patches; dark basal area also blackish towards costa; a similar blackish shade from apex extends obliquely inward towards lower outer angle of cell; some blackish shading along the outer veins and a narrowly elongate, blackish brown spot on midcosta; subterminal line very faint, except at costa, dull white, some faint whitish dusting in the outer brown area just below apex; a faint peppering of red scales on the white areas and more or less over the blackish brown markings on costal half of wing; discal dots blackish brown, separated and usually distinct; a row of black dots along termen. Hind wing semitransparent, whitish with a smoky tint towards apex and along costa and termen; the veins faintly darkened and a blackish line along terminal margin. Eighth abdominal tufts more or less swollen hairlike scales. Alar expanse, 22–26 mm.

Male genitalia with transtilla absent; harpe with sacculus partially divided (towards its apex); hair tufts from extended basal arm from sacculus, yellow; penis bearing a patch of fine scobinations; vinculum constricted near middle.

Antenna of male (fig. 279) with a broad sinus in base of shaft occupying a half-dozen fused segments; the sinus with many minute, papillalike setae (or scales) on its inner surface, but without hair or scale tuft; a small but strongly sclerotized spine from lateral edge of sinus beyond its base and a similar small spine from apex of the sinus.

TYPE LOCALITY: Honda, Colombia (type, ♂, in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: GUATEMALA: Volcán Santa María (June, July). COLOMBIA: Honda (Apr.). BRAZIL: Santa Catarina (July). PERÚ: Oconeque (*Carabaya*).

I have seen no specimens from Colombia; but the male examples before me from Guatemala, Brazil, and Perú agree in antennal characters with the type of *peterseni* as described by Ragonot. Evidently the species has a wide distribution in Central and South America.

181. Megarthria squamifera, new species

FIGURES 275, 280

Color and markings as in *peterseni*. Male genitalia also similar except lateral arms of gnathos stouter and vinculum less constricted. Digitate pocket of eighth abdominal sternite not appreciably flattened. Male antenna (fig. 280) with a broad, elongate sinus; from one lateral edge of sinus a flat brush of long stiff hairs; the opposing edge concave for most of its length, the concavity ending in a sharp projecting point at each end; inner surface of sinus smooth.

TYPE LOCALITY: Mount Poás, Costa Rica (type in USNM, 61336).

FOOD PLANT: Unknown.

Described from male type, collected by Schaus and Barnes (May).

182. Megarthria frustrator, new species

Color markings and male genitalia similar to those of *peterseni*. Male antenna like that of *squamifera*. Differs from other males of the genus in having a narrow ridge of rough, protruding scales along the costa of forewing for more than half its length from base. Alar expanse, 20 mm.

TYPE LOCALITY: Juan Viñas, Costa Rica (type in USNM, 61337).

FOOD PLANT: Unknown.

Described from male type, collected by Schaus and Barnes (Feb.).

183. Megarthria schausi, new species

FIGURE 276

Color and markings as in *peterseni*. Male genitalia with vinculum not constricted; apical process of gnathos terminating in a weak, short spine. Transtilla present developed as a square, sclerotized plate, pendant from protruding lobes from the costobasal area of the harpes and with thin short projecting arms from its lower (anterior) corners. Hair tufts from projecting basal arm of sacculus short, yellow. Male antenna like that of *squamifera*. Alar expanse, 18 mm.

TYPE LOCALITY: Juan Viñas, Costa Rica (type in USNM, 61338).

FOOD PLANT: Unknown.

Described from male type, collected by Schaus (Jan.) and named in memory of him. The species is easily identified by its platelike transtilla. I have seen nothing resembling this structure in any other male of the genus.

184. Megarthria cervicalis Dyar

FIGURES 277, 281

Megarthria cervicalis Dyar, Ins. Insc. Menstr., vol. 7, p. 42, 1919.

Forewing as on *peterseni* except that dark areas are paler; less blackish brown and with more red scaling on the dark antemedial band and midcostal spot, the latter almost entirely reddish. Eighth abdominal tuft small, consisting of broadly flattened and contorted scales; digitate pocket from sternite of eighth segment strongly bent and decidedly flattened. Alar expanse, 20 mm.

Male genitalia with vinculum not constricted, of even width throughout and with terminal margin evenly rounded; penis armed with a small, flat, bladelike cornutus; sacculus of harpe not divided at apex; hair tuft from projecting basal arm of sacculus, black.

Male antenna (fig. 281) with a short, shallow sinus at base of shaft and with a very small scale tuft from the base of the sinus (under the lower magnification looks like a small triangulate spine).

TYPE LOCALITY: Tánamo, Cuba (Aug.; type in USNM).

FOOD PLANT: Unknown.

Known only from its male type. A distinct species easily identified by its male antennae and genitalia.

185. Megarthria alpha, new species

FIGURE 760

Female. Color and markings as in *peterseni* males. Alar expanse, 17–26 mm.

Genitalia with signum developed as a teardrop shaped, finely granulate-scobinate, depressed patch: ductus bursae shorter than bursa with a narrow sclerotized band near genital opening. Eighth-segment collar with a thin apron projecting anteriorly (the shape and size of this individually variable; identical in no two specimens; compare figures 760a and 760b).

TYPE LOCALITY: Volcán Santa María, Guatemala (type in USNM, 61339).

FOOD PLANT: Unknown.

Described from type (Sept.) and three paratypes from the type locality (Schaus and Barnes, collectors, July, Oct.) and one paratype from each of the following localities: Purulhá, Guatemala (Schaus and Barnes, July); Quiriguá, Guatemala (Schaus and Barnes, Apr.), Jalapa, México (Schaus); Orizaba, México (R. Müller, Mar. 13); Mount Poás, Costa Rica (Schaus, May); Juan Viñas, Costa Rica (Schaus and Barnes, Jan.); Río Trinidad, Panamá (A. Busck, Mar. 1912); Incachaca, Cochabamba, Bolivia (J. Steinbach); Santa Catarina, Brazil (F. Hoffmann, July 12, 1935). All females; genitalic preparations made of all specimens.

I believe that *alpha* will eventually prove to be the female of *peterseni* but have no convincing evidence at this time that it is so.

186. Megarthria beta, new species

FIGURE 759

Superficially indistinguishable from *alpha* but with quite different genitalia. Alar expanse, 17–23 mm.

Bursa without trace of signum; ductus bursae much longer than bursa, unsclerotized at genital opening except for a narrow, very weakly sclerotized band on lower margin; anterodorsal projection of eighth-segment collar slight.

TYPE LOCALITY: Orizaba, México (type in USNM, 61340).

FOOD PLANT: Unknown.

Described from type (Schaus Collector, no data); one paratype from Jalapa, México (Schaus, no data); three paratypes from Cayuga, Guatemala (Schaus and Barnes, Feb., May, Oct.); one paratype from San José, Costa Rica (H. Schmidt); two paratypes from Porto Bello, Panamá (A. Busck, May 1912); and one paratype from Caparo, west-central Trinidad (F. Birch, no data). All females; the paratypes from Trinidad and Costa Rica in the Janse Collection.

46. Genus Drescoma Dyar

Drescoma Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 328, 1914. (Type of genus: *Drescoma cyrdipsa* Dyar.)

Tongue well developed. Antenna pubescent; basal segment normal (not swollen or elongated); shaft of male simple. Labial palpus upturned, reaching vertex; moderately slender, the second segment somewhat broadly scaled; third segment nearly as long as second, acuminate. Maxillary palpus subsquamous (scaling of second segment somewhat expanded); folded across base of tongue. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle about equidistant from 2 and 4; 4 and 5 slightly separated at base, thence divergent; 6 from below (but near) upper angle of cell, straight; 8 and 9 long stalked; 10 from the cell approximate to the stalk of 8–9 for some distance; male without costal fold but with a distinct notch in costa beyond base. Hind wing with vein 2 from lower outer angle of cell; 3 apparently from the stalk of 4–5, but actually contiguous or weakly anastomosed with it for half its length; 4 and 5 stalked for over half their lengths; 7–8 contiguous or partially anastomosed beyond cell, the free parts of the veins very long; cell very short, one-fifth the length of wing or less; discocellular vein oblique; on male upper vein of cell notched just beyond base and with some modified sex-scaling above and beyond the notch; also on male a short fold on anal margin enclosing a hair pencil. Eighth abdominal segment without tuft; sternite developed as a short sclerotized, digitate pocket.

Male genitalia as in *Megarthria* except: Transtilla present and in the form of a wide, very shallow U; harpe with an appressed, clasperlike projection near apex of sacculus; vinculum terminating in a strongly sclerotized, sinuate, transverse bar.

Female genitalia with signum developed as a long, strong, curved hook; ductus bursae shorter than bursa; genital opening simple; ductus seminalis from bursa near junction of bursa and ductus bursae.

A distinct genus closely related to *Ceracanthia* and *Megarthria* and to *Drescomopsis* in group II; but easily distinguished by the bent (notched) upper vein of cell in the male hind wing, the very short hind wing cell in both sexes, the notched forewing of the male, the peculiarly developed transtilla and terminal margin of vinculum.

187. Drescoma cyrdipsa Dyar

FIGURES 15, 282, 758

Drescoma cyrdipsa Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 328, 1914.

Color and markings as in *Megarthria peterseni* except for darker hind wings, especially those of the females which are dark smoky fuscous. The average size is also consistently smaller.

Hind wing of male with notched projection of upper vein of cell into the cell deep and wide; on underside of wing a patch of semimetallic scales above the notch; a black patch preceding it, and following it a line of yellow and black scales along the vein.

Male genitalia with transtilla triangularly broadened toward harpes; clasperlike projection from sacculus rather broadly triangulate. Female genitalia with bursa minutely granulate; coarser granulations in ductus bursae at its junction with bursa. The long, strong, thornlike cornutus may be a specific character also, but is more probably generic.

TYPE LOCALITY: La Chorrera, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Chiapas (May). GUATEMALA: Cayuga (Jan., May, June, Aug.). PANAMÁ: Cabima (May), Corozal (Feb., Nov.), La Chorrera (Apr., May), Río Trinidad (Mar., June), Tabernilla. FRENCH GUIANA: St. Jean Maroni.

188. Drescoma cinilixa Dyar

FIGURE 283

Drescoma cinilixa Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 329, 1914.

Markings and color of forewing as in *cyrdipsa* except dark ground color and dark costal markings paler, more ocherous fuscous than brown. Underside of male hind wing with a patch of black sex-scaling above the notch in cell, orange-yellow sex-scaling on the upper vein of cell preceding the notch, on several veins following the notch, and in the median fold at base of wing; the indentation of upper vein of cell also much shallower than on *cyrdipsa*, a concavity rather than a strongly triangular notch. Hind wing paler; dull smoky white, darkening towards termen and apex. Alar expanse, 15–16 mm.

Male genitalia with transtilla narrowed towards harpes; clasperlike projection from sacculus slender, sharply pointed. Female unknown.

TYPE LOCALITY: La Chorrera, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: GUATEMALA: Cayuga (May). PANAMÁ: La Chorrera (May).

Distinguishable from *cyrdipsa* by its paler color, the secondary sexual characters of the male hind wing, and the differently shaped transtilla and clasper.

Genus 47. *Monoptilota*

[Venational division B. Forewing with veins 4 and 5 closely approximate for a short distance from cell. Hind wing with vein 2 from well before angle of cell; 3 from the angle; cell one-third the length of wing. Male genitalia with uncus bifid, its divided elements widely separated; transtilla incomplete; apical process of gnathos a broadly triangulate hook. Male antenna unipectinate with sinus and scale tuft in base of shaft.]

47. Genus Monoptilota Hulst

Monoptilota Hulst, Canadian Ent., vol. 32, p. 13, 1900.—Forbes, Cornell Mem. 68, p. 621, 1923. (Type of genus: *Monoptilota nubilella* Hulst.)

Tongue well developed. Antenna of male (figs. 285g–h) with basal segment elongate, shaft unipectinate and with a long shallow sinus at base containing a stout, appressed scale tuft; of female simple, smooth. Labial palpus obliquely upturned, reaching to vertex; second segment broadly scaled; third segment small, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle, much closer at base to 4 than to 2; 4–5 closely approximate for a short distance from cell; 6 from below upper angle of cell, straight; 8 and 9 stalked for less than half their lengths; 10 from the cell; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with or very closely approximate at base to stalk of 4–5; 4 and 5 stalked for about half their lengths; 7 and 8 closely approximate for a short distance from cell; cell one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of fine, weak, hair tufts.

Male genitalia with uncus bifid, the divided parts widely separated and hooked at their apices. Gnathos terminating in a triangulate, sharply hooked central process, its supporting lateral arms strongly arched and arising well down from ventrolateral projections of tegumen; an elaborate well-sclerotized subanal plate attached to alimentary tube. Transtilla incomplete, consisting of two, widely spaced, slender, weakly sclerotized plates. Anellus a simple, moderately broad, partially curved band. Aedeagus short, stout; penis unarmed. Vinculum short (shorter than broad); terminal margin truncate.

Female genitalia with signum developed as a spined plate (individually variable); bursa otherwise smooth; ductus bursae rather stout, expanding gradually into the bursa, smooth except for a broad sclerotized banding near genital opening; ductus seminalis from bursa near junction of bursa and ductus bursae.

A unique genus of doubtful affinities. Contains but the one North American species.

189. Monoptilota pergratialis (Hulst)

FIGURES 27, 285, 763, 764

Nephopteryx pergratialis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 162, 1886; Phycitidae of N. Amer., p. 143, 1890.—Ragonot, Monograph, pt. 1, p. 267, 1893.

Nephopteryx grotella Ragonot, N. Amer. Phycitidae, p. 6, 1887.

Monoptilota nubilella Hulst, Canadian Ent., vol. 32, p. 14, 1900.—Chittenden, U. S. Dep. Agr. Div. Ent. Bull. 23, pp. 9–17, 1900.—Welden, Jour. Econ. Ent., vol. 1, p. 148, 1908.—Forbes, Cornell Mem. 68, p. 621, 1923.

Monoptilota pergratialis (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 195, 1916.—Brannon, Journ. Econ. Ent., vol. 27, p. 719, 1934.—Brimley, Insects of North Carolina, p. 300, 1938.—McDunnough, Check list, No. 6141, 1939.

Forewing dark fuscous (gray-brown) with blackish shading on many of the veins and on costal half of wing; along terminal margin a heavy dusting of white between the veins, giving much of wing an ashy appearance; antemedial line obscure, indicated chiefly by a diffused blackish brown outer border, broadest and strongest from costa to lower margin of cell, frequently interrupted or obscured in the ground color towards inner margin; subterminal line sinuate, grayish white with dentate blackish brown inner and outer borders; discal dots distinct, separated, blackish; a black line along terminal margin more or less interrupted by white streaklets at the vein ends. Hind wing of male semihyaline white with veins slightly darkened and a blackish brown line along terminal margin; of female much

darker, dull smoky white to brown, with veins and terminal edge correspondingly darker. Alar expanse, 17–30 mm.

Male genitalia with characters as given for the genus. Female genitalia with signum extremely variable, ranging from a small, weakly spined plate, like that of the paratype (fig. 764), to a large plate with rather long slender spines (fig. 763). In one large female of a reared series from Virginia the signum is completely absent. This variability in female structure is not matched by anything in the male, where the genitalia are remarkably uniform for large and small specimens alike.

TYPE LOCALITY: Florida (*pergratialis*, ♀, in AMNH, ex Rutgers; *grotella*, ♀, in Paris Mus.); Auburn, Ala. (*nubilella*, ♂, in USNM).

FOOD PLANT: Limabean (larva a borer in the stems).

DISTRIBUTION: *Maryland*, Cabin John Bridge (Aug., Sept.), Salisbury (Sept.); *Virginia*, Norfolk (May), St. Elmo (Jan., Feb., Mar.); *North Carolina*, Vance County (Aug., Oct.); *South Carolina*, Florence (June, July), Lyna Plantation (June); *Georgia*, Savannah (June); *Florida*, Coconut Grove (Apr., May), Miami (Apr.); *Alabama*, Auburn (July), Montgomery (July); *Arizona*, Baboquivari Mts. (June, Aug., Sept.), Huachuca Mts. (July, Aug.), Nogales (July), Palmerlee, Washington Mts., White Mts. (June).

The species is of some importance as an enemy of limabeans and is known in economic literature as the "limabeam vine borer." The Chittenden (1900) paper cited gives what is known of the life history. There are several later references in publications devoted to economic entomology but they add nothing to our knowledge of the insect. It is not known outside of the United States; at least no specimens have been received or identified from any of the tropical American regions where the species might be expected to occur; and in the United States its distribution seems to be limited to the eastern area from the District of Columbia south to Florida and adjacent Gulf States and to southern Arizona. The only known host is the limabean. The southern Arizona distribution raises a question as to another possible host (probably a wild legume), for the Arizona localities are mostly out of the range of limabean cultivation.

Genera 48–50: *Zamagiria* to *Magariopsis*

[Venational division D. Forewing with veins 4 and 5 connate, shortly stalked or closely approximate for a short distance from base; 3 close to 4–5 at base; 6 bent towards base connate with or shortly separated from the stalk of 8–9 at base. Hind wing with 4 and 5 anastomosed from just beyond angle of cell for about half their lengths; cell short. Eighth abdominal segment of male with compound, ventral tufts. Labial palpi of male upcurved; appressed to face or to each other; third segment greatly reduced, acuminate. Gnathos with apical process broadly produced and lateral arms elongate and arising from ventrolateral projection from tegumen. Female with ductus bursae short and strongly sclerotized towards genital opening and junction with bursa.]

48. Genus Zamagiria Dyar

Zamagiria Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 329, 1914. (Type of genus: *Zamagiria dixolophella* Dyar.)

Tongue well developed. Antenna of male shortly ciliate, a deep sinus containing heavy scale tuft at base of shaft; of female simple and weakly pubescent. Male head between the antennae deeply grooved to hold an appressed, matted tuft of long scales arising from the upper edge of frons. Labial palpus recurved-ascending; second segment very long; broadly dilated and hollowed within to hold the maxillary palpus; third segment short, acute. In repose the labial palpi are appressed to each other and fit into the groove on head covering both the maxillary palpi and the scale tuft from frons. Maxillary palpus of male in the form of a large aigrette; of the female minute, filiform. Forewing with a ridge of roughened scales preceding the antemedial line but not reaching to costa; 11 veins; vein 2 from before the lower outer angle of cell; 3 from the angle, close to 4–5 at base; 4 and 5 very closely approximate for a short distance from cell; 6 from upper angle of cell, bent towards base, connate with 8–9; 8 and 9 long stalked; 10 from the cell, approximate to the stalk of 8–9 for a short distance from cell; male without costal fold but rough scaled on underside of costa at base. Hind wing with vein 2 from well before the angle of the cell; 3 from the angle; 4 and 5 anastomosed from just beyond the angle for about half their lengths; 7 and 8 contiguous or weakly anastomosed for a short distance beyond cell; cell less than one-fourth the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound ventral scale tufts.

Male genitalia with uncus triangulate. Gnathos with apical process broadly produced and variously modified; lateral arms elongate and arising well down from ventrolateral projections of tegumen. Transtilla absent. Harpe with sacculus more or less produced at apex; clasper in some form usually present; cucullus narrow and reduced. Aedeagus stout; penis armed with strong spine or spines (except in *hospitabilis*).

Female genitalia with bursa armed with strong spine cluster or clusters and usually partially sclerotized; ductus bursae short, strongly sclerotized towards genital opening and junction of bursa and ductus bursa (the sclerotizations more or less contorted); genital opening broad; ductus seminalis from bursa towards junction of bursa and ductus bursae.

An easily recognized, compact genus exhibiting striking structural specific differences in genitalia.

190. Zamagiria dixolophella Dyar

FIGURE 286

Zamagiria dixolophella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 329, 1914.

Aigrette of male maxillary palpus reddish.

Forewing dark smoky gray, the basal area below costa a trifle paler; antemedial line faint, narrow, oblique and

sinuate, well out on wing, bordered outwardly by a narrow blackish line, inwardly (from top of cell to inner margin by a broad salmon-ocherous patch filling the space between antemedian line and the vertical scale ridge; the latter thin, blackish, bordered inwardly by a white line; subterminal line near outer margin, indistinct, pale, bordered inwardly by some obscure blackish streaklets on the veins; discal dots separated; all the markings obscure except the white inner margin of the subbasal scale ridge. Hind wing translucent, pale smoky fuscous; the veins and terminal margin faintly darkened. Alar expanse, 21 mm.

Male genitalia with flaring apical process of gnathos terminating in a shortly forked hook. Harpe with a broadly triangulate projection (clasper) from near apex of sacculus, the sacculus otherwise not appreciably produced at apex. Penis armed with three clusters of straight, strong spines.

TYPE LOCALITY: Corozal, Canal Zone, Panamá (Nov.; type in USNM).

FOOD PLANT: Unknown.

Represented only by the male type.

191. Zamagiria pogerythrus Dyar

FIGURES 49, 287, 765

Zamagiria pogerythrus Dyar, Ins. Insc. Menstr., vol. 7, p. 47, 1919.

Aigrette of male maxillary palpus red.

Forewing pale brownish gray dusted and blotched with white, slightly darker along costa; the white scaling most conspicuous about the lower discal spot, as a more or less diffused blotch in median area following the antemedial line, as an interrupted white line preceding the subbasal scale ridge, and as a short, narrow shade from apex in terminal area; antemedial pale line faint, its outer blackish border interrupted on the males, continuous on females; the subbasal scale ridge broken into two or three patches of black intermixed with some red raised scales; the patch between these and the antemedial line more restricted and fainter than on *dixolophella*, ocherous fuscous; subterminal line well contrasted, indented at vein 6, white, margined inwardly by blackish streakings on the veins and inwardly and outwardly by dark spots on costa; discal dots separate, black, the lower one elongately enlarged and the most conspicuous black marking on the wing; a row of 4 or 5 black dots along terminal margin. Hind wing whitish, translucent; a dark shade along costa and a narrow dark line along termen; the veins very faintly darkened. Alar expanse, 20–22 mm.

Male genitalia with apical process of gnathos contorted. Harpe with apex of sacculus shortly and bluntly produced at apex. Penis armed with two clusters of straight, stout, moderately long spines.

Female genitalia with signum developed as a narrow, elongate, strongly spined plate extending the length of the bursa; bursa otherwise unsclerotized and minutely spinose; ductus bursae very broad (as broad as long and broader than bursa), its membrane thickened and bearing on its inner dorsal surface, near genital opening, a large pair of conjoined sclerotized plates, and on its inner ventral surface, near junction of bursa and ductus, a large, thickened, corrugate, triangulate, sclerotized plate bearing minute spines over its inner surface. Eighth-segment collar ventrally fused.

TYPE LOCALITY: Chejel, Guatemala (type ♂, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Campeche (July). GUATEMALA: Chejel (June, Aug.), Purulhá (July).

192. Zamagiria hospitabilis Dyar

FIGURE 288

Zamagiria hospitabilis Dyar, Ins. Insc. Menstr., vol. 7, p. 48, 1919.

Aigrette of maxillary palpus pale red.

Forewing ocherous brown heavily overlaid with black, giving the wing a dark, blackish brown ground color; two strongly contrasted white markings, the inner border of the broken, black, subbasal scale ridge and a large, irregular blotch on lower median area just beyond the antemedial line; antemedial line not strongly contrasted but distinguishable throughout, sinuate, whitish, bordered outwardly by a thin black line; subterminal line more contrasted, dull white, indented at vein 6 and at lower fold; discal dots confluent, forming a black lunate mark on discocellular vein; outer area beyond subterminal line very faintly dusted with white; terminal dots confluent forming a narrow black line along outer margin of wing. Hind wing semihyaline white with a dark shade along costa; the veins and terminal margin faintly darkened. Alar expanse, 21 mm.

Male genitalia with apical process of gnathos broadly flaring and serrate. Harpe with sacculus shortly produced at apex, very long and with broadly triangulate, median, clasperlike projection (similar to that of *dixolophella*). Lateral margins of aedeagus armed with short, stout spines; penis unarmed except for a small, flat, weakly sclerotized plate.

TYPE LOCALITY: Tánamo, Cuba (type in USNM).

FOOD PLANT: Unknown.

Represented only by the male type.

193. Zamagiria masculinus Dyar

FIGURE 289

Zamagiria masculinus Dyar, Ins. Insc. Menstr., vol. 7, p. 46, 1919.

Aigrette of male maxillary palpus whitish ocherous.

Forewing very pale ocherous gray thinly dusted with white in median area; the ocherous tint strongest in the patch between scale ridge and antemedial line, along the costal edge, and broadly along lower fold; antemedial and subterminal lines distinguishable, but not strongly accented, whitish; black scaling of subbasal scale ridge limited to one or two dots; blackish outer

border of antemedial line interrupted; inner blackish border of subterminal line broken into short black streaks on the veins; discal dots separated, blackish; a row of small blackish dots (5 or 6) along termen between the vein ends; on inner margin at lower outer edge of antemedial line a small white spot; none of the white markings strongly contrasted; the usual black markings broken into dots and very short dashes; overall shade a pale clay color. Hind wing translucent, white with a faint ocherous tint; a narrow pale brownish line along termen; the veins very faintly darkened. Alar expanse, 25 mm.

Male genitalia with gnathos terminating in a broad, inverted, heart-shaped apical projection. Harpe with sacculus short, sharply pointed and shortly projecting at apex. Penis armed with a single stout spine about one-third as long as aedeagus.

TYPE LOCALITY: Cayuga, Guatemala (Apr.; type in USNM).

FOOD PLANT: Unknown.

The largest known species of *Zamagiria*. Known only from the male type.

194. Zamagiria australella (Hulst), new combination

FIGURES 292, 766

Selagia australella Hulst, Canadian Ent., vol. 32, p. 174, 1900.—McDunnough, Check list, No. 6232, 1939.

Immyrla bumeliella Barnes and McDunnough, Contributions, vol. 2, p. 182, 1913.—McDunnough, Check list, No. 6188, 1939. (New synonymy.)

Aigrette of male maxillary palpus ocherous white.

Forewing white dusted with black scales, giving the wing a pale gray color, lightest in basal and through the median areas, slightly darker along costa; subbasal scale ridge conspicuous and normally unbroken, black with a fine white inner border; the patch between scale ridge and antemedial line olivaceous ocherous; antemedial line oblique, dentate-sinuate, faint, indicated chiefly by its black outer bordering line; subterminal line dentate-sinuate, bordered inwardly and outwardly at costa by blackish dashes, outwardly below costa by a narrow brownish shade and inwardly by a fine black line; discal dots distinct, separate, black; a small blackish or brownish spot on inner margin a slight distance beyond antemedial line and diffused black smudges on veins 2, 3 and 4 for a short distance from cell. Hind wing semihyaline white; a darker line along termen and the veins very slightly darkened. Alar expanse, 15–18 mm.

Male genitalia with apical process of gnathos a nearly square plate. Harpe with costa narrowly sclerotized and shortly produced at apex; sacculus shortly and bluntly produced. Penis armed with a single stout cornutus about half as long as aedeagus.

Female genitalia with bursa sclerotized and densely spined at posterior end, the sclerotization extending into ductus bursae; occupying most of the remainder of ductus bursae a funnel-shaped, convoluted, sclerotized plate.

TYPE LOCALITIES: Blanco County, Tex. (*australella*, in AMNH, ex Rutgers); Fort Myers, Fla. (*bumeliella* in USNM).

FOOD PLANT: *Bumelia microcarpa*.

DISTRIBUTION: *Texas*, Blanco County; *Florida*, Fort Myers (May), Miami.

The genitalia of the female type of *australella* are identical with those of a reared female paratype of *bumeliella*, and the two moths otherwise agree, so there is no question of the synonymy. However, I doubt somewhat the correctness of the locality label on Hulst's type and suspect that it may be a Florida specimen.

195. Zamagiria fraterna, new species

FIGURE 291

Aigrette of male maxillary palpus white.

Forewing white on dorsal half and along inner margin beyond antemedial line to tornal angle; extreme base of costa rough scaled, black (similar black sex-scaling on underside of wing at base); antemedial line at middle of wing incomplete, indicated only by an angulate white line on lower half, bordered inwardly and outwardly by small black smudges; along lower margin to antemedial line the ground color is pale brown; a faint dusting of brown or purplish brown scales on the white ground for a narrow margin along costa; scale ridge interrupted, a series of black dots with the inner white bordering line very faintly indicated; the usual patch between scale ridge and antemedial line pale brown, a trifle paler than the ground color on lower basal area of wing; some similarly colored scales in the lower postmedian area between the antemedian line and the end of cell and in the interspaces of veins 3 to 5; subterminal line incomplete, only its middle portion distinguishable; discal dots distinct, separated, black, the lower one enlarged; black scaling along veins 3, 4 and 5. Hind wing hyaline white, a pale brownish gray line along terminal margin and a similar shade along costa; at extreme base of wing a few black sex-scales on the veins. Alar expanse, 21.5 mm.

Male genitalia with apical process of gnathos roundly spatulate. Harpe considerably broadened towards middle, thence sharply tapered to the narrow cucullus; costa strongly humped at middle; sacculus produced at apex into a long, strongly sclerotized, curved, free, hooklike arm. Anellus a U-shaped plate. Penis armed with a single stout spine (about one-fourth as long as aedeagus), a strongly sclerotized, corrugated plate and a concentration of rather coarse granulations.

TYPE LOCALITY: Santiago de las Vegas, Cuba (type in USNM, 61341).

FOOD PLANT: "Caimitillo."

Described from male type reared by A. Otero, Aug. 17, 1932, and labeled: "Leaf tier on Caimitillo, E. E. A. Cuba, Ento. No. 10006."

196. Zamagiria laidion (Zeller)

FIGURES 290, 767

Myelois laidion Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 211, 1881.

Piesmopoda laidion (Zeller) Ragonot, Monograph, pt. 1, p. 162, 1893.

Zamagiria laidion (Zeller) Dyar, Ins. Insc. Menstr., vol. 7, p. 46, 1919.

Zamagiria deia Dyar, Ins. Insc. Menstr., vol. 7, p. 46, 1919 (new synonymy).

Zamagiria striella Dyar, Ins. Insc. Menstr., vol. 7, p. 47, 1919 (new synonymy).

Aigrette of male maxillary palpus dull white.

Forewing pale gray, the overall tint shading from grayish white to very pale bluish gray (in fresh reared examples); costal border slightly darker; the patch between scale ridge and antemedial line reddish brown; similar reddish brown scaling spread over basal area bordering inner margin and frequently blotching the median area over vein 1b and the lower fold (especially on the males); also some scattering of reddish brown streaking on veins 3 and 4 for a very short distance from cell; black scale ridge more or less complete; on several males a black or black and red-brown streak along vein 1b from scale ridge to base of wing; transverse lines faint, the outer blackish border of the antemedial and the inner dark border of subterminal more or less interrupted (more so on males than females); discal dots separated, black, the lower one slightly enlarged; a row of 5 or 6 small black dots along termen. Hind wing semihyaline white; a dark line along terminal margin and some faint darkening of the veins. Alar expanse, 15–22 mm.

Male genitalia similar to those of *fraterna* except: Costa of harpe convex but not decidedly humped; annellus inverted;[3] penis with cornutus a single, very stout, long spine (over two-thirds as long as aedeagus) surrounded by a cluster of small granulations.

Female genitalia with a finely spined plate (signum) near junction of bursa and ductus bursae, and a strongly sclerotized lateral patch in bursa near its anterior end; ductus bursae with a sclerotized plate occupying most of its length, the posterior end of the plate folded over into triangulate ventral lips.

TYPE LOCALITIES: Honda, Colombia (*laidion*, in BM); Chejel, Guatemala (*deia* and *striella*, in USNM).

FOOD PLANTS: *Achras sapota*, *Mimusops emarginata*, *Eriobotyra japonica* (larvae feeding on leaves and flowers).

DISTRIBUTION: UNITED STATES: *Florida*, Key West (Apr., May), Miami (Jan., Dec.). GUATEMALA: Chejel (June). PANAMÁ: Porto Bello (Feb.). COLOMBIA: Honda. BRAZIL: Castro (*Paraná*) Obidos (Amazon region, Sept.), Viçosa (*Minas Geraes*, Sept.). BOLIVIA: "East Bolivia" ("Aug.–Oct., T. Steinbach").

Hitherto *laidion* has been recognized only from female examples. A reared series in the National Museum from Florida has enabled us to associate the sexes and has established the synonymy of *deia* and *striella*, both described from males. Dyar's type of *striella* is merely an extreme example of a common color variant with more or less black streaking on the base of vein 1b of forewing. The reared Florida specimens have also given us the host records cited above.

[3] This structure seems more like a transtilla than an anellus; for its straight posterior margin lies between the costal bases of the harpes, and it could be interpreted as a transtilla or combination of transtilla and anellus, except that in other species of the genus there is no trace of even the vestiges of a true transtilla.

197. Zamagiria ipsetona Dyar

FIGURE 768

Zamagiria ipsetona Dyar, Ins. Insc. Menstr., vol. 7, p. 47, 1919.

Forewing gray, more heavily marked with black than in preceding species; the blackish streakings on the veins (2 to 6 in this species) longer and stronger; lower discal spot elongated into a black dash; dark dashes (reddish brown) on the veins in outer area following the faint subterminal line; the black scale ridge not continuous; antemedial line sinuate and nearly vertical; the whitish areas limited to a pale oval patch surrounding the black-streaked veins and discal dots and a faint shade preceding the black scale ridge; the usual red-brown scaling limited to the patch between scale ridge and antemedial line and weak shadings between some of the veins in postmedian area. Hind wing translucent white; a narrow dark shade along costa and a blackish line along termen; veins appreciably darkened. Alar expanse, 23–24 mm.

Female genitalia with two elongate spined plates in bursa; another more weakly spined plate at junction of bursa and ductus bursae; from the junction a sclerotization extends along one side of bursa for about four-fifths of its length; ductus bursae very short, strongly sclerotized towards genital opening, the plate folded over at the opening into ventrolateral lips. Eighth-segment collar completely fused ventrally.

TYPE LOCALITY: Juan Viñas, Costa Rica (type in USNM).

FOOD PLANT: Unknown.

Represented by three females from the type locality (Feb., June). The male is unknown.

49. Genus Anegcephalesis Dyar

Anegcephalesis Dyar, Ins. Insc. Menstr., vol. 5, p. 46, 1917.—Heinrich, Ins. Insc. Menstr., vol. 5, p. 48, 1917 (larva). (Type of genus: *Anegcephalesis cathaeretes* Dyar.)

Characters of *Zamagiria* except: Maxillary palpus minute, subsquamous in both sexes. Forewing with veins 4 and 5 connate or very shortly stalked. Hind wing with cell longer (slightly less than one-third the length of wing).

The genus is very close to *Zamagiria* but its separation seems to be justified by the differences in the male maxillary palpi and the longer cell of hind wing. The venational differences noted above (between veins 4 and 4 of forewing) may be only a specific character. Dyar distinguished *Anegcephalesis* from *Zamagiria* on the difference in maxillary palpi, but mistook the appressed scale tuft from frons for that organ. This scale tuft is present and equally well developed in *Zamagiria* and *Anegcephalesis*.

198. Anegcephalesis arctella (Ragonot), new combination

FIGURES 50, 294, 770

Phycita arctella Ragonot, N. Amer. Phycitidae, p. 4, 1887; Monograph, pt. 1, p. 180, 1893.
Anegcephalesis cathaeretes Dyar, Ins. Insc. Menstr., vol. 5, p. 46, 1917 (new synonymy).
Anegcephalesis catheretes (Dyar), Ins. Insc. Menstr., vol. 7, p. 48, 1919 (food plant and altered spelling).—McDunnough, Check list, No. 6176, 1939.—Bruner, Scaramuzza, and Otero, Bull. 63, Estación Exp. Agron., Cuba, p. 69, 1945.

Forewing brownish gray dusted with white; the white shading more pronounced (on the males) in the median area above the base of the cell, as a small spot on inner margin below the dark markings on veins 2 to 5, and in outer area beyond the dark outer border of the subterminal line, on the female the white dusting is more generally distributed over median and outer areas and, on some specimens, on the basal area, giving the wing an ashy gray appearance; subbasal ridge black bordered inwardly by a white line and followed by a dull olivaceous ocherous patch; antemedial line well out towards middle of wing, oblique, notched at vein 1b and evenly curved above it, outwardly bordered by a continuous black line; subterminal line distinct; indented just below costa and very slightly so at 1b; discal spots fused into a lunate black line along discocellular vein; a dark brownish smudge over veins 1 to 5 adjacent to cell. Hind wings translucent white; the veins very faintly darkened. A narrow brown line along termen. Alar expanse, 20–23 mm.

Male genitalia with uncus narrowly triangulate. Apical process of gnathos a thin, broadly ovate plate. Harpe with appressed, elongate clasper; sacculus not produced at apex. Aedeagus sharply bent; penis armed with an elongate, flattened, partially bent, platelike cornutus, and some sclerotized wrinklings and granulations.

Female genitalia with signum developed as an elongate, strongly spined plate (about half as long as bursa); opposite the signum a narrower, much more weakly sclerotized plate beginning at junction of bursa and ductus bursae (this plate about half the length of signum); bursa otherwise smooth; ductus bursae tubular, sclerotized. Eighth-segment collar fused ventrally.

TYPE LOCALITY: Nassau, Bahamas (*arctella*, in Paris Mus.; *cathaeretes*, in USNM).

FOOD PLANT: *Dipholis salicifolia*.

DISTRIBUTION: UNITED STATES: *Florida*, Miami, Paradise Key (Mar.), Royal Palm State Park (Feb.). BAHAMAS: Nassau (New Providence Isl., Feb., Mar., April, May, Sept.). CUBA: Baracoa (Oct.), Santiago Province (Feb., June, Sept., Oct., Dec.).

Ragonot's *arctella* was described from a single female. His description and figure agree in every detail with Dyar's *cathaeretes* represented by a large series in the U. S. National Museum. Both were described from the same type locality. There is no doubt that both names apply to the same species.

50. Magiriopsis, new genus

TYPE OF GENUS: *Sematoneura denticosella* Dyar.

Characters of *Zamagiria* except: Antenna of male unipectinate for basal half of shaft, serrate and shortly ciliate beyond; shaft with very shallow sinus near base, containing a few roughened scales and a short row of minute spines but without scale tuft. Labial palpi of male broad, dorsoventrally flattened and appressed to face (not to each other as in *Zamagiria* and *Anegcephalesis*); hollowed inner surface; third segment greatly reduced and completely hidden by scaling of second segment. Male head without scale tuft from upper edge of frons, not deeply grooved between antennae but with an enlarged scale tuft behind antennae. Maxillary palpus of female squamous (of male, as in *Zamagiria*, in the form of an aigrette). Forewing smooth; vein 2 from well before outer angle of cell; 6 slightly bent towards base but from below upper angle of cell, separate from stalk of 8–9 at base. Hind wing with cell less than one-third the length of wing.

Male genitalia with complete transtilla.

199. Magiriopsis denticosella (Dyar), new combination

FIGURES 293, 769

Sematoneura denticosella Dyar, Proc. U. S. Nat. Mus., vol. 42, p. 105, 1912.
Hypsipyla denticosella (Dyar), Ins. Insc. Menstr., vol. 7, p. 41, 1919.
Crocidomera cristalis Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 4, p. 352, 1929 (new synonymy).

Aigrette of male maxillary palpus whitish ocherous.

Forewing reddish (rust) brown, the costal third lightly dusted with white, especially along the costa and between the veins, the dark color somewhat accented on the veins and, on occasional female specimens, some black scaling on the veins before the usual location of subterminal line; the latter rarely indicated; antemedial line and discal spots obsolete. Hind wing translucent, opalescent with a smoky shade at apex; a dark line along termen and the outer veins faintly darkened. Alar expanse, 32–40 mm.

Male genitalia with uncus narrowly triangulate. Apical process of gnathos a long, strong spine, sharply hooked at apex. Transtilla a weakly sclerotized, shieldlike bridge attached to costal bases of harpes. Harpe with costa strongly sclerotized for basal third of harpe and terminating in a broad projection; sacculus with a broad projection from base and a broadly projecting clasper from apex. Aedeagus long and stout; penis armed with three clusters of strong spines (about as long as width of aedeagus). Vinculum elongate (two and one-half times as long as greatest width), stout, not appreciably tapering; posterior margin reinforced and squarely excised.

Female genitalia with two irregularly shaped and strongly spined plates in bursa, and bursa at junction with ductus bursa strongly sclerotized, the wrinkled sclerotization extending part way into the ductus; ductus bursae otherwise only sclerotized (weakly) at

genital opening. Eighth-segment collar not fused ventrally.

TYPE LOCALITIES: Orizaba, México (*denticosella*, in USNM); Juan Viñas, Costa Rica (*cristalis*, in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Orizaba (Oct.), Misantla (Aug.). GUATEMALA: Cayuga (Jan., Aug.), Chejel (June). COSTA RICA: Juan Viñas (Jan., Nov.). COLOMBIA: Upper Río Negro. VENEZUELA: Aroa, San Esteban Valley. BRITISH GUIANA: Omai. BRAZIL: Ponte Nova (Rio Xingu, Amazonas), Santos (Mar.).

Both *denticosella* and *cristalis* were described from females. The synonymy is obvious. Both Dyar and Hampson had seen males many years before but evidently overlooked them when writing their descriptions.

Genus 51: *Ancylostomia*

Venational division D. Forewing with veins 4 and 5 contiguous or stalked for about one-third their lengths from cell; 3 connate with 4 at base; 6 bent towards base, connate with the stalk of 8–9. Hind wing with veins 4 and 5 stalked to middle; 3 closely approximate to the stalk of 4–5 at base; cell short. Labial palpus obliquely ascending with third segment long and porrect. Uncus pentagonal. Gnathos produced at apex into a pair of long, flattened, pointed, contorted, bandlike projections. Female with bursa copulatrix weakly sclerotized throughout; eighth-segment collar modified ventrally. Eighth abdominal segment of male with compound ventral tufts.

51. Genus Ancylostomia Ragonot

Ancylostomia Ragonot, Monograph, pt. 1, p. 567, 1893. (Type of genus: *Myelois stercorea* Zeller.)

Tongue well developed. Antenna of male with a sinus and strong scale tuft in shaft at base, shaft otherwise flattened, weakly serrate and pubescent; of female, simple and pubescent. Labial palpus obliquely ascending, with third segment porrect; second segment long, reaching well above vertex, on male hollowed to receive maxillary palpus; third segment slender, acuminate, on male half as long as second, on female about the same length as second segment. Maxillary palpus of male in the form of an aigrette; of female, squamous. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle, connate with 4; 4 and 5 contiguous or stalked for about one-third their lengths from cell; 6 from upper angle of cell, connate with the stalk of 8–9, bent towards base; 8 and 9 stalked for slightly more than half their lengths; 10 from the cell, approximate for a short distance to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, closely approximate to 4 at base; veins 2 and 3 very long; 4 and 5 stalked to middle; 7 and 8 anastomosed or contiguous for a short distance from cell (for less than half their lengths); cell less than one-third (about one-fourth) the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound, ventral scale tufts.

Male genitalia with uncus pentagonal (the sides parallel, the terminal margin angled). Gnathos produced at apex into a pair of long, flattened, sharply pointed and slightly contorted, bandlike projections; the lateral arms short and articulated to base of uncus. Transtilla absent. Harpe elongate, slender, cucullus reduced, its apex bluntly pointed; sacculus produced at apex into a slender, free, curved hook. Penis armed with a pair of thin, somewhat flattened and twisted spines as long (or nearly as long) as aedeagus. Vinculum slightly longer than greatest width; terminal margin broadly rounded.

Female genitalia without signum; bursa weakly sclerotized throughout; ductus bursa strongly sclerotized except for a narrow space beyond junction of bursa, at junction with bursa finely ridged and spined, the ridges and spines extending for a short distance into bursa, at genital opening the margins of ductus fuse into eighth-segment collar. Eighth-segment collar very strongly sclerotized; enlarged but not fused ventrally; its ventrocaudal angles produced and pointed; from its ventrolateral angles a pair of invaginated sclerotized pockets.

The genus is easily identified by its peculiarly developed gnathos and the eighth-segment collar of the female. Its species are tropical American in distribution with (in the case of *stercorea*) a slight extension of range into southern Florida.

200. Ancylostomia stercorea (Zeller)

FIGURES 295, 771

Myelois stercorea Zeller, Isis von Oken, 1848, p. 873.
Anerastia ignobilis Butler, Proc. Zool. Soc. London, 1878, p. 494.
Pempelia diffissella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 178, 1881.
Ancylostomia stercorea (Zeller) Ragonot, Monograph, pt. 1, p. 568, 1893.

Forewing pale ocherous along the costa, through the median fold and over most of the basal area; some pinkish brown shading between the veins in the pale areas giving the ocherous ground color a rosy tint (especially on reared and fresh specimens); the lower outer half of wing heavily shaded with brown more or less dusted with black (on reared examples this area is decidedly blackish brown, its inner margin oblique from lower outer angle of cell to basal third of inner margin); a distinct brown or black streak under vein 8 from apex about half-way to cell and a similar longer dark streak along vein 6 from terminal margin to the cell; a thin whitish line along the lower margin of cell from beyond base and continuing into vein 4 for a short distance; a similar shorter white line on the subbasal half of vein 1b; a small black dot on the middle of the white streak on vein 1b and a similar black dot above it on the white streak on lower margin of cell; a single, large, conspicuous black discal spot at lower outer angle of cell; antemedial and subterminal lines obsolete; a few black dots or streaklets in outer areas about the middle of veins 2, 3, and 4 and on dark specimens some blackish or dark brown shading on upper and lower

veins of cell at base of wing. Hind wing translucent white with a smoky shade along costa, towards apex and along termen; the veins slightly darkened. Alar expanse 16–28 mm.

Genitalic characters as given for the genus. Eighth-segment collar of female laterally corrugated.

TYPE LOCALITIES: Brazil (*stercorea*, in BM); Jamaica (*ignobilis*, in BM); Honda, Colombia (*diffissella*, in BM).

FOOD PLANT: *Cajanus cajan* (larvae feeding in the pods).

DISTRIBUTION: UNITED STATES: *Florida*, Cocanut Grove (Apr., May), Goulds (May), Homestead (Apr.), Jupiter (Apr.), Miami (May). CUBA: Santiago Province (May, June, Oct., Dec.), Santiago de las Vegas (May). HAITI (June). DOMINICAN REPUBLIC (Aug.). PUERTO RICO: Isabela (Apr.), Puerto Real (Vieques Isl., Apr.). VIRGIN ISLANDS: Kingshill (St. Croix; June, "Nov.–Dec."). JAMAICA (Mar.). BAHAMAS: Nassau (May). GRENADA: Nevis (Jan.); ST. KITTS (June). TRINIDAD (Mar., May). MÉXICO: Cuernavaca (July), Jalapa, Orizaba, Zacualpán (July). GUATEMALA: Chejel (July, Aug.), Volcán Santa María (June, July). COSTA RICA: Juan Viñas (June.) PANAMÁ: La Chorrera (May), Río Trinidad (Mar.). COLOMBIA: Honda. FRENCH GUIANA: Cayenne. BRAZIL: Castro.

The food plant and Florida records are from a large series reared by the Special Survey of the U. S. Bureau of Entomology and Plant Quarantine in 1944. We also have a couple of reared adults and several collected larvae from chickpea (*Cicer*) and black-eyed pea (*Dolichos*). The favored host, however, seems to be the pigeonpea (*Cajanus*). In the pods of that plant the larvae are abundant throughout the West Indies and in southern Florida.

201. Ancylostomia sauciella (Zeller)

FIGURE 296

Pempelia sauciella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 183, 1881.

Ancylostomia sauciella (Zeller) Ragonot, Monograph, pt. 1, p. 569, 1893.

Forewing cinnamon red mixed with rose; costa paler; a narrow subcostal reddish brown shade extending from base to apex; the veins somewhat accented by reddish scaling; a small blackish discal dot at lower outer angle of cell; a similar dot on basal third of vein 1b in a white streaklet on the vein; from apex a short oblique blackish shade. Hind wing yellowish white, translucent; a thin dark line along termen and the veins slightly darkened. Alar expanse, 20 mm.

Male genitalia as in *stercorea* except uncus narrower and apical projecting arms of gnathos shorter and decidedly broader.

TYPE LOCALITY: Maraquita, Colombia (type in BM).

FOOD PLANT: Unknown.

Known only from the type.

202. Ancylostomia argyrophleps Dyar

Ancylostomia argyrophleps Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 406, 1914.

Similar to *sauciella* except: Costa and lower half of basal area carneous white; a broad subcostal band extending from base to apex, red-brown shaded with black especially towards apex; lower outer area of the same color with a smoky fuscous shade along outer half of inner margin from near tornus; a white line along lower margin of cell and vein 5 from basal third, enclosing a black dot at lower outer angle of cell; a similar black dot on basal third of vein 1b. Hind wing translucent, semi-irridescent white with a faint smoky tint, the latter more pronounced towards apex; veins darkened in outer area on females, not appreciably so on males. Alar expanse, 20–25 mm.

Male genitalia as in *stercorea* except apical processes of gnathos a trifle broader (but not so broad as on *sauciella*). Eighth-segment collar of female smooth. Female genitalis otherwise essentially as in *stercorea*.

TYPE LOCALITY: Orizaba, México (type, ♂, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Orizaba (Aug.), Cuernavaca (July). GUATEMALA: Chejel (July).

203. Ancylostomia euchroma Dyar

Ancylostomia euchroma Dyar, Ins. Insc. Menstr., vol. 7, p. 53, 1919.

Forewing below the cell from base to tornus red-brown; the upper area white-lined between the veins and along the median fold in cell; the veins red-brown; a black dot at lower outer angle of cell, one on lower margin of cell before its middle and another on basal third of vein 1b; a diffused pale shade surrounds this last dot and extends obliquely backward to inner margin, an oblique line of black dots on veins 2, 3, and 4; on the female a smoky brown shade from apex extending narrowly along costa to base; on male the shade from apex is short and cinnamon red, and the dark area on lower half of wing is a bright cinnamon red. Hind wing in the male translucent white with a faint smoky shade at apex; on the female the smoky shade extends further back from apex and outer margin and the veins in outer area are appreciably darkened. Alar expanse, 24–25 mm.

Male genitalia with the projecting apical bands from gnathos as broad as those of *sauciella* but longer (at least as long as those of *stercorea*). Female genitalia with the sclerotized ribbing and spining at junction of bursa and ductus bursae slightly stronger than those of either *stercorea* or *argyrophleps*. Eighth-segment collar very weakly corrugated.

TYPE LOCALITY: Castro, Paraná, Brazil (type in USNM).

FOOD PLANT: Unknown.

Represented only by the female type and male paratype from the type locality. May be only a race of *sauciella*.

Genus 52: *Caristanius*

[Venational division B. Forewing with veins 4–5 separated at base and divergent shortly beyond, smooth; hind wing with vein 3 approximate to the stalk of 4–5 at base. Eighth abdominal segment of male with compound tufts. Antenna of male with sinus and scale tufts on base of shaft. Labial palpus obliquely ascending; second segment of male grooved. Maxillary palpus of male in the form of an aigrette. Male genitalia with a pair of long, strongly sclerotized arms from ventrolateral margins of uncus; transtilla absent; gnathos absent; a single strong cornutus on penis. Female genitalia with signa present, developed as coarsely spined plates; ductus bursae ribbonlike, sclerotized.]

52. Caristanius, new genus

TYPE OF GENUS: *Oligochroa pellucidella* Ragonot.

Tongue well developed. Antenna of male with sinus and stout scale tuft on base of shaft, finely pubescent; of female simple. Labial palpus obliquely ascending; on male stout and smooth scaled (the palpi appressed to each other), second segment long, reaching well above vertex, grooved to hold maxillary palpus, third segment very short, hidden in scaling of second; on female slender, shorter, reaching slightly above vertex, more roughly scaled, third segment over half as long as second, acuminate. Maxillary palpus of male in the form of an aigrette; of female squamous. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle; 4 and 5 shortly separated at base and divergent very shortly beyond; 6 from below upper angle of cell, straight; 8 and 9 stalked for half or less than half their lengths; 10 from the cell; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, approximate to stalk of 4–5 at base; veins 2 and 3 of moderate length; 4 and 5 stalked for half their lengths; 7 and 8 approximate beyond cell (for less than half their lengths); cell less than half the length of wing (but more than one-third); discocellular vein curved. Eighth abdominal segment of male with compound ventral scale tuft.

Male genitalia with uncus short, decidedly broader than long; a pair of long, strong, sclerotized arms from its ventrolateral angles. Gnathos absent (unless the fused arms from uncus can be interpreted as parts of this organ, which is extremely doubtful). Transtilla absent. Harpe with costa strongly sclerotized and with a strong projection from its base or a strong clasperlike projection from below it near base; sacculus short, narrow, weak, bluntly produced at apex; cucullus very narrow, weak and reduced. Anellus a narrow band with a central, bifurcate, bandlike projection, flanked by elongate, lateral lobes. Aedeagus elongate, moderately slender, straight; penis armed with a single strong cornutus and some fine spines and granulations. Vinculum stout, as long as or longer than greatest width.

Female genitalia with signa present, developed as elongate, curved, sclerotized, strongly and coarsely spined plates; ductus bursae flattened, ribbonlike, strongly sclerotized except for a narrow space near middle, also granulate towards bursa, the granulations extending into bursa; at genital opening ductus bursae very strongly and broadly sclerotized; ductus seminalis from bursa near junction of bursa and ductus bursae.

The species referred here have been placed in *Elasmopalpus*. They agree with the type of that genus (*lignosellus*) on antennal, palpal, and venational characters; but differ strikingly on male and female genitalic structure. The characteristic uncus with its long, produced, basal arms, the reduced, weak sacculus, the lack of any distinguishable gnathos, and the flattened, ribbonlike ductus bursae with its strongly sclerotized development at genital opening at once distinguish *Caristanius* from *Elasmopalpus*.

204. Caristanius pellucidellus (Ragonot), new combination

FIGURES 297, 775

Oligochroa pellucidella Ragonot, Bull. Soc. Ent. France, 1888, p. cxl.—Möschler, Die Lepidopteren-Fauna von Portorico, p. 329, 1890.

Elasmopalpus pellucidellus (Ragonot), Monograph, pt. 1, p. 429, 1893.

Rhodophaea melanoplaga Hampson, *in* Ragonot, Monograph, pt. 2, p. 519, 1901 (new synonymy).

Ground color of forewing variable, pale brownish gray to dark gray with a faint purplish or reddish brown tint; transverse markings obsolete on most specimens; on some the antemedial line indicated by a narrow, very faint, pale line between vein 1b and inner margin, preceded by a pale reddish or brownish patch more or less overlaid by black scaling (on most specimens before me this spot entirely absent); subterminal line distinguishable only on a few specimens, very faint, indicated chiefly by some short blackish streaklets on the veins; discal spots usually distinct but faint, blackish, separated; a row of black dots along termen. Hind wing transparent white with a dark shade along costa and at apex and extending as a dark line downward along termen; on the males this dark line extends only to about middle of termen, on females to or nearly to anal angle of wing. Alar expanse, 19–25 mm.

Male genitalia with costa of harpe broadly and stoutly sclerotized, a large oval projection from base and its apical end folded backward and contorted. Cornutus about one-third as long as aedeagus. Vinculum about as long as greatest width.

Female genitalia with granulations of ductus bursae extending for a very short distance into bursa. Eighth-segment collar not extended to ventral surface; attached laterally to the extended sclerotization of ductus bursae at genital opening; stoutly sclerotized dorsally and with an inwardly projecting curved sclerotized apron; between this apron and ductus bursae a gland of unknown function extends into abdomen, terminating in a bulb with thickened membrane. This structure not noted on other species of the genus.

TYPE LOCALITIES: Puerto Rico (*pellucidellus*, in Paris Mus.); São Paulo, Brazil (*melanoplaga*, in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: PUERTO RICO: Puerto Real (Vieques Isl., Apr., July), Río Piedras (Aug., Sept.), San Germán (Apr., Aug.). ST. VINCENT. JAMAICA. SURINAM: Zan-

derij I (Apr.). BRAZIL: São Paulo, "S. E. Brazil" [probably Castro].

The species is somewhat variable in color and markings, but is easily identified by its genitalia. Hampson's *melanoplaga* was based on large Brazilian females (25 mm.). All specimens from the West Indies and Surinam that I have seen are smaller (19 to 21 mm.). However, there does not seem to be any reason to keep *melanoplaga* as a racial designation on a mere difference in size, as there is nothing else to distinguish the Brazilian examples.

205. Caristanius decoloralis (Walker), new combination

FIGURES 298, 773

Trachonitis decoloralis Walker, List, vol. 27, p. 42, 1863.
Nephopteryx metagrammalis Walker, List, vol. 27, p. 42, 1863.
Nephopteryx furfurella Hulst, Ent. Amer., vol. 3, p. 131, 1887; Phycitidae of N. Amer., p. 143, 1890 (new synonymy).
Elasmopalpus decoloralis (Walker) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 420, 1893.—McDunnough, Check list, No. 6228, 1939.
Elasmopalpus floridellus Hulst, Phycitidae of N. Amer., p. 158, 1890.—Ragonot, Monograph, pt. 1, p. 423, 1893.
Elasmopalpus decoralis Hulst, Phycitidae of N. Amer., p. 158, 1890 (misspelling for *decoloralis*).
Elasmopalpus decorellus Hulst, *in* J. B. Smith, List of the Lepidoptera of Boreal America, No. 4341, 1891 (misspelling for *decoloralis*).
Elasmopalpus furfurellus (Hulst), Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.—McDunnough, Check list, No. 6230, 1939.

Forewing bluish gray or pale fawn gray with more or less white dusting over median area; transverse lines indistinct; antemedial line indicated chiefly by its blackish outer border broken into dots on vein 1b, lower vein of cell and a subcostal spot or short dark streak from costa to top of cell; preceding antemedial line a reddish patch on inner margin extending to or into cell and more or less shaded by black scaling; subterminal line sinuate, pale and very faint; lower discal spot at end of cell distinct, the upper discal dot much smaller, sometimes distinct but frequently obscured; a row of black dots along termen. Hind wing translucent, whitish with a pronounced smoky tint, especially over outer half of wing; the veins more or less darkened and a fine dark line along termen. Alar expanse, 21–25 mm.

Male genitalia with projecting arms from uncus somewhat curved. Costa of harpe sclerotized for the length of the harpe, narrowly sclerotized beyond base; a strong, curved, clasperlike projection from below costa near base, projected beyond costal edge. Cornutus as long as aedeagus. Vinculum considerably longer than greatest width.

Female genitalia with granulations of ductus bursae extending deeply into bursa; ductus bursae scobinate on lower surface at genital opening. Eighth-segment collar narrowed dorsally, complete but not fusing ventrally, without sclerotized dorsal apron.

TYPE LOCALITIES: United States (*decoloralis* and *metagrammalis*, in BM); Florida (*furfurellus* and *floridellus*, in AMNH, ex Rutgers).

FOOD PLANT: *Chamaecrista* spp. (*brachiata, fasciculata, robusta*) larvae feeding on the leaves. These records from rearings by the Special Survey (1944) of the Division of Foreign Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine.

DISTRIBUTION: *Florida*, Orlando (Feb.), no specific locality (Mar.), Fort Myers (May), St. Petersburg (June), Stuart (May), Tampa, Vero Beach (Apr., May, June, Oct., Dec.); *Texas*, Brownsville; *South Carolina*, Florence (June), Hiltonhead Isl. (Aug.), Pawleys Beach (Sept.).

This species seems to be confined to the southeastern United States. In his description of *decoloralis* Walker mentions the protruding arms of the uncus. Hulst noted similar structures in his *floridellus* and associated them with the genitalia, suspecting the synonymy of his and Walker's species. I have before me a photograph of the genitalia of the type of *decoloralis* supplied by Clarke. They are identical with those of the male type of *floridellus*. The synonymy of *floridellus* and *furfurellus* was established by Barnes and McDunnough (1916) and that of *metagrammalis* with *decoloralis* by Ragonot (1889).

206. Caristanius guatemalellus (Ragonot), new combination

FIGURE 774

Salebria guatemalella Ragonot, Nouv. Gen., p. 18, 1888.
Laodamia guatemalella (Ragonot), Monograph, pt. 1, p. 414, 1893.

This species is apparently known only from the female type. Ragonot's description and figure suggest a large, pale brownish, suffused form of *pellucidellus;* the forewing pale ocherous brown tinted with reddish, transverse lines absent, the lower discal spot distinct, and the veins sparsely powdered with blackish scales; hind wing semitransparent, white faintly tinted with ocherous. Alar expanse, 26 mm.

The genitalia determined the present generic reference. The granulations of ductus bursae extend deeply into the bursa as in *decoloralis;* the eighth-segment collar has a dorsal, sclerotized, invaginated apron smaller than and differently shaped from that of *pellucidellus*, and the collar itself is completely sclerotized ventrally.

TYPE LOCALITY: San Geranimo, Guatemala (type in BM).

FOOD PLANT: Unknown.

Genus 53: *Etiella*

[Venational division B. Forewing with veins 4–5 separated and divergent from base, a raised-scale ridge beyond base; hind wing with vein 3 approximate to the stalk of 4–5 at base. Eighth abdominal segment of male with paired tufts. Labial palpus porrect, long; second segment of male grooved. Maxillary palpus in the form of an aigrette. Male genitalia with apical process of gnathos a simple, short hook; transtilla incomplete and vestigial; harpe with a strong curved arm projecting the length of the harpe from base of costa, harpe otherwise weakly sclerotized; two strong cornuti on penis. Female genitalia with signa developed as curved, sclerotized bands armed with slender spines; ductus bursae short, tubular, sclerotized.]

53. Genus Etiella Zeller

Etiella Zeller, Isis von Oken, 1839, p. 179; 1846, p. 733.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 154, 1865.—Meyrick, Proc. Linn. Soc. New South Wales, vol. 3, p. 629, 1882.—Hulst, Phycitidae of N. Amer., p. 169, 1890; U. S. Nat. Mus. Bull. 52, p. 428, 1902.—Ragonot, Monograph, pt. 1, p. 569, 1893.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 208, 1910.—Forbes, Cornell Mem. 68, p. 629, 1923.—Janse, Journ. Ent. Soc. South Africa, vol. 7, p. 15, 1944. (Type of genus: *Phycis zinckenella* Treitschke.)

Ramphodes Guénée, Europaeorum Microlepidopterorum index methodicus . . ., p. 81, 1845. (Type of genus: *Phycis zinckenella* Treitschke.)

Tongue well developed. Antenna of male with basal segment enlarged and bearing a short, bluntly pointed projection on inner side near base; shaft with sinus and large hair and scale tuft at base, pubescent; antenna of female simple. Labial palpus porrect; very long (the length of head and thorax); smoothly scaled; second segment about five times the length of third on male and grooved to hold maxillary palpus; third segment short on male, longer on female, acuminate, frequently bent downward, especially on female. Maxillary palpus of male in the form of an aigrette; of female small, squamous. Forewing with ridge of raised scales beyond base; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle, approximately equidistant from 2 and 4; 4 and 5 shortly separated at base, diverging from cell; 6 from below upper angle of cell, straight; 8 and 9 stalked for half their lengths; 10 from the cell, separated and divergent from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, appreciably shorter than 2, closely approximate to the stalk of 4–5 at base (separated by a very short vein); 4 and 5 normally stalked (rarely weakly anastomosed or contiguous) to about middle; 7 and 8 closely approximate for less than half their lengths from cell; cell about one-third the length of wing on male, slightly longer on female; discocellular vein curved. Eighth abdominal segment of male with a pair of weak ventrolateral hair tufts.

Male genitalia with uncus hoodlike, its apical margin evenly rounded. Apical process of gnathos a simple, sharp hook. Transtilla incomplete and vestigial (its elements rarely distinguishable except under high magnification). Harpe with a strongly sclerotized, curved, tapering, pointed arm projecting from base of costa and as long as costa; remainder of harpe weakly sclerotized and abruptly narrowed at middle (the shape of harpe probably a specific character). Anellus V-shaped; its arms rather broad, blunt and haired. Aedeagus moderately long, stout; penis armed with two strong cornuti. Vinculum stout; as long as greatest width; evenly tapering to a blunt point.

Female genitalia with bursa elongate, finely scobinate, armed with signa consisting of curved, sclerotized bands armed with slender spines and situated near junction of bursa and ductus bursae; a sclerotized lobe on bursa near ductus bursae; ductus bursae short (much shorter than bursa), tubular, sclerotized, ribbed and broadened towards genital opening; ductus seminalis from bursa adjacent to sclerotized lobe.

A distinct genus, not to be confused with anything else and easily identified by its combination of antennal, palpal, wing, and genitalic characters. Ragonot, Hulst, and Janse list five Walker names in the generic synonymy. These supposed genera were based on Old World, tropical species which have all been referred as synonyms of *zinckenella*. I have no reason to question this synonymy but have omitted the references as I have not been able to check the genitalia or their types. The only species occurring in the New World is *zinckenella*.

The larva differs from typical phycitid larvae in that it lacks altogether the sclerotized rings about seta IIb of mesothorax and seta III of the eighth abdominal segment.

207. Etiella zinckenella (Treitschke)

FIGURES 17, 326, 840

Phycis zinckenella Treitschke, Die Schmetterlinge von Europa, vol. 9, pt. 1, p. 201, 1832.

Phycis etiella Treitschke, Die Schmetterlinge von Europa, vol. 10, p. 3, p. 174, 1835.—Duponchel, Histoire naturelle des lépidoptères, ou papillons de France, vol. 10, p. 180, 1836.—Millière, Iconographie et description de chenilles et lépidoptères inedits, vol. 1, p. 248, 1861. (Originally proposed as new name for *zinckenella*.)

Pempelia Etiella zinckenella (Treitschke) Zeller, Isis von Oken, 1839, p. 179; 1846, p. 755.—Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa, vol. 4, p. 172, 1849.

Ramphodes zinckenella (Treitschke) Guénée, Europaeorum Microlepidopterorum index methodicus . . ., p. 81, 1845.

Etiella zinckenella (Treitschke) Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 154, 1865.—Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 177, 1881.—Hulst, Phycitidae of N. Amer., p. 170, 1890; U. S. Nat. Mus. Bull. 52, p. 428, 1902.—Ragonot, Monograph, pt. 1, p. 572, 1893.—Chittenden, U. S. Dep. Agr. Bur. Ent. Bull. 82 (pt. 3), p. 25, 1909.—Essig, Insects of western North America, p. 709, 1926.—Walcott, Journ. Agr. Univ. Puerto Rico, vol. 20, no. 1, p. 476, 1936.—McDunnough, Check list, No. 6274, 1939.

Etiella zinckenella schisticolor Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 178, 1881.—Hyslop, U. S. Dep. Agr. Bur. Ent. Bull. 95, pt. 6, p. 82, 1912.

Etiella villosella Hulst, Ent. Amer., vol. 3, p. 133, 1887.

Etiella schisticolor (Zeller) Ragonot, Ent. Amer., vol. 5, p. 116, 1889; Monograph, pt. 1, p. 274, 1893.—Hulst, Phycitidae of N. Amer., p. 170, 1890.

Etiella rubribasella Hulst, Phycitidae of N. Amer., p. 170, 1890.—Ragonot, Monograph, pt. 1, p. 572, 1893.

Forewing gray more or less lightened by white scaling, especially in median areas; a broad white band along costa, extending from base to or nearly to apex; extreme costal edge dark gray to red; on occasional specimens some red scaling at extreme base of wing and in outer median area; transverse lines obsolete; the antemedial line replaced by a ridge of raised scales near basal third and extending from inner margin to top of cell, the raised scales metallic ocherous or orange red bordered outwardly by a broad ocherous or orange patch; discal spots obsolete. Hind wing whitish with a faint smoky tint, to dark smoky fuscous; the veins

and terminal margin darker. Alar expanse, 15–28 mm.

Genitalia as given for the genus.

TYPE LOCALITIES: Sicily (*zinckenella*, in Hungarian Nat. Mus., Budapest; *etiella*); California (*schisticolor*, in BM); Colorado (*villosella*, in AMNH, ex Rutgers); Florida (*rubribasella*, in AMNH, ex Rutgers).

FOOD PLANTS: Pods and seeds of various Leguminosae (*Astragalus, Cajanus, Colutea, Crotolaria, Dolichos, Glycina, Lupinus, Phaseolus, Pisum, Vicina, Vigna*).

DISTRIBUTION: Throughout the tropical and subtropical areas of the world and in the warmer temperate regions of Europe, Asia, and North America. The following American records are from specimens before me. UNITED STATES: *Florida*, Archer (Mar.), Buena Vista (May), Crescent City (Mar.), Dade City (Aug.), Egmont (Apr., June), Everglade (Apr.), Jupiter (Apr.), Lake Alfred (June, July, Nov.); *Texas*, Brownsville (June, July, Aug.), Cotulla (May), Dallas (June), Gainesville (Nov.), Kerrville, Logan (June); *Arizona*, Baboquivari Mts. (June, July, Aug.), Nogales (July), Woodruff (June); *California*, Alameda County (Sept.), Garden City (Jan., Feb.), Loma Linda (June, Aug., Sept., Oct.), Palo Alto (Sept.), San Diego (May, June, Sept.), San Gabriel Mts. (June), Santa Paula, upper Ojai (July); *Washington*, Pullman (May, July, Aug.), Yakima (May, June), Walla Walla (June, Aug.), Wenatchee (July); *Idaho*, Springfield (June); *Nevada*, Pyramid Lake, Reno; *Utah*, Provo (July), Vineyard (June); *Colorado*, Boulder Creek Canyon (May), Denver (May); *Oklahoma*, Stillwater (Aug.); *Rhode Island*, Weekapaugh (Aug.); *New Hampshire*, Hampton (Sept.). CANADA: *Saskatchewan*, Oxbow (June). CUBA: Santiago (Feb., June, Oct., Nov.). PUERTO RICO: Dorado (May), Isabella (Jan.), Mayagüez (Jan.), Palmas Abajas (near Guayaman), Puerto Real (Vieques Isl., Apr.), Río Piedras (Apr.), San Germán (Apr.). GRENADA. JAMAICA: Newport (Feb.). MÉXICO: Eldorado (Mar.), Mexico City (Nov.), Oaxaca, Orizaba, Tehuacán (Apr.). FRENCH GUIANA: St. Laurent Maroni. BRAZIL: Santa Catarina (July, Dec.), São Paulo (May). URUGUAY: Montevideo. PARAGUAY: Villarrica (Jan., Apr., July, Sept., Nov.). PERÚ: Angasmarca. GALÁPAGOS: Conway Bay (Apr.).

Presumably to be found in every Central and South American country.

This species is of economic importance as an occasional pest of cultivated beans and to American entomologists is known as the "limabean pod borer." It has an extensive literature and has been described under many names, having at least 13 Old World synonyms. I have omitted these (for reasons given under discussion of the genus) and listed only the American synonyms. Some authors have treated *schisticolor* and *rubribasella* as distinct species, others as races of *zinckenella*. They appear as the latter in our latest list (McDunnough, 1939). However, they are no more than color forms intergrading with the typical *zinckenella* and deserve no separate designation. The accepted Old World synonymy is given in the Ragonot Monograph (1893). The best and most complete accounts of the life history and immature stages will be found in the U. S. Department of Agriculture bulletins cited here (Chittenden, 1909, and Hyslop, 1912). For additional references the "Review of Applied Entomology" should be consulted.

Genus 54: *Glyptocera*

[Venational division B. Forewing with veins 4–5 connate, smooth; hind wing with veins 4–5 distinctly stalked for over half their lengths; 3 connate with the stalk of 4–5. Eighth abdominal segment of male with compound tufts. Antenna of male with shallow, spined sinus at base of shaft. Labial palpus upturned, rough scaled beneath. Maxillary palpus squamous. Male genitalia with sacculus of harpe produced at apex as a long, free spine; apex of gnathos a short, stout hook; transtilla complete but weakly sclerotized; a single strong cornutus on penis. Female genitalia with bursa partly sclerotized, otherwise finely spined but without definable signa; ductus bursae flattened and partially sclerotized.]

54. Genus Glyptocera Ragonot

Glyptocera Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Bull. Soc. Ent. France, 1890, p. vii; Monograph, pt. 1, p. 209, 1893.—Hulst, Phycitidae of N. Amer., p. 140, 1890.—Forbes, Cornell Mem. 68, p. 621, 1923. (Type of genus: *Nephopteryx consobrinella* Zeller.)

Tongue well developed. Antenna of male pubescent, shaft with shallow sinus towards base containing a row of short, toothlike spines; antenna of female simple. Labial palpus upturned; second segment rough scaled beneath; third segment about one-third as long as second, acuminate. Maxillary palpus rather large, squamous. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle, separated from 4–5 at base, but about half as far from them as from 2; 4 and 5 connate; 6 from below upper angle of cell, straight; 8 and 9 long stalked (for slightly over two-thirds their lengths); 10 from the cell, closely approximate to the stalk of 8–9 for nearly half its length; male without costal fold. Hind wing with vein 2 from before but near lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 distinctly stalked for over half their lengths; 7 and 8 closely approximate for a short distance from cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound ventral scale tuft.

Male genitalia with apical process of gnathos a short, stout, simple hook. Transtilla complete but very weakly sclerotized, a simple, arched band. Harpe with a row of fine, erect hairs from below costa near base; a slender, short, clasperlike projection from just below base of costa; sacculus produced at apex as a long, free, spinelike projection. Vinculum a small V-shaped plate with elongate, bandlike, central projection attaching to apex of aedeagus. Penis armed with a single, strong cornutus. Vinculum stout, longer than greatest width.

Female genitalia with bursa sclerotized over nearly half of one surface, densely and finely spined over most of remaining area; ductus bursae flattened, a broad sclerotized band extending its length on ventral surface;

ductus seminalis from bursa near junction of bursa and ductus bursae; genital opening simple.

The combination of male characters and the rather broadly squamous maxillary palpi distinguish the genus. The long, straight, free sacculus at once identifies it and distinguishes it from the genera which follow, and which are related to *Nephopteryx* and *Salebria*. The weak transtilla also occurs in *Meroptera* and some species of *Nephopteryx*. The female genitalia are similar to those of *Nephopteryx*.

Glyptocera contains but the one North American species.

208. Glyptocera consobrinella (Zeller)

FIGURES 327, 811

Nephopteryx consobrinella Zeller, Verh. zool.-bot. Ges. Wien, vol. 22, p. 548, 1872.

Glyptocera consobrinella (Zeller) Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Monograph, pt. 1, p. 210, 1893.—Hulst, Phycitidae of N. Amer., p. 140, 1893.—Forbes, Cornell Mem. 68, p. 621, 1923.—McDunnough, Check list, No. 6148, 1939.

Ambesa busckella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 108, 1904.—Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.

Forewing ashy gray shaded and marked with black, the blackish shade most conspicuous broadly bordering the antemedial line on inner side, expanded narrowly along inner margin to base and also broadening the black outer border of the line at costa; basal area otherwise pale clay color more or less shaded with pale salmon especially in lower fold; on many specimens a blotch of the same salmon shade over the middle of inner margin; antemedial line well out beyond basal third, slightly oblique, sharply sinuate, whitish gray with black inner and outer bordering lines; subterminal line outwardly rounded at middle and angled above and below the bulge, margined inwardly and outwardly by distinct black lines; discal spots confluent, forming a black line along discocellular vein which expands below into short black streaklets or smudges on the lower veins; terminal dots confluent, forming a black line along termen. Hind wing smoky white with a faint ocherous tint; the veins not appreciably darkened; a narrow dark line along termen. Alar expanse, 20–25 mm.

Genitalia as given for the genus. On some males in addition to the strong cornutus there is a second much smaller and weaker spine but this is variable and apparently not a constant structure.

TYPE LOCALITIES: Texas (*consobrinella*, in MCZ); Plummers Island, Md. (*busckella*, in USNM).

FOOD PLANT: *Viburnum*, maple (Dyar and Ely rearings).

DISTRIBUTION: UNITED STATES: *Maine*, Lincolnville (May, reared by Dyar on *Viburnum*), Orono, Sebec Lake (July), Weld (July); *New Hampshire*, Hampton (July); *Vermont*, Clarendon; *Massachusetts*, Framingham (June), *New York*, Plattsburg (July), Valcour Isl. (July); *Connecticut*, East River (June, July); *New Jersey*, Basking Ridge; *Pennsylvania*, New Brighton (June, July, Aug.), Pittsburgh (July); *Maryland*, Plummers Isl. (May, Aug.); *District of Columbia*, Washington (July, reared by Dyar from larva on maple); *Texas*, Kerrville (Mar.); *Illinois*, Chicago (July). CANADA: *Ontario* Trenton (July); *Quebec*, St. Johns (June); *Nova Scotia*, Cape Breton Isl. (June); *Newfoundland*, Humber Mouth (Bay of Fundy, Aug.).

Presumably generally distributed over the eastern section of the continent from Canada to Texas.

Genera 55–58: *Pima* to *Catastia*

[Venational division B. Forewing with veins 4–5 separate or connate at base, smooth; hind wing with veins 4 and 5 anastomosed for about half their lengths, discocellular vein considerably extended at lower angle. Eighth abdominal segment of male with paired tufts. Antenna of male with shallow, spined sinus at base of shaft (also on *Catastia* a weak scale tuft). Labial palpus porrect or oblique, not grooved. Maxillary palpus of male squamous or subsquamous. Male genitalia with costa of harpe strongly sclerotized throughout its length and slightly produced at apex; gnathos terminating in a short, stout hook; transtilla incomplete or absent; penis armed with two stout cornuti (*Pima*, *Interjectio*) or a single strong cornutus (*Ambesa*, *Catastia*). Female genitalia with bursa partially sclerotized and sometimes (*Pima*, *Interjectio*) granulate-scobinate but without definable signa; ductus bursae more or less sclerotized and considerably broadened at genital opening.]

55. Genus Pima Hulst

Pima Hulst, Ent. Amer., vol. 4, p. 114, 1888; Phycitidae of N. Amer., p. 164, 1890. (Type of genus: *Pima fosterella* Hulst.)

Epischnia Authors (not Hübner) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph (in part) pt. 1, p. 493, 1893.—Forbes, Cornell Mem. 68, p. 629, 1923.—McDunnough, Canadian Ent., vol. 67, p. 176, 1935.

Tongue well developed. Antenna finely pubescent; on male with a very slight incurvation in base of shaft containing a row of minute, black, toothlike spines (6 to 8). Labial palpus porrect (the second segment oblique, the third projected forward); extending at least twice the length of the head beyond it; second segment broadly (triangularly) scaled; third segment as long as second. Maxillary palpus minute but rather broadly scaled. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, closer to 4 than to 2; 4 and 5 separated at base; 6 from well below upper angle of cell, straight; 8 and 9 stalked for one-half of less than half their lengths; 10 from the cell, more or less approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; vein 3 from 4 well beyond 2 and considerably shorter than 2; 4 and 5 anastomosed just beyond 3 for nearly half their lengths; 7 and 8 contiguous or closely approximate for a short distance from cell; cell slightly less than half the length of wing; discocellular vein curved, greatly extended at lower angle (running into 4 just beyond base of vein 3). Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with uncus hoodlike; its terminal margin broadly rounded. Apical process of gnathos a short, stout hook. Transtilla absent. Harpe elongate, tapering to bluntly pointed apex; costa broadly and strongly

sclerotized for the entire length of the harpe, its apex blunt, slightly produced and usually forked; sacculus short and narrow, its inner surface covered with dense, spinelike hairs (probably the "strong spines" mentioned by Hulst in his original description of the genus). Vinculum a broad plate with weak lateral lobes. Aedeagus long, moderately stout, smooth, slightly curved towards base; penis armed with two stout cornuti. Vinculum stout, tapering, considerably longer than greatest width.

Female genitalia with bursa stout, scobinate-granulate and usually with sclerotized patches or folds; ductus bursae long (much longer than bursa), flat (ribbonlike), sclerotized and granulate for its entire length, broadest towards genital opening; ductus seminalis from lobe of bursa near junction of bursa and ductus bursae. Eighth-segment collar with middle of dorsal anterior margin slightly produced.

Hulst erected the genus *Pima* for one species (*fosterella*) which he later (1890) synonymized with *albiplagiatella*. Ragonot (1889) referred *fosterella* and the other congeneric American species to *Epischnia* Hübner. The latter as defined by Ragonot (1893) is a composite of several disparate elements and none of the species occurring in the New World agrees with the type species of *Epischnia* (*prodromella*, Hübner). The latter has quite different genitalia (figs. 426, 884). Its male antenna has a deep sinus but the latter is without the row of toothlike spines characteristic of *Pima;* and the third segment of the labial palpus is much shorter (less than half the length of the second segment). There is also a heavy scale-and-hair tuft on the underside of the prothorax. This may be only a specific character (as similar tuftings are in some other phycitid genera); but the structure is entirely lacking on the New World species and on the European *boisduvaliella* Guénée, which is a typical *Pima* on all characters. The venation of *Pima* is like that of *Epischinia* (fig. 26).

The species here referred to *Pima* (except *granitella* and *parkerella*) have a strikingly similar habitus; but are individually variable in size and color, especially among examples of western species, several of which exhibit both pale and dark forms. The extent of the white costal streak on forewing is also individually variable and reliance on this and other color features has resulted in considerable confusion in the application of names. The most reliable specific characters are in the genitalia, especially those of the females. The chief male differences are in the shape and size of the cornuti, the shape of the anellus, and the configuration and width of the apex of the sclerotized costa of harpe. These differences are trifling and also subject to some variation, especially the notching at the apex of costa of harpe.

The larvae feed in the flowers and seed pods of various Leguminosae. From scattered reared examples in the National Collection the species do not seem to be confined to specific plants; but there have been no extensive and systematic rearings, and these will be needed to clear up host relationships and to differentiate any possible food-plant races.

Genus *Pima*, Species 209–216: *P. boisduvaliella* to *P. fulvirugella*

[Forewing with strongly contrasted white costal stripe.]

209. Pima boisduvaliella (Guénée), new combination

FIGURES 299, 776

Epischnia boisduvaliella Guénée, Europaeorum Microlepidopterorum index methodicus . . . , p. 81, 1845.—Ragonot, Ent. Monthly Mag., vol. 22, p. 23, 1885; Monograph, pt. 1, p. 518, 1893 (part).—Lafaury, Ann. Soc. Ent. France, ser. 6, vol. 5, p. 398, 1885.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 209, 1910.—Meyrick, Revised handbook of British Lepidoptera, p. 382, 1928.—McDunnough, Canadian Ent., vol. 67, p. 176, 1935 (part); Check list, No. 6251, 1939.

Forewing pale fawn on lower half shading into muddy fawn along the lower border of the white costal stripe where it forms a more or less distinct dark band through the center of the wing from base to termen; no indication of transverse lines; extreme costal edge blackish gray weakly peppered with white, this dark shade encroaching on the white costal stripe beyond middle; white costal stripe extending to apex, its lower margin edged by a fine gray-black line; discal dots at end of cell minute, blackish, the upper one lying within the blackish edge of the white stripe and frequently indistinguishable, the lower one distinct but not conspicuous; some faint scattered black dotting and dusting on and below vein 1b beyond base. Hind wing pale ocherous brown, on some specimens with a faint ocherous tint. Alar expanse, 19–25 mm.

Male genitalia with apex of costa of harpe slightly expended, concave or weakly notched, the upper angle of the notch rounded, the apical margin oblique. Cornuti both broadened for more than half their lengths; the broad part of the shorter thorn longitudinally grooved (fluted); the longer thorn but slightly less than half the length of the aedeagus.

Female genitalia with bursa narrowly heart shaped; a small rounded or oval sclerotized plate in bursa near its middle; bursa longitudinally wrinkled, the wrinklings weakly sclerotized; also a couple of broader, more tortuous, sclerotized folds, the one curving about junction of bursa and ductus bursae serrate along its edge; bursal granulations weak, scobinations in lobed area adjacent to junction of ductus bursae fine but rather dense; lower margin of ductus bursae at genital opening straight, not produced.

TYPE LOCALITY: Switzerland (location of type unknown).

FOOD PLANTS: *Ononis, Anthyllis, Lotus, Astragalus* (European records).

DISTRIBUTION: EUROPE. CANADA: *Manitoba*, Aweme (May), Beulah (June, Aug.), Winnipeg; *Saskatchewan*, Regina (June, Aug.); *Alberta*, Lethbridge (June).

This European species is definitely established in North America, but most of the American references to *boisduvaliella* apply to other native species. The only American examples of the true *boisduvaliella* I have seen are some ten specimens from the Canadian localities

cited above. Old World synonymns and doubtful American references are omitted from the foregoing literature citations. There can be no reasonable doubt of the correctness of the European synonymy of *farrella* (Curtis) or *lafauriella* (Constant) (their references will be found in the Ragonot Monograph); but the status of the supposed Asiatic variety *tabulella* Staudinger is doubtful. Ragonot's reference of *albocostalialis* Hulst as a variety of *boisduvaliella* is obviously incorrect.

In size *boisduvaliella* averages appreciably smaller than any other species of *Pima*. Occasional examples have an expanse equal to that of small specimens of some of our American species (24–25 mm.); but most specimens expand 24 mm. or less, while in the other species the average expanse is well over 25 mm.

The male genitalia are similar in all essential characters to those of *albiplagiatella;* but the female genitalia, while of the same general habitus, differ in marked and apparently consistent details—the folds of the bursa are more weakly sclerotized, the bursa itself decidedly smaller, and the granulations and scobinations in bursa weaker. The contrasts are somewhat greater than shown in the figures.

210. Pima albiplagiatella (Packard), new combination

FIGURES 305, 777

Myelois albiplagiatella Packard, Ann. Lyc. Nat. Hist. New York, [1874] vol. 10, p. 269, 1874.

Epischnia boisduvaliella albiplagiatella (Packard) McDunnough, Canadian Ent., vol. 67, p. 70 (larva), p. 176 (part), 1935; Check list, No. 6251, 1939.

Larger than *boisduvaliella*. The ground color on lower half of forewing very pale fawn, paler than that of *boisduvaliella* and containing little of no dark scaling, the latter when present confined to a couple of faint gray dots on basal third of vein 1b and some very sparse gray scaling along inner margin near tornus; the contrasted dark band bordering lower margin of the white costal stripe brown rather than ruddy; a similar, weaker, narrower, brown shade along lower fold for most of its length; extreme costal edgepale brownish gray, this color encroaching on the white stripe beyond middle as in other species; lower discal dot distinguishable but very faint. Hind wing whitish ocherous. Alar expanse, 26–31 mm.

Male genitalia like those of *boisduvaliella*. Female genitalia similar to those of *boisduvaliella* but consistently different in minor details. These differences were noted in the discussion of *boisduvaliella* and are shown in the figures.

TYPE LOCALITY: New Hampshire (type in MCZ).

FOOD PLANT: *Lathyrus maritima* and presumably other Leguminosae.

DISTRIBUTION: UNITED STATES: *New Hampshire*, Hampton (June, July). CANADA: *Nova Scotia*, White Point Beach (Queens County, July).

Typical *albiplagiatella* is probably generally distributed in eastern Canada and northeastern United States. The foregoing records are from specimens whose genitalia I have been able to examine, the Nova Scotia record from a specimen supplied by McDunnough. He has referred *albiplagiatella* as a race of *boisduvaliella*. It is indeed very close to the European species, but I believe the differences in female genitalia justify more than racial separation.

211. Pima albiplagiatella occidentalis, new race

FIGURE 303

A variety occurring in the Rocky Mountain and Pacific Coast States. Extremely variable in color and the amount of blackish dusting on forewing. Average specimens in Washington, Colorado, and New Mexico with ground color very pale fawn (cream white in some specimens); the dark border of the white costal stripe ranging from pale ocherous brown to dark gray-brown; two distinct black dots on basal third of vein 1b, enclosing a white spot; the remainder of 1b more or less streaked with black outwardly and a fine peppering of black scales and white scales along inner margin near tornus; costal edge brownish or blackish gray, encroaching on and attenuating the white costal streak beyond middle, and sometimes blotting it out before apex. In southern California the paler specimens show more blackish dusting expecially along the outer veins, and sometimes a faint white subterminal line can be distinguished; the darkest specimens are almost a uniform dark gray with the blackish gray dusting obliterating all markings except the white spot on vein 1b and the contrasted white costal streak; between these two extremes there is every intergrade in series from any given locality; lower discal spot small, but usually distinct, blackish. Hind wings ocherous white to dark smoky gray. Alar expanse, 24–31 mm.

Male genitalia like those of typical *albiplagiatella* except that apex of sclerotized costa of harpe is somewhat more swollen; in average specimens the outer edge of apex is slightly concaved; one example from Alamogordo, N. Mex., has the edge almost straight, but there is a gradual intergradation from this to forms with the apex as in our figure of *albiplagiatella* (fig. 305c). The cornuti are like those of typical *albiplagiatella*. The female genitalia are like those of eastern *albiplagiatella*. A series of 24 preparations from the various western localities exhibits no significant variation from type and nothing approaching the bursa of *boisduvaliella*.

TYPE LOCALITY: Pullman, Wash. (type in USNM, 61342).

FOOD PLANTS: *Astragalus, Lathyrus*.

Described from male type (C. V. Piper, collector, May 1905) and one female paratype (J. F. G. Clarke, May 30, 1924) from the type locality, and paratypes as follows: One male from above Golden, Colo. (H. G. Dyar No. 17468, May 29, 1901); one female, Beulah, Colo. (June 21, 1900, W. D. Kearfott Collection); 2 male and one female, Alamogordo, N. Mex. (May 15, 17, 1929, reared by M. W. Talbot from *Astragalus wootoni*); one female, Phoenix, Ariz. (Apr., Kunze, collector); one male, Palm Springs, Calif.; one male and one female,

Loma Linda, Calif. (May, June); one female, Claremont, Calif. (Baker, no date); and one female, San Diego, Calif. (H. G. Dyar, May 22, 1924). These are from a series of 85 specimens in the U. S. National Collection from the following localities: United States: *Colorado*, Beulah (June), Denver, Golden (May); *New Mexico*, Alamogordo, (May), Jemez Springs (Apr., May), Pecos; *Arizona*, Phoenix (Apr.). "Southern Arizona"; *California*, Claremont, Loma Linda (Mar., Apr., May, June), "Los Angeles County" (May), Mirage Lake (San Bernardino County, Apr.), Olancha (Apr., May), Palm Springs (Mar.), San Diego (Mar., May), "Shasta County," "Sierra Nevada"; *Oregon*, Baker (June); *Washington*, Copalis (a gray specimen with very dark hind wings, reared under Special Survey No. 26286, Mar. 27, 1945, from *Lathyrus* sp.), Palouse Falls (May), Pullman (May, June, July, Aug.), Walla Walla (June, July), Yakima (May).

212. Pima fosterella Hulst

FIGURES 300, 783

Pima fosterella Hulst, Ent. Amer., vol. 4, p. 114, 1888.
Pima albiplagiatella Hulst (not Packard), Phycitidae of N. Amer., p. 164, 1890.
Epischnia albiplagiatella Ragonot (not Packard), Monograph, pt. 1, p. 518, 1893.
Epischnia fulvirugella McDunnough (not Ragonot), Canadian Ent., vol. 70, p. 178, 1935.
Epischnia fosterella (Hulst) McDunnough, Check list, No. 6252, 1939.

A large, pale species similar in general appearance to typical eastern *albiplagiatella*, but without any trace of a dark shade in lower fold; the dark shade along lower border of the white stripe also paler, a light drab brown; a single small black spot on basal third of vein 1b, but no white spot and seldom any further dark shading on 1b, but more or less gray dusting along outer two-thirds of inner margin; white costal streak usually obliterated before apex, rarely reaching apex; lower discal dot usually well contrasted, but minute, blackish. Hind wing whitish ocherous or pale smoky fuscous. Alar expanse, 27–35 mm.

Male genitalia with harpe somewhat longer in proportion to tegumen and uncas than in preceding species; sclerotized costa broadened and forked at apex, the prongs of the fork pointed. Cornuti spaced apart; neither one appreciably flattened or ribbed towards base; the longer slightly less than one-third the length of aedeagus.

Female genitalia with little or no sclerotization of bursa except immediately about junction of bursa and ductus bursae. The extreme of sclerotization is shown in figure 783, from an Arizona female; the female type shows none except about the junction with ductus. Bursa finely scobinate over entire inner surface. Ductus bursae produced at apex into a projecting shield, its apical margin variable, pointed to evenly rounded.

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado*, Baileys (July), Denver (June), Durango (June), Golden (June), Gunnison County (near Altmont, July); *Arizona*, Williams; *Utah*, Eureka (May), Park City (July); *Montana*, Miles City. CANADA: Nordegg (June).

A distinct species easily recognized by its female genitalia. The type (♀) at Rutgers bears only a number label ("43") but is obviously a Colorado specimen and an authentic type. A male paratype matching it is in the National Museum. It and one other male and two females labeled only "Colo." All Colorado examples are larger specimens. The Nordegg specimen (♂) had been received from Dr. McDunnough and formed part of the series he had treated as *fulvirugella* in his 1935 paper. It and a male from Eureka, Utah, show some black scaling on the outer veins. They are superficially very much like some specimens of the western race of *albiplagiatella* and except for their genitalia could easily be confused with them.

213. Pima vividella (McDunnough), new combination

FIGURES 302, 780

Epischnia vividella McDunnough, Canadian Ent., vol. 67, p. 179, 1935; Check list, No. 6256, 1939.

Forewing salmon pink below costal white stripe, shading below and towards tornus into pinkish ocherous; some gray dusting along outer two-thirds of inner margin; a black dot, followed by an obscure white one, on vein 1b at basal third; white costal stripe attenuated by smoky costal scaling on its outer half and obliterated before apex. Hind wing pale smoky with a faint ocherous tint. Alar expanse, 27–30 mm.

Male genitalia with apex of costa of harpe forked as in *fosterella*; but upper prong somewhat longer and sharper than the lower one. Cornuti closely approximate; the longer one with flattened but not ribbed basal part, a trifle longer than one-third of the aedeagus. Female genitalia resemble those of *fosterella* except: Bursa proportionally smaller, with two pitted and sclerotized patches; sclerotization at junction of bursa and ductus bursae serrate along one edge.

TYPE LOCALITY: Lethbridge, Alberta (type in Canadian Nat. Coll.).

FOOD PLANT: Unknown.

DISTRIBUTION: *Manitoba*, Aweme (June); *Saskatchewan*, Saskatoon (June); *Alberta*, Lethbridge (June). Also recorded by McDunnough from Beulah, Manitoba (June) and Indian Head, Saskatchewan (July).

A good species, close to but distinct from *fosterella*; easily identified by its male cornuti, female genitalia, and salmon-colored forewings.

214. Pima albocostalialis (Hulst), new combination

FIGURES 301, 778, 779

Ephestia albocostalialis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 64, 1886.
Epischnia albocostalis (Hulst), Phycitidae of N. Amer., p. 163, 1890. (Emended spelling).
Epischnia boisduvaliella albocostalis (Hulst) Ragonot, Monograph, pt. 1, p. 520, 1893.
Epischnia albocostalialis (Hulst) McDunnough, Canadian Ent., vol. 67, p. 178, 1935; Check list, No. 6254, 1939.

Forewing dark gray shading into very dark grayish or blackish brown towards the white costal streak; the latter ending just before apex; no spottings or other markings on the wing, even the lower discal dot lost in the dark suffusion of the wing. Hind wing whitish at base, shading into a smoky outer area. Alar expanse, 26–34 mm.

Male genitalia with apex of costa of harpe narrow, very slightly notched, reaching only to end of cucullus. Harpe itself shorter in proportion to length of tegumen and uncus than that of any preceding species except *boisduvaliella*. Cornuti spaced apart as in *fosterella*, the longer one about one-third the length of aedeagus.

Female genitalia with two rather large, irregularly shaped, pitted and sclerotized patches in bursa, one at the terminal end, the other on the left side (viewed ventrally); bursa otherwise membranous except for a sclerotization about junction with ductus bursae; ductus bursae not produced at genital opening, its apical margin straight.

TYPE LOCALITY: California (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Claremont, "En route Imperial to Bishop" (May), Loma Linda (Mar.), Riverside (Apr.), Shasta Retreat (Siskiyou County, July); *Washington*, Olympia (June), Rochester (June), Seattle, Wenatchee (May). McDunnough also records the species from Lethbridge, Alberta, Canada. His specimen is undoubtedly this species, but may represent one of the varieties that follow.

The type in the Rutgers Collection lacks antennae and abdomen but matches otherwise the examples in the National Collection, so there can be no question of the application of Hulst's name. He emended its spelling to *albocostalis* in 1890, but gave no reason for doing so, hence we shall probably have to perpetuate the original barbarous spelling.

215. Pima albocostalialis subcostella (Ragonot), new combination

Epischnia subcostella Ragonot, N. Amer. Phycitidae, p. 10, 1887; Monograph, pt. 1, p. 520, 1893.—McDunnough, Check list, No. 6255, 1939.

Forewing with white costal streak as in typical *albocostalialis;* below it a bordering band of blackish brown with a lighter brown shade below it as far as lower fold; these dark shades terminating beyond cell in what would be the position of the antemedial line if one were present, the outer margin of the dark shade outwardly angled at middle; remainder of wing pale, ashy gray with a dusting of blackish scales along outer two-thirds of inner margin and (in some specimens) blackish streaklets on the veins before termen; on basal third of vein 1b a white dot preceded by a black shade. Hind wing white; smoky shading limited to a narrow line along termen and a very small area at apex; on the females the smoky tints slightly more extended. Alar expanse, 25–27 mm.

Genitalia, male and female, as in typical *albocostalialis*.

TYPE LOCALITY: Utah (type in Paris Mus.).

FOOD PLANT: Unknown.

A male and three females from Eureka, Utah (May, June), a female from Bellevue, Washington County, Utah (May) and a male from Pyramid Lake, Nev., are before me. They match Ragonot's description and figure of *subcostella* in every detail. The name may represent nothing more than a color variety of *albocostalialis* and if there were not an old name available for it, and one that until now was supposed to represent a distinct species, I should not have named it. I am holding *subcostella* as a trinomial against the possibility that it may represent a valid local race.

There are also before me what appear to be two other varieties with male genitalia identical to those of *albocostalialis:*

Variety *a:* A large form with a reddish brown band bordering the white costal stripe; the red-brown color shading into ocherous fawn on lower and outer areas of the wing; lower discal dot present, black; no white spot or other appreciable marking on vein 1b. Hind wing ocherous white with a pale broken line along termen. Alar expanse, 34–35. Represented by three males from Manitou, Colorado (H. G. Dyar, coll. No. 6062–6065, May 5, 1891).

Variety *b:* A variable variety ranging from dark gray, suffused examples to a couple with the entire median area of the forewing a ruddy fawn color; the white spot is present on vein 1b, but very faint on the darker specimens. Hind wings white to pale smoky fuscous. Alar expanse, 26–27 mm.

The female genitalia differ rather markedly from those of *subcostella* or typical *albocostalialis* in that the sclerotized patches in bursa are situated on opposite sides of that organ. This arrangement is consistent for the females from both New Mexico and Arizona.

DISTRIBUTION: *Colorado*, Glenwood Springs (June); *New Mexico*, Fort Wingate (June), Pecos (June); *Arizona*, Huachuca Mts., White Mts. (Aug.).

Superficially this form looks like nothing but a color variant of *subcostella*. However, if the single female genitalic difference should hold through extended series it will need further designation.

216. Pima fulvirugella (Ragonot), new combination

FIGURE 304

Epischnia fulvirugella Ragonot, N. Amer. Phycitidae, p. 10, 1887; Monograph pt. 1, p. 521, 1893.—McDunnough, Check list, No. 6253, 1939.

I have seen nothing that exactly matches Ragonot's description or figure (Monograph, pl. 16, fig. 43). A male before me from San Francisco has a similar, attenuated white subcostal streak and rather pronounced black lining on the veins from cell. Its genitalia, however, do not match those of the type, and the moth itself is smaller (27 mm.). Ragonot gives the alar expanse of his type as 30 mm.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

Genus *Pima*, Species 217 and 218: *P. granitella* and *P. parkerella*

[Forewing with white costal streak obscure or absent.]

217. Pima granitella (Ragonot), new combination

FIGURES 307, 781

Epischnia granitella Ragonot, N. Amer. Phycitidae, p. 9, 1887; Monograph, pt. 1, p. 523, 1893.—Hulst, Phycitidae of N. Amer., p. 162, 1890.—McDunnough, Check list, No. 6258, 1939.

Megasis piperella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 110, 1904.

Forewing gray finely powdered with white, the white dusting concentrated between the veins; the latter finely lined with blackish brown giving the wing (to the naked eye) a longitudinally dark-lined, over-all pale bluish gray appearance; on some specimens a trace of the usual costal white strip as a narrow white line along top of cell for a short distance from base; the lower blackish discal spot usually distinct but occasionally obliterated; on a few specimens the subterminal line slightly indicated by interruptions in the blackish streaks on the veins, but, otherwise, transverse lines absent. Hind wing pale brown, unicolorous, except for a narrow, very slightly darker line along termen. Alar expanse, 22–23 mm.

Male genitalia with sclerotized costa of harpe broadened, slightly notched and produced at apex. Cornuti lying one before the other, of nearly equal length, not (or but very slightly) broadened and not flattened at base; the longer one slightly less than one-third the length of aedeagus. Female genitalia similar to those of *albocostalialis* except sclerotized patches in bursa, narrower, more elongate.

TYPE LOCALITY: California (*granitella*, in Paris Mus.); Pullman, Wash. (*piperella*, in USNM).

FOOD PLANT: *Crotolaria*.

DISTRIBUTION: *Colorado*, Glenwood Springs (Apr., May); *Utah*, Eureka (May, June), Richfield (May), Stockton (May); *New Mexico*, Jemez Springs (Apr., May); *Arizona*, Dewey (Apr.); *Nevada*, Baker (May); *California*, Argus Mts. (May), Crows Landing (May), Los Angeles County (May); *Washington*, Pullman, Walla Walla (May).

A distinct species, easily recognized by its wing pattern.

218. Pima parkerella (Schaus), new combination

FIGURES 306, 782

Epischnia parkerella Schaus, Proc. Ent. Soc. Washington, vol. 26, p. 196, 1924.—McDunnough, Check list, No. 6250, 1939.

Forewing olive buff, costal and inner margins whitish more or less overlaid with a fine peppering of blackish scales; on some specimens a scattering of similar dark scales in the central area and near outer margin along some of the veins; no contrasted white costal strip; transverse lines well marked on most specimens, white, rather broad (absent on one example before me); the antimedial line outwardly oblique from costa to inner margin, nearly straight, at most with a slight bend at vein 1b; subterminal line inwardly oblique from costa to inner margin, with a decided notch at lower fold, inwardly margined by a faint dark shade; discal spots usually obsolete, when distinguishable very faint. Hind wing very pale fuscous with a narrow dark line along termen; on the paler examples the hind wing has a slight ocherous-gray tint. Alar expanse, 30–35 mm.

Male genitalia somewhat stouter than those of preceding species. Sclerotized costa of harpe not appreciably broadened at apex nor projecting beyond apex of cucullus; very slightly if any notched at apex. Cornuti lying close to each other, the apex of one projecting slightly beyond that of the other; about one-third as long as aedeagus.

Female genitalia with bursa minutely scobinate, at left posterior angle developed as a protruding lobe with thickened membrane; ductus bursae developed into a projecting shield at genital opening.

TYPE LOCALITY: Bozeman, Mont. (type in USNM).

FOOD PLANT: "Locoweed" (*Astragalus*).

Represented in the National Collection by nine examples from the type locality (July). The species is easily recognized by its forewing markings. It is the only *Pima* with anything approaching distinct transverse lines.

56. Interjectio, new genus

TYPE OF GENUS: *Ambesa columbiella* McDunnough.

Characters as in *Pima* except: Labial palpus extending little more than the length of the head beyond it, third segment less than half as long as second; apical process of gnathos a broad, flanged plate terminating in a short slender hook; harpe short, hardly extending beyond apical margin of uncus; vinculum little longer than greatest width; genitalia generally broader andmore chunky than those of *Pima;* ductus bursae of female short, little, if any, longer than bursa.

This genus is intermediate between *Pima* and *Ambesa*. From the latter it differs chiefly in having at least two cornuti on the penis and the granulations of the ductus bursae uninterrupted for its entire length.

219. Interjectio denticulella (Ragonot), new combination

FIGURE 308

Pristophora denticulella Ragonot, N. Amer. Physicidae, p. 6, 1887.

Ambesa lallatalis Authors not Hulst (in part) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 241, 1893.

Ambesa denticulella (Ragonot) McDunnough, Canadian Ent., vol. 67, p. 174, 1935; Check list, No. 6158, 1939.

Forewing white dusted and marked with black, making the ground color (of fresh specimens) white with a very faint bluish tint; the dark markings strongly contrasted, consisting of streaks and spots chiefly indicating broken margins of the antemedial and postmedial lines; the antemedial line itself obscure except between lower fold and inner margin when it is an inwardly curved white line preceded by a black spot and followed by a thin black marginal line; above, indicated only by its outwardly oblique, broken outer margin, consisting of a short black line from costa and black streaklets on

upper and lower veins of cell; subterminal line indicated by an oblique, deeply dentate, broken, black inner border; black discal dots at end of cell distinct, the upper minute, the lower a short but conspicuous streak; a row of black dots along termen; the blackish shading otherwise consists of very fine dusting between the veins, supplemented by some faint brownish shading in the folds. Hind wing whitish brown, the veins very slightly dakened; a pale brown line along termen. Alar expanse, 32–34 mm.

Male genitalia with apical process of gnathos with the lateral angles of the flanged plate incurved and broadly rounded. Apex of cucullus not projecting beyond sclerotized costa of harpe. Cornuti two stout thorns, less than half as long as aedeagus; the latter short, stout, straight.

TYPE LOCALITY: North America, but otherwise unspecified (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Washington*, Wenatchee (May). CANADA: *British Columbia*, Keremeos (June).

This species was removed by McDunnough (1935) from the synonymy of *Ambesa lallatalis* (Hulst) where it was placed originally by Ragonot (1889), presumably on the basis of specimens of supposed *lallatalis* sent him by Hulst. The latter species was misidentified by Hulst himself as well as by later authors.

220. Interjectio columbiella (McDunnough), new combination

FIGURE 784

Ambesa columbiella McDunnough, Canadian Ent., vol. 67, p. 175, 1935; Check list, No. 6159, 1939.

Similar to *denticulella* but without the well-contrasted dark markings of that species; the black spot on inner margin, preceding the antemedial line, entirely lacking and the dark markings themselves more brown than blackish, except for the small, narrow black lower discal dot, an occasional black dot on vein 1b near base, and some blackish dots along termen; the brown markings limited to streakings on the veins and (where the transverse lines are distinguishable) to a narrow dark shade along inner margin of the subterminal line. Hind wings as in *denticulella*. Alar expanse, 23–34 mm.

The species averages smaller than *denticulella*, especially the females, which are even smaller than any of the males before me.

Male genitalia similar to those of *denticulella* except cornuti distinctly more slender. Female genitalia (figured from a Pullman, Wash., specimen from a series associated with males of the same locality) with sclerotized ductus bursae projecting as a short shield at genital opening.

TYPE LOCALITY: Oliver, British Columbia (type in Canadian Nat. Coll.)

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Utah*, Stockton (June); *Washington*, Pullman (May, June), Yakima (June). CANADA: *British Columbia*, Oliver (June); *Alberta*, Lethbridge (July).

221. Interjectio ruderella (Ragonot), new combination

FIGURE 785

Epischnia ruderella Ragonot, N. Amer. Phycitidae, p. 9, 1887; Monograph, pt. 1, p. 514, 1893.—Hulst, Phycitidae of N. Amer., p. 162, 1890.—McDunnough, Check list, No. 6249, 1939.

This species is known only from the female type, which, from Ragonot's description and figure, must be very close to some of the small females of *columbiella*, especially paler examples from Pullman, Wash., except that the lower discal spot is a more contrasted black streaklet. Alar expanse, 24 mm.

The genitalia show a broader and stronger sclerotization of the ductus bursae at its junction with bursa than typical *columbiella;* but this character is approached in Utah examples of the latter species.

TYPE LOCALITY: "North America" [given as "without doubt from California" in the Ragonot Monograph] (type in Paris Mus.).

FOOD PLANT: Unknown.

222. Interjectio niviella (Hulst), new combination

FIGURE 309

Lipographis niviella Hulst, Ent. Amer., vol. 4, p. 117, 1888.
Ambesa niviella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 241, 1893.—Hulst, Phycitidae of N. Amer., p. 141, 1890.—McDunnough, Check list, No. 6157, 1939.

Forewing chalk white; a large black patch bordering inner margin of antemedial line and extending from inner margin to top of cell; antemedial line faint but complete, oblique from costa to lower vein of cell, thence concave to inner margin, bordered outwardly by a black line, which is more or less broken into spots on upper half; black streaks and wedges on the outer veins indicating the deeply notched, otherwise obscure subterminal line; both discal spots conspicuous, black; a row of short black streaklets along outer margin; on some specimens smears of a faint, pale, ocherous brown tint towards apex; a fine brown line along termen. Alar expanse, 25–28 mm.

Male genitalia with apical process of gnathos a broadly crescentiform plate with the lateral angles slightly produced; the terminal hook short and slender. Harpe with apex of cucullus projecting beyond the sclerotized costa. Cornuti a cluster of several short, stubby thorns. Aedeagus rather slender, sinuously curved.

TYPE LOCALITY: Colorado (type in AMNH, ex-Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado; Iowa*, Sioux City. CANADA: *Manitoba*, Aweme (July), Cartwright, Winnipeg.

The type is a female without abdomen. I have seen but one other female and it too was without abdomen, so the female genitalia could not be studied. These specimens matched the males in every detail of color and maculation.

57. Genus Ambesa Grote

Ambesa Grote, N. Amer. Ent., vol. 1, p. 98, 1880.—Hulst, Phycitidae of N. Amer., p. 141, 1890.—Ragonot, Monograph, pt. 1, p. 237, 1893. (Type of genus: *Ambesa laetella* Grote.)

Tongue well developed. Antenna as in *Pima* and *Interjectio*. Labial palpus oblique, extending above vertex; second segment roughly and rather broadly scaled; third segment not defected forward, about one-third as long as second, acuminate. Maxillary palpus minute, filiform. Forewing smooth; venation as in *Pima*. Hind wing with vein 3 from the angle of the cell (but separated from discocellular vein by a short spur), longer in proportion to 2 than in *Pima*, 4 and 5 anastomosed for nearly half their lengths, 7 and 8 closely approximate for a short distance from cell; cell one-third the length of wing; discocellular vein curved, extended at lower angle but not so far as in *Pima*. Eighth abdominal segment of male simple or (*laetella*) with a pair of ventrolateral hair tufts.

Male genitalia similar to those of *Interjectio* except: Harpe longer in proportion to combined tegumen and uncus; its sclerotized costa with upper angle at apex produced into a sharp point; sacculus finely haired, not with coarse spinelike hairs of *Pima* or *Interjectio*. Anellus a simple plate without lateral projections. Penis armed with a single, long, stout cornutus; over half as long as aedeagus. Vinculum as long as greatest width.

Female genitalia with bursa unsclerotized except at junction of bursa and ductus bursae; ductus bursae sclerotized except for narrow space at middle, broadened at genital opening.

A North American genus close to both *Pima* and *Interjectio*, distinguished from both by its palpi, weakly haired sacculus, single strong cornutus, and the interrupted sclerotization of ductus bursae. The known species occur only in the western parts of the United States and Canada.

223. Ambesa laetella Grote

FIGURES 18, 310, 790

Ambesa laetella Grote, N. Amer. Ent., vol. 1, p. 98, 1880.—Hulst, Phycitidae of N. Amer., p. 141, 1890.—Ragonot, Monograph, pt. 1, p. 240, 1893.—McDunnough, Check list, No. 6156, 1939.

A brilliant, brightly colored species with clearly marked pattern; forewing markings a rich red-brown against a surrounding suffusion of ashy white; on midcosta a broad, elongate red-brown patch extending from outer margin of antemedial line to end of cell and from costal edge well into cell, shading into a blackish line on its lower margin, and bordered on its outer edge by an angled black discal mark formed of the fused discal spots; upper half of basal area, median area from the brown midcostal patch to vein 1b, and most of the area beyond as far as subterminal line, ash white; a brownish suffusion, paler than the costal patch, along inner margin below vein 1b, on some specimens intensified into a constrastingly darkened patch above middle of inner margin; the transverse lines well separated, clearly marked; antemedial line narrow, angled, white, bordered outwardly by a narrow blackish brown line; subterminal line sinuate, narrow, white, preceded and followed by blackish brown costal spots, the inner one continued as a brown inner bordering line, the outer expanding below into a pale brownish suffusion filling tornal area; subapical area dusted with white; terminal dots fused into a black line along terminal edge. Hind wing pale smoky fuscous with a very faint yellowish tint. Alar expanse, 28–30 mm.

Male genitalia with apical process of gnathos continued below into a pair of narrow, converging, sclerotized lobes. Transtilla absent. Harpe with cucullus narrow; sclerotized costa terminating in a short, sharp point at apex; an erect clasper arising from below costa near base. Terminal margin of vinculum narrowly rounded. Eighth abdominal segment of male with paired tufts.

Female genitalia with terminal, sclerotized portion of ductus bursae abruptly widened and transversely wrinkled toward genital opening. Eighth-segment collar narrowly sclerotized.

TYPE LOCALITY: Colorado (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, White Mts. (July, Aug.), Williams; *Colorado*, Fort Collins (Aug.), Glenwood Springs (Aug.); *Montana*, Bozeman (Aug.), Cut Bank (July); *Utah*, Provo, "South Utah" (July); *Nevada*, Verdi (June); *California*, Inyo County (June), San Bernardino Mts. (July, Aug.), Sierra Nevada Mts.; *Washington*, Pullman (June, July, Aug.). CANADA: *Manitoba*, Aweme (Aug.); *Alberta*, Calgary (July).

An easily recognized species and one of the most beautiful of the American Phycitidae.

224. Ambesa walsinghami (Ragonot)

FIGURES 312, 791, 792

Pristophora walsinghami Ragonot, N. Amer. Phycitidae, p. 6, 1887.

Ambesa walsinghami (Ragonot) Hulst, Phycitidae of N. Amer., p. 142, 1890.—Ragonot, Monograph, pt. 1, p. 239, 1893.—McDunnough, Check list, No. 6153, 1939.

Ambesa monodon Dyar, Ins. Insc. Menstr., vol. 1, p. 34, 1913.—McDunnough, Check list, No. 6154, 1939. (New synonymy.)

Forewing blackish gray faintly tinted with purplish fuscous over the lower half of the wing; on costal half from base to antemedial line, white faintly streaked along the veins with black, the outer margin of the whitish area oblique from lower angle of cell to costa near beginning of subterminal line and, on some fresh specimens, bordered outwardly by a transverse blackish darkening of the ground color; some further ashy white dusting in the subapical area beyond the subterminal line; transverse lines well contrasted; the white antemedial line distinct only from inner margin to cell, concave to lower fold thence inwardly oblique to the cell, beyond which it is lost in the white dusting above, its outer black margin begins as a black, oblique streak from costa and continues outwardly as a fine black line

along upper edge of cell as far as discocellular vein, whence it loops backward along the lower vein of cell and thence along outer edge of the white line to inner margin; subterminal line, parallel with termen, sinuate, white, bordered inwardly by a black line and outwardly by a narrow dark shade, both borders enlarged at costa into contrasted black spots; discal dots not distinguishable; along termen a row of more or less confluent black dots. Hind wings varying from smoky white to pale brownish, the veins faintly darkened. Alar expanse, 19–28 mm.

Male genitalia with uncas broadly elongate, the side margins parallel. Apical process of gnathos without pendant lobes. Transtilla present, incomplete. Harpe with cucullus moderately broad; apex of sclerotized costa produced into a long point at upper (outer) angle; no erect clasper. Eighth abdominal segment of male without tufts.

Female genitalia with terminal sclerotized portion of ductus bursae gradually broadened to genital opening, its terminal margin deeply concaved. Eighth-segment collar broadly sclerotized, ventrally fused.

TYPE LOCALITIES: California (*walsinghami*, in Paris Mus.); Stockton, Utah (*monodon*, in USNM).

FOOD PLANT: *Prunus virginiana melanocarpa*.

DISTRIBUTION: *California*, Cloverdale (June), Deer Park Spring (Lake Tahoe), Plumas County (July, Aug.); *Utah*, Bellevue (May), Eureka (June, July), Provo (July), Stockton (July); *Washington*, Kamiack Butte (May).

Dyar's type of *monodon* is a small female whose genitalia (fig. 792) show minor differences from typical California specimens, but a series from Utah shows all intergradations between the extremes displayed in the figures. The food plant record is from a series reared by J. F. G. Clarke in 1934 at Kamiack Butte, Wash., which I then identified as *mirabella* Dyar. Their abdomens are distinctly gray and their hind wings (especially those of the females) are brownish. In examples of typical *walsinghami* from the coastal region of California (Cloverdale) the hind wings are whitish and the abdomens gray or grayish ocherous.

225. Ambesa walsinghami mirabella Dyar, new status

FIGURES 313, 793

Ambesa mirabella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 59, 1908.—Essig, Insects of western North America, p. 709, 1926.—McDunnough, Check list, No. 6155, 1939.

Not distinguishable from typical *walsinghami* in color or maculation of forewing. The hind wing of a distinctly ocherous tint and the abdomen ocherous over the entire upper surface. Alar expanse, 25–28 mm.

The male genitalia show only a trifling difference from those of typical *walsinghami* in forking of apex of costa (fig. 313). Female genitalia with a shallower concavity in terminal margin of the projecting ductus bursae at genital opening. Figure 793 shows the extreme of reduction in the concavity. Other examples of *mirabella* show intergrading approaches to the deep concavity of *walsinghami*.

TYPE LOCALITY: San Diego, Calif. (type in USNM).

FOOD PLANT: "Plum."

DISTRIBUTION: *California*, Atascadero (San Luis Obispo County, July), Camp Baldy (San Bernardino Mts., July), Cloudburst Canyon (Los Angeles County, July), Mount Lowe (July), Pasadena, Pine Valley (San Diego County), San Diego (July). According to Essig (1926) the larvae were taken in large numbers on prune trees at Hopeland, Calif.

The name *mirabella* represents, at most, only a southern California race of *walsinghami*.

226. Ambesa lallatalis (Hulst)

FIGURES 311, 789

Neophopteryx lallatalis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 161, 1886.

Ambesa lallatalis (Hulst) Phycitidae of N. Amer., p. 142, 1890 (part).

Forewing white heavily dusted with blackish giving the entire wing a pale ashy gray appearance; markings as in *walsinghami* but much fainter; the transverse lines obscure; antemedial line indicated by its broken outer blackish border which has the same outer loop over the cell so characteristic of *walsinghami* but much fainter and often interrupted; on better marked examples a whitish crescent on inner margin indicates the base of the normal antemedial line; beyond this, dark lines extend along vein 1b and the edge of inner margin as far as base of subterminal line, defining a narrow oval patch along inner margin; subterminal line sinuate, defined by its black, dentate inner border, the latter interrupted by a rather broad pale shade extending along outer half of lower fold; the outer area (beyond subterminal line) and the costal area at base also paler than remainder of wing; a thin blackish line along outer margin. Hind wing white to pale smoky brown. Eighth abdominal segment of male without tufts. Alar expanse, 26–30 mm.

Male genitalia with apical process of gnathos a simple, narrow, moderately long hook. Transtilla absent. Harpe without clasper; cucullus moderately broad; sclerotized costa terminating in a very shortly projecting point at apex. Anellus a narrow, elongate, plate. Cornutus almost as long as aedeagus. Vinculum with terminal margin broad.

Female genitalia with terminal margin of ductus bursae at genital margin scobinate, convex, slightly notched in the middle (giving the projecting lower surface of the ductus a bilobed appearance). Eighth-segment collar broadly sclerotized, wrinkled at lateral margins, not ventrally fused.

TYPE LOCALITY: Nevada (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

In addition to the female type in the Rutgers Collection, I have seen only four other authentic specimens, a series of three males and one female from Bellevue, Washington County, Utah, in the National Collection, collected by G. P. Engelhardt, June 21, 1917. The

genitalia of the Utah female agree in every detail with those of the type.

The Ragonot and Dyar references to *lallatalis* have been omitted from the above synomy as they apply to other species. For comments on the misapplication of Hulst's name see under *Interjectio denticulella* (p. 106) and *Phobus brucei* (p. 138).

58. Genus Catastia Hübner

Catastia Hübner, Verzeichniss bekannter Schmetterlinge, p. 372, 1825.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 164, 1865.—Ragonot, Monograph, pt. 1, p. 479, 1893.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 210, 1910.—Hemming, Hübner, vol. 2, p. 168, 1937.—Janse, Journ. Ent. Soc. South Africa, vol 7, p. 13, 1944 (description and figures). (Type of genus: *Noctua marginea* Schiffermüller; figs. 314, 796.)

Tongue well developed. Antenna finely pubescent; on male with a shallow sinus in base of shaft containing a row of minute black teeth and a short, weak scale tuft. Labial palpus oblique, not extending above vertex; broadly scaled, the scales tightly appressed (except on *incorruscella* and *actualis*); third segment over one-third the length of second,[4] usually projected forward and partially concealed in the scaling of second segment, acuminate. Maxillary palpus squamous (broadly scaled). Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, closer to 4 than to 2; 4 and 5 separated at base; 6 from below upper angle of cell, straight; 8 and 9 stalked for nearly half their lengths; 10 from the cell; male without costal fold. Hind wing as in *Ambesa* (except that in the European *marginea* vein 3 is slightly longer in proportion to 2; this species barely coming within our venational group B). Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalic characters as in *Ambesa* except: Harpe not so long in proportion to combined length of tegumen and uncus; cucullus narrow on all species. Transtilla incomplete, but its elements more strongly sclerotized. Vinculum as long or a trifle longer (*marginea*) than greatest width, stout.

Female genitalia with lower surface of ductus bursae towards genital opening unsclerotized or very weakly sclerotized (except in *marginea*); a pair of narrow, elongate plates on inner dorsal surface of ductus bursae at genital opening; otherwise as in *Ambesa*.

This genus is very close to *Ambesa*, differing chiefly in its shorter labial palpus with deflected third segment; its squamous maxillary palpus; stronger sclerotization of the elements of transtilla; the presence of the two elongate sclerotized plates in the ductus bursae towards genital opening; and the slight scale tuft in the sinus of the male antennal shaft.

The European type of the genus (figs. 314, 796) differs from our American species in having the lower surface of the ductus bursae sclerotized and produced at genital opening, the pointed projection from apex of costa a trifle longer, the vinculum narrowly rounded at its extremity, and vein 3 of hind wing a trifle longer in relation to 2. These differences, however, are more specific than generic in character and do not seem to justify a separate generic designation for our American species, despite the obvious likenesses in structure.

The life history of none of the species is known.

[4] Denuded example of palps of the type species (*marginea*) show the third segment half again as long as the figure (52b) in Janse's 1944 paper.

227. Catastia bistriatella (Hulst), new combination

FIGURES 316, 797

Pyla bistriatella Hulst, Canadian Ent., vol. 27, p. 54, 1895.—McDunnough, Check list, No. 6238, 1939.

Head, thorax, and forewing black with a deep greenish blue iridescence; the forewing crossed by two rather broad white lines; the antemedial line slightly oblique, nearly straight; the subterminal line set well back from termen, somewhat wavy. Hind wing a uniform, glossy black-brown. Labial palpus not reaching to vertex (shorter than the palpi of the other species of the genus); second segment broadly scaled, the scales flatly appressed; third segment shorter than that of any other species of the genus, almost completely hidden in the scaling of second segment. Alar expanse, 23–25 mm.

Male genitalia with projecting spine at apex of sclerotized costa very short. Terminal margin of vinculum moderately broad, slightly produced at the lateral edges, very slightly convex. Female genitalia with ventral surface of ductus bursae at genital opening not sclerotized; bursa copulatrix with an irregular, lined, weakly sclerotized patch towards anterior end (probably an individual rather than a specific character).

TYPE LOCALITY: Yosemite, Calif. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Humphreys Basin (Fresno County, Aug.), Yosemite.

A striking, easily recognized species. Hulst is in error in stating that the maxillary palpi are not scale tufted. They are squamous like those of the other cogeneric species but are difficult to see behind the heavily scaled labial palpi. The genitalia of the male type agree in every detail with those of the Humphreys Basin male figured.

228. Catastia incorruscella (Hulst), new combination

FIGURES 315, 795

Pyla incorruscella Hulst, Canadian Ent., vol. 27, p. 55, 1895.—McDunnough, Check list, No. 6240, 1939.

Fore and hind wings a deep, blackish brown, somewhat lustrous but without metallic iridescence; transverse lines similar to those of *bistriatella*, but thinner and a dull ocherous white. On thorax and palpi a scattering of whitish scales; the scaling on second segment of labial palpus slightly roughened; third segment about the same proportional length as on *marginea* and *actualis*, longer than that of *bistriatella*. Alar expanse, 20–22 mm.

Male genitalia differ from those of *bistriatella* only in insignificant details. Female genitalia having bursa without sclerotized patch. However, a sclerotized patch similar to that shown for *bistriatella* (fig. 797) is present in the bursa of a female in the National Collection from Slate Peak, Wash. On this specimen there is also a weak sclerotization of the ventral surface of the ductus bursae at genital opening.

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado; Arizona*, White Mountains (June); *Washington*, Slate Peak (Okanogan County, Aug.).

I have seen no Colorado examples except the male type, but the Arizona locality is represented in the National Collection by a series of males and females in excellent condition (collected by Grace M. and John L. Sperry at Colter's Ranch in the White Mountains, June 17–18, 1937). Their male genitalia are like those of the type.

229. Catastia actualis (Hulst), new combination

FIGURES 317, 794

Nephopteryx actualis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 161, 1886.

Dioryctria actualis (Hulst), Phycitidae of N. Amer., p. 135, 1890.—Ragonot, Monograph, pt. 1, p. 203, 1893.—McDunnough, Check list, No. 6132, 1939.

Monoptilota actualis (Hulst), U. S. Nat. Mus. Bull. 52, p. 421, 1902 (this combination the result of an accidental misplacement).

Forewing with basal and outer areas ocherous, the basal area more or less dusted with ashy fuscous, especially towards inner margin, the outer area with some blackish streaks on the veins; median area (between the transverse lines) ashy fuscous, the whitish dusting concentrated into a pale suffusion transversely across the wing from costa before subterminal line to or almost to inner margin at base of antemedial line; antemedial line white, oblique, notched below cell and more or less dentate above; bordered outwardly by a diffused blackish smudge at costa and below cell by a blackish line, and preceded on inner margin by a black patch (except on California examples); a blackish spot precedes and one usually follows the sinuate subterminal white line on costa, the inner costal spot continuing as a blackish bordering line to inner margin; discal dots distinct, separated, black; a row of blackish dots along termen. Hind wing ocherous brown, darker brown on most females; a dark line along termen and some darkening of the veins. Alar expanse, 24–28 mm.

Male genitalia differing only in insignificant details from those of *bistriatella* and *incorruscella*.

Female genitalia with sclerotized wrinklings of bursa more extended than in other species of the genus; ductus bursae weakly granulate towards genital opening (differences of little or no significance).

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado*, Denver (June), Florissant (July), Gunnison County (near Almont, June, July), Platt Canyon (July), no specific locality (June); *Nevada;* Secret Pass (Elko County, June); *California*, Deer Park Springs (Lake Tahoe, July), Tuolumne Meadows (July); *Washington*, Easton, Walla Walla (June). CANADA: *Manitoba*, Aweme (July); *British Columbia*, Blue Lake (west of Lytton, Aug.).

The foregoing description was drawn from typical Colorado examples. The British Columbia and Washington specimens before me are much darker, the ocherous coloration of forewing replaced by deep brown and the general color of the wing a suffused blackish fuscous with only the white transverse lines and some whitish dusting in the median area contrasted; the hind wings deep brown to blackish brown with no ocherous tinting. This is merely a color form, not a race, and probably represents nothing more than individual response to a moist condition. The Nevada record, cited above, is from a single male in the Canadian National Collection (Grace H. and John L. Sperry, collectors). It also represents a divergent color form with very dark brown hind wing, a dark ground color on forewing and strongly marked, white, transverse lines. The type in the Rutgers Collection is a male. Its genitalia agree in every detail with those of our pale and dark forms.

Genera 59–64: *Immyrla* to *Quasisalebria*

[Venational division B. Veins 4 and 5 of forewing slightly separated at base, in *Oreana* connate or, rarely, very shortly stalked; vein 6 straight. Hind wing with veins 7–8 approximate or very shortly anastomosed beyond cell. Antenna of male with sinus and scale tuft at base of shaft. Labial palpus erect or oblique, smooth scaled; on male second segment grooved to hold maxillary palpus. Maxillary palpus of male in the form of an aigrette. Male genitalia with transtilla absent, or incomplete and with its elements rudimentary; penis normally armed with a single strong cornutus (except *Oreana* which has several cornuti and *Quasisalebria* which has none). Female genitalia with bursa more or less finely and densely spined or scobinate.]

59. Genus Immyrla Dyar

Immyrla Dyar, Journ. New York Ent. Soc., vol. 14, p. 108, 1906.—Forbes, Cornell Mem. 68, p. 627, 1923. (Type of genus: *Immyrla nigrovittella* Dyar.)

Tongue well developed. Antenna pubescent; a sinus and large-scale tuft on base of shaft of male. Labial palpus erect; reaching above vertex; smoothly scaled; second segment on male grooved to hold the maxillary palpus, appressed to face; third segment minute (less than one-fifth the length of second and hidden in the scaling of the latter on male, a trifle longer and partially exposed on female), acuminate. Maxillary palpus of male in the form of an aigrette; of female squamous. Forewing with subbasal scale ridge; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, closer to 4 than to 2; 4 and 5 approximate for a short distance from their bases; 6 from below upper angle of cell, straight; 8 and 9 stalked for over half their lengths; 10 from the cell, approximate for a short distance to the

stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from 4 well beyond 2, in some specimens (fig. 19) connected with discocellular by a short spur before its separation from 4; 4 and 5 anastomosed for less than half their lengths; 7 and 8 anastomosed for a short distance beyond cell; cell less than half the length of wing; discocellular vein curved and considerably extended at lower angle. Eighth abdominal segment of male with compound ventral scale tufts.

Male genitalia as in *Catastia* except transtilla completely absent, a fine brush of long hairs arising from inner surface of harpe along lower edge of basal half of the sclerotized costa (as in *Meroptera*).

Female genitalia with bursa copulatrix finely and densely spined; ductus bursae flattened, granulated, inbent at middle; not longer than bursa, its lateral margins strongly and broadly sclerotized towards genital opening, opening deeply concave; ductus seminalis from a thickened (but not sclerotized) lobe of bursa, near junction of bursa and ductus bursae.

This and the five genera following form a group closely allied to *Salebria* Hübner. All have grooved and erect or oblique male labial palpi, the male maxillary palpus in the form of an aigrette, a scale tuft in sinus on base of shaft of male antenna, no transtilla or only the greatly reduced rudiments of one, and (except for *Oreana* and *Quasisalebria*) a single, long, strong cornutus on penis. *Immyrla* is distinguished from all nearly related genera by the raised scale ridge on forewing. *Ortholepis* also has this character, but the costal sclerotization of its harpe is much weaker, and it has a complete transtilla.

230. Immyrla nigrovittella Dyar

FIGURES 19, 318, 798

Immyrla nigrovittella Dyar, Journ. New York Ent. Soc., vol. 14, p. 109, 1906.—Forbes, Cornell Mem. 68, p. 627, 1923.—McDunnough, Check list, No. 6187, 1939.

Forewing dark gray, the basal area darker than remainder of wing; median and outer areas a paler brownish gray with a faintly darker shade preceding the subterminal line, a very sparse dusting of whitish scales on the paler areas; antemedial line faint, narrow, oblique and more or less curved, dull white, followed by a narrow, blackish brown border and preceded by a conspicuous black ridge of raised scales extending from inner margin to top of cell; subterminal line obscure, sinuate, pale, without dark bordering lines; discal spots faint, blackish and confluent, forming a curved line along discocellular vein. Hind wing pale fuscous, the veins very slightly darkened. Both fore and hind wings have a rather slick, glossy finish. Alar expanse, 20–21 mm.

GENITALIA: As given for the genus.

TYPE LOCALITY: Pittsburgh, Pa. (type in USNM).

FOOD PLANT: Hickory.

DISTRIBUTION: *Pennsylvania*, New Brighton (June), Pittsburgh (May); *New York*, Illion (June).

The only species so far discovered referable to the genus. The food plant record is from a female without a locality label in the National Collection, reared from a pupa. The label reads simply "102, Hickory, pupated VII—17." The specimen also bears an identification label in Dyar's handwriting.

60. Genus Oreana Hulst

Oreana Hulst, Ent. Amer., vol. 4, p. 115, 1888. (Type of genus: *Dioryctria unicolorella* Hulst.)

Characters as in *Immyrla* except: Forewing smooth; veins 4 and 5 connate (rarely very shortly stalked); vein 10 from the stalk of 8–9 a short distance from cell. Hind wing with 4 and 5 stalked for more than half their lengths.

Male genitalia with numerous strong slender cornuti on penis.

Female genitalia with bursa copulatrix strongly sclerotized in the lobed area giving off the ductus seminalis; sclerotized lateral margins of ductus bursae not produced at genital opening and ventral margin of the opening not appreciably concave (these differences in the ductus bursae probably only of specific significance).

Oreana sank into the synonymy of *Meroptera* when Ragonot (1889) referred its type species (*unicolorella*) to the latter genus, but it must be restored, as *unicolorella* is not a *Meroptera* on genitalic characters. Its chain of numerous, strong cornuti distinguish it from any species in *Meroptera* or the American genera closely allied to *Salebria*. *Oreana*, on most characters, seems nearest to *Immyrla*, from which it is at once distinguished by its smooth forewing. It contains but the one described American species.

231. Oreana unicolorella (Hulst)

FIGURES 319, 788

Dioryctria unicolorella Hulst, Ent. Amer., vol. 3, p. 136, 1887.
Oreana unicolorella (Hulst), Ent. Amer., vol. 4, p. 115, 1888.
Meroptera unicolorella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 315, 1893.—Hulst, Phycitidae of N. Amer., p. 149, 1890.—Forbes, Cornell Mem. 68, p. 624, 1923.
Myelois leucophaeella Hulst, Canadian Ent., vol. 24, p. 60, 1892.
Meroptera leucophaeella (Hulst), Barnes and McDunnough, Contributions, vol. 3, p. 194, 1916.
Meroptera nebulella McDunnough (*not* Riley), Check list, No. 6185, 1939.

Forewing mouse gray, the basal area slightly paler than remainder of wing; transverse lines grayish white, obscure; antemedial line oblique, notched below cell, bordered outwardly from costa for a short distance by an obscure blackish shade; subterminal line sinuate, without appreciable dark borders; discal dots faint, brown, usually separated but sometimes confluent; on underside of male forewing a streak of blackish sex scaling along basal third of costa. Hind wing pale smoky brown, the veins slightly darkened. Alar expanse, 18–22 mm.

Male genitalia with harpe, tegumen, and vinculum similar to those of *Immyrla nigrovittella*. Uncus somewhat smaller in proportion; in natural position inclined

downward, but when flattened out it shows an appreciable constriction at middle. Anellus a simple shield-shaped plate. Female genitalia as given for the genus; spining of bursa not so dense or continuous as in *nigrovittella*.

TYPE LOCALITIES: Washington, D. C. [sic] (*unicolorella*, in AMNH, ex Rutgers); Iowa (*leucophaeella*, in AMNH, ex Rutgers).

FOOD PLANT: Apple (record from female in National Collection labeled "bred from apple, emerged 25—V—1904, Ottawa, J. Fletcher").

DISTRIBUTION: UNITED STATES: *Maine*, Augusta (June); *New Hampshire*, Dublin; *Connecticut*, East River (July); *New Jersey*, Montclair (July); *Pennsylvania*, New Brighton (May, June, July, Aug.), Oak Station (June), Pittsburgh (June, July); *Iowa; Colorado; Oregon*, Milton (July); *Washington*, Pullman (June). CANADA: *Ontario*, Ottawa (May), Trenton (July); *Quebec*, Montreal (July), St. Hilaire (July); *Nova Scotia*, Cape Breton Isl. (July).

There is some mislabeling of the types or, what is more likely, errors in the citation of type localities by Hulst. In his original description of *unicolorella* he cites "Washington, D. C." and in his 1890 paper gives "Canada." His type is a male (without abdomen) from Iowa, labeled: "H. S. Sanders, June 13, 1886." The type of *leucophaeella* is a female with typical genitalia, labeled "Colo., Gillette." The type locality citation of "Iowa" in the original description can be written off as another Hulst lapsus, although the species occurs there and is represented by several examples in the National Collection. Barnes and McDunnough (1916) first put *leucophaeella* into synonymy with *unicolorella*, and there does not seem to be any reason to doubt the correctness of that procedure. The two specimens at Rutgers labeled "type" by Hulst certainly represent one and the same species.

61. Olybria, new genus

TYPE OF GENUS: *Myelois aliculella* Hulst.

Tongue well developed. Antenna finely and densely pubescent; on male a sinus and scale tuft in shaft at base. Labial palpus oblique, reaching well above vertex; second segment of male grooved to hold the maxillary palpus; third segment short, about one-third the length of second, acuminate, partially concealed by scaling of second segment. Maxillary palpus of male in the form of an aigrette; of female small, squamous. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell; 2, 3, and 4 equidistant at base; 4 and 5 shortly separated at base and thence approximate (parallel) for a very short distance; 6 from below upper angle of cell, straight; 8 and 9 stalked for about half their lengths; 10 from the cell, shortly separated from the stalk of 8–9 at base; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 stalked for half their lengths; 7 and 8 closely approximate for half their lengths beyond cell; cell slightly less than half the length of wing; discocellular vein curved, considerably extended at lower angle. Eighth abdominal segment of male with a pair of thin, weak, ventrolateral hair tufts.

Male genitalia with uncus small, hoodlike, projected downward (at right angle to tegumen). Apical process of gnathos a short, stout, curved hook. Tegumen with a pair of straight, strongly sclerotized arms projecting backward from its lower, posterior angles. Transtilla absent. Harpe with costa strongly sclerotized throughout its length and produced at apex into a sharp spine; cucullus narrowly elongate, tapering to pointed apex. Anellus a broadly U-shaped band, supplemented (in *furciferella*) by some sclerotization of the membranous tube surrounding the aedeagus. Aedeagus rather long and stout; penis armed with a single long, strongly sclerotized, rather slender cornutus. Vinculum stout, longer than greatest width, narrowly truncate at terminal margin; the latter very slightly concave.

Female genitalia with bursa smoothly sclerotized over most of dorsal surface, its ventral surface finely scobinate with contorted, wrinkled and spined bands more or less encircling the bursa at junction of bursa and ductus bursae; ductus bursae at least as long as bursa, rather broad, flattened (ribbonlike) and waved (twice bent), sclerotized throughout, at genital opening the sclerotization forming a stout, squarish ventral plate; ductus seminalis from a lobe of bursa near junction of bursa and ductus bursae.

This genus is distinguished from its nearest allies of the *Salebria* complex by the projecting arms from tegumen of the male genitalia, the ribbonlike, sclerotized ductus bursae and heavy, squarish genital plate of the female, and the simple, paired tufts of the eighth abdominal segment of the male. This last character is shared by the genus *Salebriacus*, which separates from *Olybria* on other differences of genitalia and venation.

Two North American species, referred from *Salebria* (of authors), represent the only known components of the genus.

232. Olybria aliculella (Hulst), new combination

FIGURES 320, 786

Myelois aliculella Hulst, Ent. Amer., vol. 3, p. 135, 1887.
Salebria oberthuriella Ragonot, N. Amer. Phycitidae, p. 9, 1887.
Salebria aliculella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 367, 1893.—Hulst, Phycitidae of N. Amer., p. 154, 1890.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.—McDunnough, Check list, No. 6217, 1939.

Forewing white dusted with black, making the general color ashy gray, the black dusting concentrated on extreme base and in short streaklets on the lower veins at termen; antemedial line narrow, oblique, slightly notched at vein 1b, white, bordered outwardly by a black line which begins on costa as a conspicuous, triangular, black spot; on inner margin, preceding the antemedial line, a large orange spot; subterminal line sinuate, narrow, white, bordered inwardly by a narrow black line and outwardly by a broad orange band which

ends in a black spot at costa; along lower fold between the transverse lines fresh specimens show a faint shading of olivaceous ocherous; a similar shade often along discocellular vein; completely surrounding the discocellular vein a large black ring (obicular). Hind wing translucent white with a faint ocherous tint especially towards outer margin and anal angle; the veins very faintly darkened and a dark line along termen. Alar expense, 19–22 mm.

Male genitalia showing only comparative differences to distinguish them from those of *furciferella*. These are shown in the figures. Female genitalia with a row of stiff, flattened setae along lower, posterior margin of the eighth-segment collar.

TYPE LOCALITY: Arizona (*aliculella*, in AMNH, ex Rutgers; *oberthuriella*, in Paris Mus.).

FOOD PLANT: *Ceanothus* ? (Hulst, 1890).

DISTRIBUTION: *Arizona*, Kingman (Oct.), White Mts. (Aug.), Wilgus, Williams, state locality only (June); *New Mexico*, Albuquerque, Fort Wingate (June), Jemez Springs (June, July); *Texas*, Big Bend region (May).

Easily identified by the orange spot preceding the antemedial line and the large black obicular mark on the disc of the forewing.

233. Olybria furciferella (Dyar), new combination

FIGURES 321, 787

Salebria furciferella Dyar, Journ. New York Ent. Soc., vol. 12, p. 106, 1903.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.—McDunnough, Check list, No. 6216, 1939.

Similar to *aliculella* except: Forewing more strongly dusted with black, making ground color a decided ash gray; the obicular spot on disk absent, replaced by a couple of black streaks on upper and lower veins at end of cell, forking from a black streak extending along the upper vein of cell from the black costal dash bordering the antemedial white line; the subbasal orange patch on inner margin preceding the antemedial line and the orange shade following the subterminal line reduced and, on some specimens, obscured by black scaling. Hind wing as in *aliculella*. Alar expanse, 21–23 mm.

Male genitalia similar to those of *aliculella* except projecting arms of tegumen stouter; aedeagus and cornutus longer. Female genitalia with a fringe of fine hairlike setae along the lower posterior margin of eighth-segment collar.

TYPE LOCALITY: Ashfork, Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Ashfork and Prescott (June, type, ♂, and 2 paratypes, ♀), also 2 females with only the state locality, from the Fernald and Brooklyn Museum Collections and originally made cotypes of *aliculella* Hulst.

The species is easily recognized by the black streak along the upper vein of cell and is distinct from *aliculella* though obviously very close to it.

62. Salebriacus, new genus

TYPE OF GENUS: *Nephopteryx odiosella* Hulst.

Characters of *Olybria* except: Male antenna with scale tuft in shallow sinus on base of shaft but greatly reduced, a mere vestige. Forewing with vein 2 slightly further from 3 at base than 3 is from 4; 8 and 9 stalked for considerably more than half their lengths. Paired tufts on eighth abdominal segment of male very weak, mere vestiges.

Male genitalia with uncus hoodlike, elongate (longer than wide) and not projected downward. Apical hooked process of gnathos stout, long, reaching nearly as far as apex of uncus. Tegumen simple. Transtilla present but incomplete and its elements much reduced. Harpe with apex of sclerotized costa produced as a stout, free spine before apex of cucullus. Anellus a simple shield. Entire genitalia more robust and proportionally shorter than those of *Olybria* or the genus *Salebriaria*, which follows.

Female genitalia with bursa very broad in proportion to its length, not sclerotized, nearly half the inner surface covered with a dense, spinose mat; ductus bursae semitubular, broad and short, partially sclerotized (the sclerotization interrupted near middle of the ductus); ductus seminalis from near anterior end of bursa. Eighth-segment collar narrow ventrally and laterally, dorsally produced as a spatulate apron.

This genus is another restriction from *Salebria* of authors. It is distinguished chiefly by the weak tuft of the male antenna, the squat, stout, male genitalia; the robust, hooked projection of gnathos, the eighth-segment collar of the female, and the place of departure from bursa copulatrix of the ductus seminalis.

It contains but one North American species.

234. Salebriacus odiosellus (Hulst), new combination

FIGURES 322, 799

Nephopteryx odiosella Hulst, Ent. Amer., vol. 3, p. 132, 1887.

Salebria odiosella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 366, 1893.—Hulst, Phycitidae of N. Amer., p. 155, 1890.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.—McDunnough, Check list, No. 6219, 1939.

Salebria bakerella Dyar, Journ. New York Ent. Soc., vol. 12, p. 105, 1904.—McDunnough, Check list, No. 6220, 1939. (New synonymy.)

Salebria yumaella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 35, 1905.—McDunnough, Check list No. 6218, 1939. (New synonymy.)

Forewing white dusted with black, making the ground color ashy gray, palest over the median area; antemedial line narrow, oblique from costa to lower margin of cell, thence slightly incurved to lower margin, white, margined outwardly on upper half by a rather broad black band and inwardly on lower margin by a more or less expanded black patch; subterminal line sinuate, narrow, white, bordered inwardly and, to a lesser extent, outwardly by blackish lines which expand into distinct black dashes at costa; discal dots at end of cell, separated, usually distinct, blackish; on most

specimens a diffuse oblique shade from upper part of subterminal line obliquely across wing toward inner margin, and on a few of the more contrastingly marked specimens a faint ocherous shading along the lower fold; terminal dots along outer margin more or less confluent, obscure on many specimens. Hind wing white, translucent; faintly shaded with pale brown at apex and along outer margin for a short distance from apex. Alar expanse, 19–26 mm.

Male genitalia with vinculum rather abruptly narrowed from middle to a truncate terminal margin. Female genitalia with sclerotized portion of ductus bursae at genital opening produced and broadened, its terminal margin and lateral angles concave.

TYPE LOCALITIES: "Colorado" [sic] (*odiosellus*, in AMNH, ex Rutgers). Ormsby County, Nevada (*bakerella*, in USNM); Yuma County, Ariz. (*yumaella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Blanco County [?]; *Arizona*, Mohave County (July, Sept.), Yavapai County, Yuma County; *Colorado; Utah*, Bellevue (May, June, July); *Nevada*, Ormsby County (July), Pyramid Lake, Reno; *California*, Jacumba (May), Mexican Wells (Clarke Mts., Sept.), Morongo Valley (May).

The types of *odiosellus*, *bakerella*, and *yumaella* are all males with identical genitalia. That of *yumaella* is a small, somewhat suffused specimen with the black markings less strongly contrasted than those of typical Nevada examples. In our series there is a complete intergradation between the extreme forms.

Barnes and McDunnough (1916) called attention to the confused citations of the type locality of *odiosellus*. Hulst gives Colorado in his original description, but in his 1893 paper cites "Texas." The type at Rutgers is labeled "Blanco Co., Texas." I suspect that this is a mislabeling, for Colorado seems a more likely locality than central Texas. In my paper on the cactus-feeding Phycitinae (Proc. U. S. Nat. Mus., vol. 86, p. 389, 1939) I misapplied the Hulst name to a species described by Dyar as *Ozamia clarefacta*. This error is discussed further under the treatment of *clarefacta* (p. 258).

63. Salebriaria, new genus

TYPE OF GENUS: *Salebria ademptandella* Dyar.

Tongue well developed. Male antenna pubescent with strong scale tuft in sinus at base of shaft. Labial palpus obliquely upturned, reaching above vertex, smoothly scaled; second segment on male grooved to hold the maxillary palpus, appressed to face; third segment minute and hidden in scaling of second on male, somewhat longer and partially exposed on female, acuminate. Maxillary palpus of male in the form of an aigrette; of female subsquamous. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell; 3 usually somewhat nearer to 4 than to 2, sometimes equidistant from them; 4 and 5 shortly separated at base, rarely (in smaller specimens) closely approximate; 6 from below upper angle of cell, straight; 8 and 9 stalked for well over half their lengths (except in *fructetella*); male without costal fold; on underside of male wing a streak of appressed, black sex-scaling along basal third of costa. Hind wing with vein 2 from before, but rather near lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 stalked for approximately half their lengths (for slightly over half in *fructetella*); 7 and 8 approximate beyond cell (except in *pumilella* and *fructetella* where they are contiguous or weakly anastomosed for a short distance); cell slightly less than half the length of wing. Eighth abdominal segment of male with compound ventral scale tufts.

Male genitalia with uncus subtriangulate (apex rather broadly rounded). Apical process of gnathos a short hook, slender (except on *fructetella*). Transtilla absent. Harpe with apex of sclerotized costa produced as a short free spine before apex of cucullus. Anellus a semitubular shield. Penis armed with a single, strongly sclerotized, moderately long cornutus. Vinculum stout, subtriangulate, slightly longer than greatest width.

Female genitalia with much of inner surface of bursa covered with a dense matting of fine spines (especially towards distal end); bursa also sometimes partially sclerotized (*pumilella, fructetella*); ductus bursae shorter than bursa, strongly sclerotized (at least towards genital opening), partially flattened (ribbonlike in *pumilella*); ductus seminalis from lobe of bursa adjacent to the junction of bursa and ductus bursae.

This genus is a further restriction from *Salebria*. It is a compact group of very closely related species; in its smooth forewings and male genitalia markedly distinct from typical *Salebria*; closest to *Salebriacus* from which it is at once distinguished by the compound scale tufts on eighth abdominal segment of the male and the place of departure of the ductus seminalis from bursa in the female. How many valid species are represented by the several names in our North American lists and definitely referable to the genus cannot be exactly determined until larger series of reared specimens are available. The genitalia (except for those of *pumilella* and *fructetella*) offer little or nothing in the nature of trustworthy specific characters. The maculation and color differences on forewings that have been used by previous authors seem to be equally unreliable.

235. Salebriaria turpidella (Ragonot), new combination

FIGURES 323, 802

Salebria turpidella Ragonot, Nouv. Gen., p. 19, 1888; Monograph, pt. 1, p. 346, 1893.—Forbes, Cornell Mem. 68, p. 625, 1923.—McDunnough, Check list, No. 6196, 1939.

Salebria ademptandella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 114, 1908.—McDunnough, Check list, No. 6198, 1939. (New synonymy.)

Forewing powdery gray, the ground color variable, ranging from pale ash gray (*ademptandella*) to a more suffused pale brownish gray; basal area usually somewhat paler than median area; the transverse lines but little paler than the ground color, indicated chiefly by their dark margins; the latter narrow, blackish, well contrasted, especially on the paler examples; antemedial

line sinuate-angulate, bordered outwardly by a black line and inwardly, on lower half, by a similar narrow black line; on many specimens a small, faint, whitish patch just beyond the antemedial line on inner margin; subterminal line sinuate, bordered inwardly by a blackish line, the latter fainter than that bordering the antemedial line; discal spots black, confluent, normally forming a black line along the discocellular vein, but on individual specimens tending to separation on one or the other forewing. Hind wing smoky white to brown, variable in both sexes. Alar expanse, 17–18 mm.

Male genitalia show no distinguishable differences from those of typical *turpidella*, *nubiferella*, or *annulosella*. Female genitalia with the spining on anterior half of bursa of a nearly uniform fineness (no dense concentration of darker spines at the closed end); bursa without appreciable sclerotization at middle.

TYPE LOCALITIES: UNITED STATES: (*turpidella*, ♂, in Paris Mus.); Kerrville, Tex. (*ademptandella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Burnet County (Oct.), Kerrville (Apr., May, June), Sabinal (Sept.), also one Texas male from the Boll Collection (No. 558) labeled "Europe"; *Florida*, Gotha (F. Rauterberg, collector, 2 specimens, ♂ and ♀).

The foregoing from typical examples. Also before me are transitional examples between *turpidella* and *nubiferella* from Texas, Blanco County (May, July) and Shovel Mountain, and North Carolina, Southern Pines (Apr., July, Aug.) and Tryon (May, Sept.). These specimens are dark, with the size and markings of *turpidella* but with female genitalia more like those of *annulosella*. Some of them had been identified as *annulosella*. Others were under *turpidella*. I doubt very much if *turpidella* is anything more than a variety of *nubiferella*. Dyar's *ademptandella* is nothing but a paler form of the typical *turpidella*.

236. Salebriaria nubiferella (Ragonot), new combination

Salebria nubiferella Ragonot, N. Amer. Phycitidae, p. 8, 1887; Monograph, pt. 1, p. 344, 1893.—Hulst, Phycitidae of N. Amer., p. 150, 1890.—McDunnough, Check list, No. 6191, 1939.

Salebria annulosella nubiferella (Ragonot) Forbes, Cornell Mem. 68, p. 625, 1923.

If this and the preceding "species" (*turpidella*) are anywise distinct, the name *nubiferella* will apply to a larger form (21 mm.) with the basal area of forewing dark and concolorous with the darker shading in median and outer areas and with a more strongly contrasted white patch on the inner margin just beyond the antemedial line; but neither of these differences, nor those used by Ragonot (Monograph, pp. 329, 345) to separate *turpidella* and *nubiferella* are constant. According to Clarke's notes the species is represented in the Paris Museum only by the unique type, a male labeled "type orig., pl. XIV fig. 23, Amer. Sept. don. C. V. Riley." I have examined its genitalia and they show nothing to distinguish them from those of *turpidella*, *annulosella*, or *engeli*.

What appears to be a typical female in the National Museum from Putnam County, Ill. (July) has the well-contrasted white spot on inner margin, dark hind wings and dark gray forewings, the latter with discal dots fused and the dark (blackish) borders of antemedial and subterminal lines as in *turpidella*, but somewhat weaker. Its alar expanse is 20 mm. The female genitalia have a rather dense and dark concentration of fine spines at the anterior end of bursa and a thickening and slight sclerotization of the membrane at middle of bursa, the sclerotized part showing what seems to be a fixed longitudinal fold. In these particulars the genitalia are like those of *annulosella*.

TYPE LOCALITY: "Amer. Sept." [Texas] (type in Paris Mus.).

FOOD PLANT: Unknown.

Besides the aforementioned female there are before me a male (19 mm.) from Putnam County, Ill. (July), and a male (18 mm.) and female (19 mm.) from near St. Louis, Mo. (June) which appear to be conspecific with the Illinois female. They have the white spot on inner margin less strongly marked, but the strength of this marking does not seem to be of any significance. Presumably several of the Texas examples from the intermediate specimens mentioned under *turpidella* should be referred here if a specific distinction can be maintained between *turpidella* and *nubiferella*. We shall have to have host plant association and good reared series before such a distinction can be made with any certainty.

237. Salebriaria engeli (Dyar), new combination

Salebria engeli Dyar, Journ. New York Ent. Soc., vol 14, p. 107, 1906.—Forbes, Cornell Mem. 68, p. 625, 1923.—McDunnough, Check list, No. 6195, 1939.

Forewing dark brownish gray, the transverse lines obscured; antemedial line indicated only by its very faint, narrow, angulate, outer black border, followed outwardly on inner margin by a strongly contrasted white patch; subterminal line faint, but slightly paler than the ground color and with an obscure, narrow, dark inner border, sinuate; discal dots more or less confluent, blackish with some pale scaling on their outer margins; a row of separated blackish dots along outer margin. Hind wings smoky fuscous, on darker specimens with a pale brownish tint; the veins darkened. Alar expanse, 18–20 mm.

Genitalia as in *annulosella*.

TYPE LOCALITY: Oak Station, Pa. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Pennsylvania*, Hazleton, New Brighton (July), Oak Station (July); *Maryland*, Plummers Isl. (July); *Illinois*, Decatur (May); *Texas*, Kerrville (May, June, July).

An intermediate form between typical *nubiferella* and *annulosella*, probably only a variety of the former.

238. Salebriaria annulosella (Ragonot), new combination

FIGURE 800

Salebria annulosella Ragonot, N. Amer. Phycitidae, p. 7, 1887; Monograph, pt. 1. p. 346, 1893.—Forbes, Cornell Mem. 68, p. 625, 1923.—McDunnough, Check list, No. 6197, 1939.

Salebria robustella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 114, 1908.—McDunnough, Check list, No. 6211, 1939 (New synonymy.)

Forewing gray; antemedial line but slightly paler than the ground color and not sharply defined, margined on outer side at costa by a more or less triangulate blackish patch and on inner side at inner margin by a somewhat larger blackish patch which extends to or nearly to base of wing; discal dots distinctly separated, black, surrounded by pale dusting; subterminal line obscure; a row of distinct blackish dots along terminal margin. Alar expanse, 18–20 mm.

Female genitalia figured from specimen from Burnet County, Tex. They are like those of the type in Paris and differ in no essential details from those of females of *nubilella*.

TYPE LOCALITIES: Texas (*annulosella*, in Paris Mus.); Burnet County (*robustella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Blanco County (Apr.); Burnet County (Apr.); *North Carolina*, Raleigh (June).

According to Clarke's notes, two examples, forming the basis of Ragonot's diagnosis of the species in his Monograph, are in the Paris Museum. One is a female from Texas, obviously the type but not so labeled. It was the specimen figured in the Monograph (pl. 9, fig. 6). The other specimen is a male labeled: "Dallas, Texas, Boll, 24–V–689." A female in the U. S. National Museum, also a Boll specimen from Texas (No. 559) and probably a mate to the Paris male, bears a name label (*Salebria annulosella*) in Ragonot's handwriting. I doubt that either of these Boll specimens is a typical *annulosella*. Our female in markings is intermediate between *annulosella* and *tenebrosella* with female genitalia like the latter species. Dyar's type of *robustella* (a male) matches Ragonot's figure and description of *annulosella* in all details except that the discal spots are obscured on one forewing. A female, obviously the other sex of Dyar's type, had been identified by him as *annulosella*. The remaining Texas examples before me (Blanco County) had been identified by Hulst as either *nubiferella* or *pumilella*.

239. Salebriaria tenebrosella (Hulst), new combination

FIGURES 801, 803

Nephopteryx tenebrosella Hulst, Ent. Amer., vol. 3, p. 131, 1887.

Nephopteryx quercicolella Ragonot, N. Amer. Phycitidae, p. 7, 1887.

Salebria tenebrosella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 347, 1893.—Hulst, Phycitidae of N. Amer., p. 151, 1890.—McDunnough, Check list, No. 6199, 1939.

Salebria heinrichalis Dyar, Ins. Insc. Menstr., vol. 5, p. 45, 1917.—McDunnough, Check list, No. 6192, 1939. (New synonymy.)

Forewing dark gray more or less shaded with black, especially in basal area; antemedial line whitish, diffused, oblique, sometimes interrupted at middle, preceded by a dark red patch on lower half; cutting this red patch an oblique black line which fuses into the black basal shade on costal half of basal area; subterminal line obscure, sinuate, very slightly paler than the ground color; discal dots coalesced into a black lunulate line along discocellular vein, partially obscured in the dark ground color over middle of wing but set off by some pale (whitish) dusting along its outer edge; separated blackish dots along terminal margin. Hind wings brownish gray; the veins slightly darkened. Alar expanse, 17–18 mm.

Male genitalia showing no distinguishing characters from those of preceding species.

TYPE LOCALITIES: Texas (*tenebrosella*, in AMNH, ex Rutgers); "America Septentrionalis" (*querciocolella*, in Paris Mus.); Falls Church, Va. (*heinrichalis*, in USNM).

FOOD PLANT: Oak (larva a leaf tier).

DISTRIBUTION: *Texas*; *Missouri* (Aug.); *Virginia*, Falls Church (Apr.).

In addition to typical examples from the above localities there is before me a series of males and females of a slightly larger average size, 18–20 mm., with a somewhat more diffused and contrasted whitish antemedial line and little or no trace of the subbasal red patch on forewing and no red on the thorax. On typical *tenebrosella* the tips of the patagia are shaded with red. The females of these variant examples also have larger genitalia (fig. 803). They may represent a food plant race or a color form of *tenebrosella* but hardly anything more. In view of the already obscure specific limits of the described species I do not feel justified in adding a further name.

The variety is represented in the National Collection from the following localities: *Massachusetts*, Cohasset (July), Martha's Vineyard (July); *New York*, Utica (Aug.); *Maryland*, Plummers Isl. (Aug.); *District of Columbia*, Washington (June); *North Carolina*, Tryon (May); *Georgia*, Atlanta (June); *Illinois*, Decatur (May), Lacon (June); *Missouri*, near St. Louis, and one small example from the Murtfeldt Collection labeled "130 M. apple, 5–8–89." Several of these had been previously misidentified as *Oreana leucophaeella* (Hulst).

240. Salebriaria pumilella (Ragonot), new combination

FIGURES 325, 804

Salebria pumilella Ragonot, N. Amer. Phycitidae, p. 8, 1887; Monograph, pt. 1, p. 344, 1893.—McDunnough, Check list, No. 6190, 1939.

Salebria georgiella Hulst, Canadian Ent., vol. 27, p. 57, 1895.—McDunnough, Check list, No. 6210, 1939. (New synonymy.)

Forewing dark gray shaded with brown; a rather pale chocolate brown, triangulate patch on inner margin on inner side of antemedial line; the latter narrow, white, its blackish bordering lines broken, and obscure except the inner one on lower half of wing; a similar black border on the inner edge of the chocolate brown patch; on some specimens (especially faded examples) a slight ocherous shading at extreme base of wing; on most fresh

specimens a narrowly elongate, grayish fuscous patch on midcosta; some white dusting on inner margin beyond antemedial line and in cell towards its outer margin; subterminal line fine, white, its dark borders obscure; discal spots confluent, forming a narrow, blackish line along discocellular vein; the blackish dots along terminal margin weak, more or less confluent. Hind wing pale smoky fuscous. Alar expanse, 15–17 mm.

Male genitalia with spine from apex of sclerotized costa of harpe projecting straight out beyond apex of cucullus (not curved dorsally as in the other species).

Female genitalia with ductus bursae flattened, ribbon-like, sclerotized throughout and dorsoventrally folded towards bursa copulatrix, its lower margin produced at genital opening into a subtriangulate projecting shield with somewhat rounded terminal margin; bursa with nearly half of one side strongly and smoothly sclerotized.

TYPE LOCALITIES: Texas (*pumilella*, in Paris Mus.); Charlotte Harbor, Fla. (*georgiella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Florida*, Charlotte Harbor (Mar.); *Texas*, Burnet County (Apr.), also 3 examples (♂ and ♀♀) with only the state locality and without dates; *North Carolina*, Southern Pines (June, Aug.).

Hulst's references to *pumilella* in his Phycitidae of N. Amer. (p. 150) are omitted from the above synonymy, since he had misidentified Ragonot's species. The technical description he gives was simply copied from Ragonot's original description. There is no doubt about the synonymy of *georgiella*.

In all examples I have seen, veins 4 and 5 of forewing are rather closely approximate.

241. Salebriaria fructetella (Hulst), new combination

FIGURES 324, 805

Myelois fructetella Hulst, Canadian Ent., vol. 24, p. 59, 1892.
Salebria rectistrigella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 115, 1908.
Salebria fructetella (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 194, 1916.—McDunnough, Check list, No. 6203, 1939.

Forewing glossy brownish gray shaded with blackish brown and dusted with white; the black shading forming a blotch on costa following, and a similar blotch on inner margin preceding the antemedial line, and an obscure dark shade extending from costa near apex obliquely inward across the subterminal line; white dusting limited to a more or less triangulate cloud from midcosta surrounding the upper discal spot and a smaller cloud on costa preceding the antemedial line; antemedial line narrow, slightly oblique, straight or (on some examples) with a slight notch at middle, white and distinctly contrasted against the ground color but without appreciable black bordering lines; discal dots separated, blackish; subterminal line obscure, whitish gray, vertical except for a median outward bulge; terminal dots obscure, brown. Hind wing smoky white shading to fuscous along termen; veins very slightly darkened. Alar expanse, 15–18 mm.

Male genitalia distinguished from those of other species in the genus by the spoon-shaped apical projection of gnathos, the V-shape of the sclerotized part of anellus, and the longer cornutus.

Female genitalia with ductus bursae very short, its median area membranous, a moderately broad sclerotized and granulate band at genital opening, strongly sclerotized and longitudinally ridged towards junction with bursa; this peculiar sclerotization extending into and occupying nearly half of the bursa, anterior (closed) end of bursa fused into a thickened (but not sclerotized) membrane; remainder of bursa covered by a mat of fine spines.

TYPE LOCALITIES: Blanco County, Tex. (*fructetella*, in AMNH, ex Rutgers); Kerrville, Tex. (*rectistrigella*, in USNM).

FOOD PLANT: Oak (larva a leaf feeder).

DISTRIBUTION: *Florida*, Key West, Orlando (Mar.); *Louisiana*, Natchitoches Parish (Aug.); *Texas*, Blanco County (June), Kerrville (May, June), Sabinal (Sept.), Shovel Mountain (June, July); *Arizona*, Williams (Sept.), *Missouri* (June, reared); *District of Columbia* (May, Aug., reared); *New York*, Bellport (June, Sept., reared).

Superficially *fructetella* strikingly resembles *Acrobasis amplexella* Ragonot (especially the females). The reared examples before me had been identified to the latter name. The male antennal character and the genitalia of both sexes, however, easily separate the two species.

64. Quasisalebria, new genus

TYPE OF GENUS: *Quasisalebria admixta*, new species.

Characters of *Salebriaria* except: Labial palpus erect, appressed to flattened face. Forewing with vein 8 and 9 stalked for slightly more than two-thirds of their lengths. Hind wing with veins 4 and 5 stalked for over three-fourths of their lengths; 7 and 8 shortly anastomosed beyond cell.

Male genitalia with costa of harpe sclerotized for its entire length, not appreciably produced at apex, but with a strongly sclerotized, free, articulating arm from base; shieldlike part of anellus with a pair of long, divergent, lateral horns; penis without cornutus.

Female genitalis with ductus bursae thickened (cartilaginous in texture) except at junction with bursa copulatrix; bursa finely spined only in area adjacent to junction with ductus bursae.

The type of this genus is, in many respects, close to *Salebriaria fructetella* and appears to be an aberrant offshoot of *Salebriaria*. I propose the new generic designation reluctantly; but no other procedure is possible if we are to have any exact definition of genera for the species allied to *Salebria*. Nothing in our American fauna is properly referable to the latter genus, which is characterized by a forewing with partial scale ridge in the subbasal area; harpe (fig. 332) with erect clasper from near middle and costal margin weakly sclerotized;

bursa copulatrix of female without spining or granulations (membranous and smooth in the type, *palumbella*).

242. Quasisalebria admixta, new species

FIGURES 328, 806

Forewing ashy white shaded with olivaceous brown or grayish fuscous in outer area and on lower half of basal area; the whitish ground color strongly contrasted on costal half of basal area and in a more or less triangulate area extending from median half of costa into cell and including the discal spots; antemedial line distinct, narrow, slightly curved, white, bordered outwardly on costa by a strongly contrasted, black, triangulate patch and preceded on inner margin by a similar quadrate spot; subterminal line narrow, white, close to termen, and outwardly bulged at middle, bordered by fine blackish lines which begin as strong black smudges at costa; discal dots separated, the lower one always distinct, the upper sometimes absent. Hind wing semihyaline, white with a brownish shade at apex and a narrow brown line along upper half of termen; the veins not appreciably darkened. Alar expanse, 19–21 mm.

Male genitalia. Characters as given for the genus. The peculiar development of the anellus may be only of specific significance.

TYPE LOCALITY: Provo, Utah (type in USNM, 61343).

FOOD PLANT: Unknown.

Described from male type and two male and four female paratypes from the type locality (July, Aug.); one male paratype from Redington, Ariz.; two female paratypes from Bellevue, Washington County, Utah (May); and one female paratype from Glenwood Springs, Colo. (Aug.).

The species is superficially similar to *Salebriaria fructetella* Hulst, but with the white areas and blackish markings of forewing more strongly contrasted.

Genus 65: *Ortholepis*

[Venational division B. Veins 4 and 5 of forewing connate (rarely in individual specimens, slightly separated at base). Hind wing with vein 2 from rather near lower outer angle of cell. Male genitalia with transtilla complete but its median area weakly sclerotized and granulate; costa of harpe strongly sclerotized throughout but not produced at apex; penis armed with a single, long, strong cornutus. Female genitalia without signum or scobinations in bursa.]

65. Genus Ortholepis Ragonot

Ortholepis Ragonot, N. Amer. Phycitidae, p. 6, 1887; Monograph, pt. 1, p. 214, 1893.—Hulst, Phycitidae of N. Amer., p. 140, 1890. (Type of genus: *Ortholepis jugosella* Ragonot.)

Tongue well developed. Antenna of male pubescent, shaft with sinus towards base containing a row of black toothlike spines more or less concealed under a weak scale tuft; antenna of female simple. Labial palpus obligue; second segment roughly and rather broadly scaled, on male slightly grooved on inner side; third segment very short, acuminate, reaching to height of vertex. Maxillary palpus of male squamous (*jugosella*) or in the form of an aigrette (*pasadamia*); of female minute and filiform. Forewing with ridge of raised scales on inner side of antemedial line, not reaching costa or inner margin; 11 veins; 2 from before lower outer angle of cell; 3 from the angle, separated at base from 4–5; 4 and 5 connate, rarely (in individual specimens) slightly separated at base; 6 from below upper angle of cell, straight, 8 and 9 stalked for slightly more than half their lengths; 10 from the cell, shortly separated from 8–9 at base and thence divergent; male without costal fold. Hind wing with vein 2 from before but rather near lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5, short as compared with 2; 4 and 5 stalked for half or a trifle over half their lengths; 7 and 8 contiguous or anastomosed for a very short distance beyond cell; cell less than half the length of wing; discocellular vein curved, considerably extended at lower angle. Eighth abdominal segment of male simple.

Male genitalia with uncus subtriangulate; slightly produced (lobed) near its lower, lateral angles. Apical process of gnathos a short, simple hook. Transtilla complete but its median area weakly sclerotized and granulate; its lateral elements broadly sclerotized. Harpe narrow; costal margin sclerotized throughout but not produced. Anellus U-shaped, narrowly sclerotized. Penis armed with a single stout cornutus nearly as long as aedeagus. Vinculum stout, triangulate; about as long as greatest width.

Female genitalia without signum; bursa elongate, large, longitudinally wrinkled, partially sclerotized in the lobed area bearing the ductus seminalis; ductus bursae considerably shorter than bursa; flattened, strongly sclerotized, at least near and at its junction with bursa copulatrix; ductus seminalis from lobe of bursa near junction of bursa and ductus bursae. Eighth-segment collar with sclerotized part on dorsum reduced to a U-shaped band.

An American genus showing affinities to *Polopeustis* and the various genera of the *Salebria* complex; but easily distinguished by its genitalia. Ragonot's description is somewhat misleading. Veins 4 and 5 of forewing are normally connate and not "nearly parallel" except well beyond base; from base to near middle they are divergent.

243. Ortholepis jugosella Ragonot

FIGURES 23, 329, 808

Ortholepis jugosella Ragonot, N. Amer. Phycitidae, p. 6, 1887; Monograph, pt. 1, p. 214, 1893.—Hulst, Phycitidae of N. Amer., p. 140, 1890.—McDunnough, Check list, No. 6149, 1939.

Maxillary palpus of male squamous.

Forewing gray, rather shiny; palest (on some specimens ash gray) on costal half of median area and on the anterior costal half of basal area; remainder of basal and median areas and the area beyond the subterminal line brownish gray with a faint purplish suffusion;

antemedial line oblique from costa to lower margin of cell, thence vertical to inner margin, its upper half obscure, indicated chiefly by a blackish outer border, lower half distinct, whitish; the antemedial line preceded by a raised tuft of brown and blackish scales which are bordered inwardly by a more or less contrasted white line; subterminal line faint, narrow, slightly bulged at middle; discal dots black, separated, distinct and rather large, especially the upper one; terminal dots reduced, obscure and more or less confluent. Hind wing light brown; a thin blackish line along termen; the veins not appreciably darkened. Alar expanse, 19–20 mm.

Male genitalia as given for the genus. Female genitalia with posterior half of ductus bursa very weakly sclerotized.

TYPE LOCALITY: "America septentrionalis" (type in Paris Mus.).

FOOD PLANT: Hickory (*Carya alba*) and wild azalea (Ragonot records). Hickory and walnut are the more probable hosts.

DISTRIBUTION: UNITED STATES: *Connecticut*, East River (July). CANADA: *Nova Scotia*, White Point Beach (Queens County, July).

244. Ortholepis pasadamia (Dyar), new combination

FIGURE 807

Immyrla pasadamia Dyar, Ins. Insc. Menstr., vol. 5, p. 45, 1917.—McDunnough, Check list, No. 6189, 1939.

Maxillary palpus of male in the form of a short aigrette.

Forewing uniformly dark glossy gray with a purplish tint; the transverse lines well marked, narrow, whitish; a contrasted white inner margin to the subbasal tuft; discal dots usually confluent, distinguishable but not strongly contrasted against the dark ground color. Hind wing smoky fuscous; the veins faintly darkened. Alar expanse, 17–20 mm.

Male genitalia as in *jugosella*. Female genitalia as in *jugosella* except ductus bursae sclerotized along ventral surface to genital opening.

TYPE LOCALITY: St. Johns, Quebec (type in USNM).

FOOD PLANT: *Betula*.

DISTRIBUTION: UNITED STATES: *Pennsylvania*, Hazleton (June); *New Hampshire*, Dublin, Hampton (July); *Maine*, Mount Desert Island (July), Sebec Lake (July); *Washington*, Meadow Creek (Grant County, Apr.), reared specimen, Walla Walla (June). CANADA: *Ontario*, Blacotasing (July), Ottawa (July), Waubamia (Perry Sound, July); *Quebec*, St. Johns (June).

The foregoing description was drawn from typical examples represented in the National Collection by a series of 16 males and females. There are also before me four specimens from Maine, New Hampshire, and Quebec of what appears to be a color form in which the transverse lines (except for the white inner border of the raised-scale patch) are almost completely obliterated; the ground color of the forewing is darker (more purplish) and the hind wing is brown (as in *jugosella*); there is also a faint narrow dusting of whitish scales in the median area of forewing. The genitalia of these specimens are identical with those of typical *pasadamia*. Examples of both forms have been reared from *Betula*.

Genus 66: *Polopeustis*

[Venational division B. Vestiture of head, thorax, labial palpi, and femora a mixture of scales and hairs.]

66. Genus Polopeustis Ragonot

Polopeustis Ragonot, Monograph, pt. 1, p. 233, 1893.—Staudinger and Rebel, Catalog der Lepidopteren des palaearctichen Faunengebietes, vol. 2, p. 30, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 212, 1910.—Forbes, Cornell Mem. 68, p. 622, 1923.—Janse, Journ. Ent. Soc. South Africa, vol. 5, p. 30, 1942. (Type of genus: *Phycis annulatella* Zetterstedt; figs. 24, 330, 809.)

Tongue well developed. Antenna of male ciliate-pubescent (the cilia a trifle shorter than width of segments) the shaft curved towards base and containing two or three short teeth in the incurvation; of female simple. Labial palpus obliquely ascending, not reaching height of vertex; third segment short, less than one-third of second. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle; 4 and 5 separated at base; 6 from below upper angle of cell, straight; 8 and 9 stalked for over half their lengths; 10 from the cell, shortly separated from the stalk of 8–9 at base; male without costal fold. Hind wing with vein 2 from well before outer angle of cell; 3 from the angle; 4 and 5 anastomosed for about half their lengths beyond cell; 7 and 8 closely approximate for a short distance beyond cell; cell less than half the length of wing; discocellular vein curved, produced at lower angle. Eighth abdominal segment of male with pair of ventrolateral hair tufts.

Vestiture of head, thorax, labial palpi, femora, and and foretibiae a mixture of scales and hairs.

Male genitalia with uncus about as broad as long; at apical margin broadly rounded. Apical process of gnathos (from ventral view) an inverted heart-shaped lobe terminating in a short, slender, hooked spine. Transtilla absent. Harpe short, stubby; its apex bluntly rounded; costa broadly and strongly sclerotized throughout, but not produced at apex; otherwise simple. Anellus a U-shaped plate terminating in short lateral lobes. Aedeagus slender; penis armed with moderately stout, elongate cornutus or two similar cornuti. Vinculum stout, slightly longer than greatest width; tapering to blunt and rather broad terminal margin.

Female genitalia without signum; bursa copulatrix small and with a rather broad, fused cartilagenouslike thickening around its lateral and anterior margins, otherwise minutely granulate and containing a weak elongate chitinized strip; ductus bursae twice as long as bursa, flattened, its ventral surface sclerotized and granulate through its length, the sclerotization extending into bursa; genital opening simple. Eighth-segment

collar with sclerotized area reduced to a narrow, more or less U-shaped dorsolateral band (similar to that of *Ortholepis*).

An Old World genus of Holarctic distribution with one European and one North American species; easily identified by its genitalia and hairy vestiture.

245. Polopeustis arctiella (Gibson)

FIGURES 331, 810

Pyla arctiella Gibson, Report of the Canadian Arctic Expedition (1913–18), vol. 3, pt. 1, p. 46, 1920.

Polopeustis annulatella arctiella (Gibson) McDunnough, Canadian Ent., vol 67, p. 174, 1935; Check list, No. 6150, 1939.

Forewing slate gray with a fine scattered sprinkling of white, the whitish dusting more concentrated in basal area and the area beyond the subterminal line; transverse lines rather broad, well contrasted, white; antemedial line oblique and slightly angulate; subterminal line sinuate; a narrow blackish shade bordering the antemedial outwardly and the subterminal inwardly; discal dots obscure, more or less confluent. Hind wings smoky white; the veins darkened; a narrow dark shade along termen. Alar expanse, 21–25 mm.

Male genitalia with two cornuti on penis; otherwise as in *annulatella*. Female genitalia differ from those of *annulatella* chiefly in the shape of the sclerotized area of eighth-segment collar (compare figs. 809a and 810a). The differences in shape and extent of sclerotized area of bursa are probably individual in character.

TYPE LOCALITY: Collinson Point, Alaska (type in Canadian Nat. Coll.).

FOOD PLANT: Unknown.

DISTRIBUTION: ALASKA: Collinson Point (July). CANADA: *Labrador*, Hopedale (July), Nain; *Manitoba*, Fort Churchill (June, July).

Gibson's name may represent no more than a New World race of *annulatella*; but *arctiella* is at least that. Good series of both are before me and their genitalic differences appear to be constant; the male of *annulatella* has but one cornutus, that of *arctiella* has consistently two cornuti. If and when intergrading examples of *Polopeustis* are recovered from northern Siberia the name *arctiella* may be reduced to subspecific status or referred as a synonym to *annulatella*. Meanwhile a specific separation seems the safer procedure.

Genera 67–70: *Meroptera* to *Tulsa*

[Venational division B. Veins 4 and 5 of forewing very shortly stalked, connate or closely approximate at base, in *Tulsa* approximate at base and for a short distance beyond; 8 and 9 long stalked; 10 frequently connate or shortly stalked with 8–9, if from the cell approximate to the stalk of 8–9 for some distance from its base. Antenna of male with sinus and scale tuft in base of shaft. Labial palpus erect or obliquely upturned. Maxillary palpus of male in the form of an aigrette or squamous. Male genitalia with transtilla frequently complete, but if so, weakly sclerotized; harpe with clasper always present and well sclerotized, digitate or enlarged and spined; harpe with long hair brush from inner surface along lower edge of basal half of sclerotized costa; penis armed with two stout, rather short cornuti. Female genitalia with bursa finely and densely spined, usually with one or more sclerotized, granulate patches.]

67. Genus Meroptera Grote

Meroptera Grote, Canadian Ent., vol. 14, p. 29, 1882.—Hulst, Phycitidae of N. Amer., p. 148, 1890.—Ragonot, Monograph, pt. 1, p. 312, 1893.—Forbes, Cornell Mem. 68, p. 624, 1923. (Type of genus: *Pempelia pravella* Grote.)

Emmerita Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 76, 1930. (Type of genus: *Meroptera mirandella* Ragonot. New synonymy.)

Tongue well developed. Antenna weakly pubescent; on male with sinus and scale tuft in base of shaft. Labial palpus upturned, closely appressed to face; smooth scaled; reaching above vertex; second segment long, on male hollowed to receive maxillary palpus; third segment short (about one-fourth of second), acuminate. Maxillary palpus of male in the form an of aigrette; of female squamous. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle, at base slightly nearer to 4–5 than to 2; 4 and 5 very shortly stalked, connate or closely approximate at base; 6 from below upper angle of cell, straight or (rarely) very slightly bent towards base; 8 and 9 stalked for over two-thirds their lengths; 10 shortly stalked or connate with the stalk of 8–9 (individually variable); male without costal fold. Hind wing with vein 2 from before but near lower outer angle of cell; 3 from the angle, connate with 4; 4 and 5 stalked for slightly more than half their lengths; 7 and 8 closely approximate for a short distance beyond cell; cell less than one-half the length of wing; discocellular vein curved, outwardly produced at lower angle of cell. Eighth abdominal segment of male with compound scale tufts.

Male genitalia with uncus triangulate or subtriangulate, its apex bluntly rounded. Apical process of gnathos a short, stout hook. Transtilla complete but weakly sclerotized; a narrow, flatly arched band. Harpe with costa sclerotized throughout but not produced at apex; a fine brush of long hairs arising from inner surface along lower edge of basal half of sclerotized costa; cucullus simple, narrow, tapering slightly to rounded apex; from near base of harpe an appressed, stout, thorny or serrate clasper. Penis armed with two, stout, rather short cornuti less than one-half the length of aedeagus. Vinculum stout, as long as or somewhat longer than greatest width, its terminal margin bluntly rounded or narrowly truncate.

Female genitalia without signum; bursa with a couple of conspicuous round or oval, strongly pigmented and sclerotized, densely granulate patches, otherwise bursa finely spinose over its membranous areas; ductus bursae shorter than bursa, not sclerotized adjacent to bursa, but with strong sclerotization at broadened genital opening; ductus seminalis from a lobe of bursa near junction of bursa and ductus bursae.

This genus, while distinct from, is very close to *Nephopteryx*, from which it is distinguished only by the

peculiar development of the clasper on harpe of the male genitalia and the strong sclerotization about the genital opening of the female. Hampson's *Emmerita* has not a single character to separate it from *Meroptera*. The stalking of vein 10 of forewing with 8–9, upon which Hampson evidently relied, is shared by the types of both *Meroptera* and *Nephopteryx*. This stalking is very short at most and is not even specifically constant in either genus.

The genus as here defined contains but four North American species, and (to the best of my knowledge) no Old World representatives.

246. Meroptera mirandella Ragonot

FIGURES 21, 333, 816

Meroptera mirandella Ragonot, Monograph, pt. 1, p. 313, 1893.
Emmerita mirandella (Ragonot) Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 76, 1930.—McDunnough, Check list, No. 6181, 1939.

Forewing ocherous white with a very faint and scattered dusting of blackish scales in median area; antemedial line narrow, oblique, indented at lower fold, bordered outwardly by a black line which begins as an enlarged, more or less triangular dash on costa, inwardly by a straight black line from top of cell to inner margin; subterminal line obscure, dentate-sinuate, margined inwardly and outwardly for a short distance from costa by black lines, on well marked specimens the inner line continued as a fine dark border to tornus; also on well marked examples a faint blackish or fuscous shade extending obliquely across the wing from the inner costal edge of the antemedial line; discal dots faint, but usually distinguishable, blackish, separated, obliquely placed; terminal black dots more or less confluent. Hind wing white with a faint creamy or smoky tint; a very faint brownish line along termen; veins not or very slightly darkened. Alar expanse, 23–26 mm.

Male genitalia with broad, irregularly fan-shaped clasper. Female genitalia with sclerotization of genital opening a narrow, corrugate, sclerotized band with short lateral, inward projections; bursa with two opposed, lateral, granulate patches.

TYPE LOCALITY: Colorado (type in Paris Mus.).

FOOD PLANT: *Populus* (this record from an Arizona specimen in the National Collections reared from a cocoon on a cottonwood leaf).

DISTRIBUTION: *Colorado*, Denver; *Arizona*, Douglas (Aug.), Nogales (July), Phoenix (Apr.), Pinal Mts. (May), Readington, Tucson (Apr.), Yuma (June).

One of the females before me from Phoenix is decidedly abnormal in venation, the forewing having vein 10 from the cell and closely approximate to the stalk of 8–9, 6 bent at base and from very near the upper angle of the cell and 4 and 5 closely approximate at base and for some little distance from the cell. Its genitalia are normal and it is clearly an individual aberration, but an example of what occurs all too often in the Phycitidae and which should caution us to use generic keys with discretion and to place unusual specimens only after examination of their genitalia.

247. Meroptera cviatella Dyar

FIGURE 817

Meroptera cviatella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 34, 1905.—McDunnough, Check list, No. 6182, 1939.
Salebria cviatella (Dyar) Forbes, Cornell Mem. 68, p. 627, 1923.

Forewing bright reddish brown with a more or less distinct, transverse purplish gray shading in outer area and bordering outwardly the subterminal line; this latter area sometimes dusted with blackish scales; the central area near antemedial line more or less dusted with whitish scales; antemedial line oblique, narrow, strongly indented at lower fold, its upper half obscured; the white line bordered outwardly by a conspicuous black band, broad on costa and very gradually narrowing towards inner margin; inwardly bordered on lower half by a similar broad, vertical black band; subterminal line diffused, whitish; discal dots confluent, black, the lower one sometimes obscured; a row of more or less confluent black dots along termen. Hind wing pale smoky brown, darkened slightly towards termen. Alar expanse, 23–25 mm.

Male genitalia similar to those of *mirandella*. Female genitalia with sclerotization of genital opening a narrow, dark, granulate band, broken and with two short, divergent extensions at middle, these extensions fusing into a small, thin, triangulate, sclerotized patch on the lower median surface of the ductus bursae.

TYPE LOCALITY: Chicago, Ill. (type in USNM).

FOOD PLANT: *Populus* (cottonwood). Larva a borer in buds and new shoots.

DISTRIBUTION: *Illinois*, Chicago (June, July), Lacon (Aug.), Putnam County (July, Aug.); *Mississippi*, Starkville (July).

The above food-plant record is from Putnam County specimens reared by Mr. Murry O. Glenn. One of his series is labeled "bred from larva on *Amorpha canescens*." I doubt if *Amorpha* is a true food plant or the presence of the larva on this plant anything more than an accidental last-stage migration from cottonwood.

248. Meroptera pravella (Grote)

FIGURES 22, 334, 812

Pempelia pravella Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, No. 3, p. 694, 1878.
Meroptera pravella (Grote), Canadian Ent., vol. 14, p. 30, 1882.—Packard, U. S. Dep. Agr. Div. Ent. Bull. 13, p. 23, 1887; U. S. Dep. Agr. Fifth Rep., Ent. Comm., p. 574, 1890.—Ragonot (in part), Monograph, pt. 1, p. 314, 1893.—McDunnough, Check list, No. 6184, 1939.

Forewing dark gray; the basal area, except for a narrow dark gray shading at extreme base, pale ashy gray and contrastingly paler; antemedial line obscure and often partially obliterated, when distinguishable it is oblique, narrow, dull white, distinguished chiefly by its black borders, which tend to coalesce into a broad, diffused, blackish band; subterminal line faint but distinguishable, grayish white, sinuate, in fresh specimens bordered inwardly by an obscure, narrow, blackish line; discal dots separated, blackish, not conspicuous; a faint blackish line along termen. Hind

wing very pale smoky fuscous. Alar expanse, 20–22 mm.

Male genitalia with an elongate, stout, tapering clasper extending about half the length of harpe; figured from male from Edmonton, Alberta, and compared by Clarke with the genitalia of the type of *pravella* in the British Museum. Female genitalia with sclerotization at genital opening in the form of a broad, stout, curved, granulate and wrinkled, lunate plate with strong lateral arms projecting into the ductus bursae.

TYPE LOCALITY: Oldtown, Maine (type in BM).

FOOD PLANT: *Populus, Salix* [?].

DISTRIBUTION: UNITED STATES: *Maine*; *New Hampshire*, Hampton (July); *New York*, Ilion (June); *Colorado*, Chimney Gulch (Golden, June). CANADA: *Quebec*, Knowlton (Feb., reared in laboratory from larva on aspen), Norway Bay (June); *Ontario*, Constance Bay (Feb., from poplar), Grand Bend (July), Hymers (June), Mer Bleue (June), Ottawa (Mar., from poplar), Smoky Falls (Mattagami River, June), Trenton (June); *Manitoba*, Aweme (May, June, July), Winnipeg; *Saskatchewan*, Indian Head (June, July); *Alberta*, Bilby (June, July), Edmonton (May, July), Nordegg (July); *British Columbia*, Canim Lake (June), "100 Mile House" (June).

These records (except for the type locality) are from specimens before me from the U. S. and Canadian National Collections. The *Salix* plant record is from Packard. I have not seen the reared Brunswick, Maine, specimens upon which it was based but have little doubt that the name *pravella* was correctly applied. Most of the specimens in our collections that have been identified as *pravella* as well as many of the references in literature are referable to *Nephopteryx subfuscella* (Ragonot) (=*semiobscurella* (Hulst)). This confusion is discussed under *subfuscella*. The two species are easily confused, especially with worn examples, if their genitalia are not examined; but in unrubbed specimens *pravella* is easily separated from *subfuscella* by the lack of any reddish or reddish ocherous scaling adjacent to inner margin at the base of forewing. Also included under *pravella* in the U. S. and Canadian National Collections were 21 Canadian examples of a new species (hereinafter described as *abditiva*) similar in all superficial characters to *pravella* but with distinctly different male and female genitalia.

249. Meroptera abditiva, new species

FIGURES 335, 813, 814

In color and maculation like *pravella* but with consistently different genitalia. Alar expanse, 19–22 mm.

Male genitalia with harpe having a stout but short, stubby clasper, less than one-fourth the length of harpe. Female genitalia with the sclerotization at genital opening in the form of a rather narrow granulate, curved, transverse band without inwardly projecting arms. The pigmented, granulated area of the bursa is individually variable in extent and sometimes divided into two distinct patches by a slight break at the anterior (closed) end of the bursa. Extremes of variation are shown in figures 813 and 814. However, there are no intergradations whatever between *abditiva* and *pravella* in the structure of the female genital plate nor in the male clasper.

TYPE LOCALITY: Knowlton, Quebec (type in Canadian Nat. Coll.; paratypes in Canadian Nat. Coll. and USNM, 61344).

FOOD PLANT: *Populus tremuloides*.

Described from male type and 3 female paratypes from the type locality reared (in laboratory) Feb. 12, 1 and 2, 1930, from larvae feeding on leaves of *P. tremuloides* ("aspen") by J. McDunnough; and 17 paratypes from the following Canadian localities: *Quebec*, Mount St. Hilaire, June 30, 1908, G. Chagnon (♀); Norway Bay, June 4, 1938, E. G. Lester (♂). *New Brunswick*, Chamcook, June 23, 1938, T. N. Freeman (♀); Eel River, June 21, 1941, T. N. Freeman (♂). *Nova Scotia*, Beddeck, June 23, 1936 and June 27, 1938, T. N. Freeman (2♀); White Point Beach, Queens, Feb. 12 and 20, 1936, J. McDunnough (2 ♀, reared). *Ontario*, Trenton, May 29 and June 25, 1908, Evans (2 ♀); Vineland Station, June 15, 1936, W. L. Putnam (♀, reared). *Saskatchewan*, Christopher Lake, June 19, 1939, A. R. Brooks (♂). *British Columbia*, Canim Lake, June 25, 1938, J. K. Jacob (♀); Jesmond, July 13, 1937, J. K. Jacob (2 ♀); Kaniloops, June 14, 1937, J. K. Jacob (♂); Shingle Creek, Penticton, June 25, 1935, A. K. Cartrell (♀).

In as much as *pravella* and *abditiva* have the same hosts and larval habits, an overlapping distribution, and similar habitus, it is necessary to examine their genitalia to distinguish them apart.

68. Genus Nephopteryx Hübner

Nephopteryx Hübner, Verzeichniss bekannter Schmett[er]linge, p. 370, 1825.—Zeller, Isis von Oken, 1846, p. 731.—Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 695, 1878; North Amer. Ent., vol. 1, p. 11, 1879.—Ragonot, Ent. Monthly Mag., vol. 22, p. 19, 1885 (citation of type); Monograph, pt. 1, p. 254, 1893.—Hulst, Phycitidae of N. Amer., p. 142, 1890.—Forbes, Cornell Mem. 68, p. 622, 1923.—Hemming, Hübner, vol. 2, p. 229, 1937.—Bisset, *in* Pierce and Metcalfe, Genitalia of the British Pyrales, p. 61, 1938.—Janse, Journ. Ent. Soc. South Africa, vol. 5, p. 34, 1942. (Type of genus: *Phycita rhenella* Zincken; Europe; figs. 25, 336, 815.)

Sciota Hulst, Ent. Amer., vol. 4, p. 115, 1888. (Type of genus: *Sciota croceella* Hulst.)

Characters of *Meroptera* except: Labial palpus erect or obliquely upturned. Maxillary palpus of male in the form of an aigrette or squamous. Forewing with 10 usually connate with the stalk of 8–9 or closely approximate to it, rarely stalked. Transtilla frequently incomplete or absent. Clasper of harpe digitate, slender, simple (without spining). One cornutus on penis in *uvinella*, other species have two cornuti as in *Meroptera*. Female genitalia with ductus bursae sclerotized along ventral surface for most of its length from junction with bursa, the sclerotization terminating before genital opening, the latter simple (unsclerotized).

As here defined the genus includes a number of species with two types of maxillary palpi, several of which have been hitherto referred to either *Salebria* or *Myrlaea*. The reference of some of our North American species to the latter genus on the strength of a slight obliqueness of their labial palpi is not warranted as none of them agrees with the Old World type of *Myrlaea* (*albistrigella* Staudinger) on either male or female genitalic characters. The ductus bursae and bursa of *albistrigella* are perfectly smooth, without granulations, scobinations, or sclerotizations of any kind; and its harpe lacks the hair brush characteristic of *Meroptera* and *Nephopteryx*.

The two types of male maxillary palpi (aigrettelike and squamous) do not justify generic separation of the species here any more than they do in *Dioryctria* or *Ortholepis* although such a difference should be, and in the Phycitidae usually is, of generic significance. On *basilaris*, the palpus is midway between the two types, though somewhat more aigrettelike than squamous. The uniform type of their male and female genitalia and the similar habitus of the included species indicate a distinct and natural group. *Nephopteryx* is very close to *Meroptera* but is distinguished by its simple, slender clasper, simple female genital opening, and differently sclerotized ductus bursae.

Genus *Nephopteryx*, Species 250–267: *N. subfuscella* to *N. celtidella*

[Males with aigrettelike palpi.]

250. Nephopteryx subfuscella (Ragonot), new combination

FIGURES 337, 821

Salebria subfuscella Ragonot, N. Amer. Phycitidae, p. 8, 1887; Monograph, pt. 1, pp. 329, 350, 1893.—Hulst, Phycitidae of N. Amer., p. 151, 1890.—McDunnough, Check list, No. 6123, 1939.

Salebria semiobscurella Hulst, Phycitidae of N. Amer., p. 151, 1890.—Ragonot, Monograph, pt. 1, p. 352, 1893.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.—Forbes, Cornell Mem. 68, p. 626, 1923.—McDunnough, Check list, No. 6212, 1939.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 454, 1950. (New synonymy.)

Meroptera pravella (authors not Grote) Hulst (in part), Phycitidae of N. Amer., p. 148, 1890.—Ragonot (in part), Monograph, pt. 1, p. 314, 1893.—Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, p. 130, 1917.—Forbes, Cornell Mem. 68, p. 624, 1923.

Color and maculation resembling those of *Meroptera pravella*. Forewing gray; the basal area contrastingly paler with some dark shading at extreme base and more or less reddish or orange scaling on base of inner margin (at least a trace on all except badly rubbed specimens); antemedial line obscure, indicated chiefly by its fused dark inner and outer borders which form a rather broad, oblique, blackish band, the antemedial line itself distinguishable on most specimens only as an incomplete, median, pale (whitish) streak in the dark band; subterminal line obscure but complete, narrow, sinuate, pale gray with fine dark bordering lines; some whitish dusting over central area of wing, especially on pale examples; discal dots blackish, occasionally separated, more often fused into a curved line; dots along terminal line fine, weak, blackish, usually separated, on some specimens confluent. Hind wing pale brown to smoky fuscous; veins darkened, especially on the darker females; a narrow dark shade along termen. Alar expanse, 18–22 mm.

Male genitalia with apical process of gnathos triangulate. Clasper bent downward, parallel to surface of harpe. Female genitalia with granulate sclerotized patch on bursa a continuous band across posterior ventral surface and forward on right side of bursa.

TYPE LOCALITY: Not given (*subfuscella*, in Paris Mus.); Blanco County, Tex. (*semiobscurella*, in AMNH, ex Rutgers).

FOOD PLANTS: *Rhus*, locust [?]. Larva a leaf-folder.

DISTRIBUTION: UNITED STATES: *Maine*, Augusta (June); *Massachusetts*, Martha's Vineyard (May, July); *Connecticut*, East River (June); *Rhode Island*, Weekapaugh (Aug.); *New York*, Ilion (June), Rossville (Long Island, Feb., Mar.), Shore of Lake Ontario (near Rochester, May, June); *Pennsylvania*, Oak Station (Aug.); *District of Columbia*, Washington; *North Carolina*, Tryon (May); *Florida*, Fort Myers (May), Lake Alfred (July); *Texas*, Burnet County (Apr.), Kerrville (May, Aug.); *Missouri*, Kirkwood (Mar., Apr., May); *Illinois*, Decatur (July, Aug.); *Washington*, Almota (July), Bellingham (Nov.), Pullman (Feb., May, June, July, Aug., Nov.), Snake River (Jan., Feb., July), Walla Walla (July), Wawawai (May). CANADA: *Quebec*, Levis, Meach Lake (July), Mount St. Hilaire (July); *Ontario*, Merivale (Mar.), Ottawa (Mar.), Trenton (May, June, July).

Many of the above records are from reared examples from sumac, and all such had been identified by Riley and Dyar as *Meroptera pravella*. Barnes and McDunnough (1916) were the first to question and correct this identification, assigning the name *Salebria semiobscurella* Hulst to the sumac feeder. At that time *subfuscella* had not been recognized by American lepidopterists. It resembles *pravella* but has the reddish scaling on base of inner margin of forewing. Unquestionably it is the same as what Hulst later described as *semiobscurella*. No other American species that could have been referred to *Meroptera* or *Salebria* has this red-scale character with the habitus, otherwise, of *pravella*. The food plant record of dried peaches ("peches desséchées") given for *subfuscella* by Ragonot (Monograph, pt. 1, p. 352) on the basis of two imperfect specimens sent him so labeled by Riley is obviously incorrect and can be ignored. I question also "locust" as a probable or even occasional food plant. That record, given above, is based on four males from the Fernald collection that had been identified by Dyar as *pravella*. They had been reared (Apr. 1889, May 1893) from larvae collected by Miss Murtfeldt at Kirkwood, Mo., on locust. Her note ("324M") states that most of the larvae in the lot were "*Salebria contatella* Grote" but that a few seemed to be a different species. I suspect that the latter (the *subfuscella* larvae) had merely migrated to the locust after feeding on nearby sumac.

251. Nephopteryx delassalis Hulst

FIGURE 818

Nephopteryx delassalis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 161, 1886.

Salebria purpurella Hulst, Canadian Ent., vol. 24, p. 61, 1892.—Forbes, Cornell Mem. 68, p. 627, 1923.

Salebria pudibundella Ragonot, Monograph, pt. 1, p. 350, 1893.—McDunnough, Check list, No. 6208, 1939. (New synonymy.)

Myelaea delassalis (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 198, 1916.—McDunnough, Check list, No. 6225, 1939.

Thorax vinous red with a scattered dusting of white and black scales. Forewing vinous red with a more or less diffused bluish white shading in basal area immediately preceding inner border of the antemedial line; this border a broad black band (the most conspicuous marking on the wing), vertical, and fusing at costa with the outer black border; the antemedial line itself faint, but on most specimens its lower half distinct, narrow, white, slightly oblique and inwardly angulate at lower fold, bordered outwardly by a rather narrow, interrupted black band; some blackish dusting on the whitish subbasal area, black scaling along lower margin of cell, on some of the lower veins from cell and on costa, especially towards apex; discal dots (when distinguishable) separated, red, more or less shaded with black; dots along termen very faint, blackish, more or less confluent. Hind wing pale ocherous fuscous. Alar expanse, 22–26 mm.

Male genitalia similar to those of *fernaldi;* transtilla absent; apical process of gnathos narrow (not triangulate); clasper short, slightly curved. Female genitalia with two granulate patches on bursa copulatrix, a small one on posterior dorsal surface, near the left side of bursa and a larger on ventral surface at the anterolateral margin (closed end) of bursa.

TYPE LOCALITIES: Nevada (*delassalis*, in AMNH, ex Rutgers); New Mexico (*purpurella*, in AMNH, ex Rutgers); Colorado (*pudibundella*, in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, White Mts; *Colorado*, Beulah (June), Fort Collins; *Utah*, Vineyard (June, July); *Nevada; California*, Inyo County (May, June, July).

The types of *delassalis* and *purpurella* are both females. Their genitalia are alike. Barnes and McDunnough (1916) first noted this synonymy and the misidentification of his species by Hulst (1900) and the consequent misapplication of the name *delassalis* to specimens of *fernaldi* Ragonot. The descriptions under *delassalis* in Hulst's 1900 revision and in Ragonot's monograph apply to *fernaldi* and not *delassalis*. On the other hand, Ragonot's description of *pudibundella* applies in detail to the true *delassalis*.

The venation of forewing is individually variable, as with many species of *Nephopteryx*, vein 10 being either connate or closely approximate at base to the stalk 8–9 (rarely short stalked with it) and veins 4 and 5 either connate or closely approximate at base.

252. Nephopteryx delassalis fraudifera, new race

Superficially appears quite distinct from *delassalis;* the entire median area and much of the basal area of forewing being heavily dusted with whitish, giving the general ground color a whitish blue-gray shade similar to that of *inconditella* rather than the vinous red of typical *delassalis;* the vinous red limited in *fraudifera* to the thorax, extreme base of forewing, a broad band outwardly bordering the subterminal line, and a faint diffused shading just preceding it. The red shade somewhat darker than in typical *delassalis;* the black borders of antemedial line also somewhat broader, especially at costa. Alar expanse, 24–26 mm.

Male and female genitalia agreeing in all details with those of *delassalis*.

TYPE LOCALITY: Oliver, British Columbia, (type in Canadian Nat. Coll.; paratypes in USNM, 61345, and Canadian Nat. Coll.).

FOOD PLANT: Unknown.

Described from male type and one female paratype from the type locality (June 8 and 9, 1923, G. B. Garrett, collector); and paratypes from the following localities: "Shingle Cr. Road," Keremeos, British Columbia June 22, 1935, A. N. Cartrell (♀); Salmon Arm, British Columbia, June 20, 1916, "W. R. B." (♀); Kaslo, British Columbia, June 13, 1903, H. G. Dyar, "19366" (♀); Alberni, British Columbia, June 20, 1922, "W. R. B." (♂), and Bellingham, Wash., May 30, 1922, J. F. G. Clarke (♂).

Presumably a distinct food plant as well as local race.

253. Nephopteryx rubescentella (Hulst)

Mineola rubescentella Hulst, Canadian Ent., vol. 32, p. 169, 1900.

Nephopteryx rubescentella (Hulst), U. S. Nat. Mus. Bull. 52, p. 419, 1903.—McDunnough, Check list, No. 6173, 1939.

Ground color of forewing slightly paler than that of typical *delassalis*. Thorax also paler, pale purplish gray or grayish ocherous. The dark bands bordering antemedial line on forewing dull red or reddish orange, containing no black except for occasional scattered scales. Maculation otherwise as in typical *delassalis*. Alar expanse, 26 mm.

Male genitalia similar to those of *fernaldi*.

TYPE LOCALITY: Tennessee (type in USNM).

FOOD PLANT: Unknown.

In addition to the male type, the National Collection contains a male from Denver, Colo. (Aug.). I have seen no other specimens. A female from the type locality will be needed before the exact status of *rubescentella* can be determined. It may be no more than a race or variety of *fernaldi*.

254. Nephopteryx fernaldi (Ragonot), new combination

FIGURES 340, 819

Salebria fernaldi Ragonot, N. Amer. Phycitidae, p. 9, 1887.

Salebria delassalis Hulst (not Hulst), Phycitidae of N. Amer., p. 154, 1890.

Myrlaea delassalis (Hulst not Hulst) Ragonot, Monograph, pt. 1, p. 402, 1893.

Myrlaea fernaldi (Ragonot) McDunnough, Check list, No. 6226, 1939.

Forewing whitish ocherous with basal half of costa faintly washed with reddish ocherous, also some traces of this shading on the pale ocherous thorax and along inner margin of forewing from base to antemedial line, strongest on costa just above the dark borders of the antemedial line; some blackish dusting along costa near apex and occasionally on a few of the veins; antemedial line obscure, broken, frequently obscured entirely by its black borders; the latter forming a broad, strongly contrasted black blotch which extends from inner margin to top of cell (not reaching costa); discal dots much reduced or absent, if present more or less confluent. Hind wing pale whitish ocherous; the veins very slightly darkened. Alar expanse, 22–25 mm.

Male genitalia figured from Colorado specimen identified by Hulst as *delassalis* (one of his spurious "types"). There are no structural differences to distinguish the male genitalia of the two species.

Female genitalia with a single, rather large, granulate patch in bursa, on left side and extending onto ventral surface near posterior end of bursa; the bursa copulatrix itself as broad as long, approximately round, the membrane at anterior end thickened (cartilaginous).

TYPE LOCALITY: Arizona (type in Paris Mus.).

FOOD PLANT: Unknown (probably *Amorpha* sp.).

DISTRIBUTION: UNITED STATES: *Arizona; Colorado*, Denver, Glenwood Springs (July), also two males and a female with only the state locality, identified by Hulst as "*delassalis*"; *Kansas*, Thomas County; *Iowa*, Ames. CANADA: *Manitoba*, Cartwright (June, July), Winnipeg.

The female genitalia and ground color of thorax and forewing easily separate this species from *delassalis*, with which it has been confused due to Hulst's later (1890) misidentification of his own species.

255. Nephopteryx dammersi, new species

FIGURES 338, 822

Ground color pale ashy gray strongly shaded with pale rust red on thorax, at extreme base, on basal half of costal edge and on basal third of inner margin of forewing; more or less of this red shading on the black inner border of the antemedial line and forming its outer border near costa; an obscure, ill-defined, rusty blotch on middle of lower fold; antemedial line distinguishable on most specimens, narrow, whitish, slightly oblique and indented between cell and inner margin (the antemedial line, where it can be distinguished for any appreciable distance, has a similar configuration and slant on most of our American *Nephopteryx*), bordered outwardly on lower half by a narrow, interrupted black line and inwardly by a broad black band, the latter extending only from inner margin to middle of cell and (as noted above) more or less shaded with rust red; subterminal line obsolete or nearly so; discal dots usually distinct, especially the lower one, separated, blackish; terminal dots minute, very faint, not confluent. Hind wing dull white with a faint ocherous tint on male; pale smoky fuscous on female; the veins faintly darkened and a faint, narrow, dark shade along termen. Alar expanse, 25–26 mm.

Male genitalia similar to those of *fernaldi*. There is some difference in the armature of the penis between the two species; the cornuti are somewhat shorter and stouter and there is a darker pigmentation of some of the scobinations on penis in *dammersi* (fig. 338); but there is so much individual variation of these structures within any given species of *Nephopteryx* that they can not be safely used to separate species. Female genitalia with two small and one large granulate patch in bursa.

TYPE LOCALITY: Cajon Valley, San Bernardino Valley, Calif. (type in USNM, 61346).

FOOD PLANT: *Amorpha californica*.

Described from male type and three male and six female paratypes from the type locality (reared by Commander J. Dammers Apr. 15, 1933, and July 20, 30, 1932), and one female from the Huachuca Mts., Ariz. ("July 8–15"). In addition I have before me a male from Douglas County, Ariz. (July 20, 1940, collected by Fritz Forbes), which appears to be conspecific. It is a trifle smaller (24 mm.) than the specimens of the type series. Without a matching female from the same locality it appears unwise to include it among the paratypes.

The species is named in honor of Commander Dammers, who has given many fine reared and collected specimens to our National Collection. It is close to *fernaldi*, but on female genitalic characters seems to be a distinct species and not a color form or local race.

256. Nephopteryx dammersi floridensis, new race

Smaller and considerably darker than typical *dammersi;* the ground color dark gray finely peppered with white especially in median and subbasal areas making these areas a trifle paler than remainder of wing; the rust red markings of typical *dammersi* replaced by lavender-red in *floridensis* and this color more extended, forming a faint suffusion over much of the median and outer areas in addition to the stronger markings on costa, inner margin and extreme base; subterminal line distinct and with narrow dark borders. Hind wing smoky fuscous; the veins darkened; a narrow blackish line along termen. Alar expanse, 21–22 mm.

GENITALIA: Male and female as in typical *dammersi*.

TYPE LOCALITY: Williamsburg, Fla. (type in USNM, 61347).

FOOD PLANT: *Amorpha herbacea*.

Described from male type from the type locality, reared under S. S. No. 16970A, June 25, 1944; and one female paratype from Tampa, Fla., reared under S. S. No. 16859, June 29, 1944. Larva collected and both specimens reared by members of the Special Survey of the Division of Foreign Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine.

257. Nephopteryx vetustella (Dyar), new combination

FIGURE 820

Salebria vetustella Dyar, Journ. New York Ent. Soc., vol. 12, p. 106, 1904.—Forbes, Cornell Mem. 68, p. 626, 1923.

Myrlaea vetustella (Dyar) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5650, 1916.—Forbes, Cornell Mem. 68, p. 627, 1923.—McDunnough, Check list, No. 6224, 1939.

Forewing pale ash gray with a slight purplish shading over outer half; basal area almost to inner dark border of antemedial line, Indian red or reddish orange, this reddish shade also on collar and top of head; antemedial line distinct from upper vein of cell to inner margin, narrow, oblique, inwardly notched between cell and inner margin, bordered inwardly by a broad black band and outwardly by a narrow black line, the black borders continuous to and fused at costa; subterminal line usually distinct but faint and with a weak dark inner bordering line, sinuate; discal dots separated, small, blackish; a weak row of blackish dots along termen. Hind wing pale smoky brown; the veins and terminal margin slightly darkened. Alar expanse, 22–25 mm.

Male genitalia similar to those of *fernaldi*. Female genitalia with a single long granulate patch in bursa extending nearly the length of the bursa on its left side (seen from below) and curving onto ventral surface near junction of bursa and ductus bursae.

TYPE LOCALITY: Plummers Isl., Md. (type in USNM).

FOOD PLANT: Unknown (*Amorpha* sp. ?).

DISTRIBUTION: UNITED STATES: *Maryland*, Plummers Isl. (Apr., May); *Pennsylvania*, Oak Station (June), Pittsburgh (May, June); *New York*, Ilion (May); *Illinois*, Edgebrook (June), Elkhart (Aug.), Palos Park (June); *Iowa*, Iowa City (June), Sioux City (July); *Missouri*, St. Louis; *Florida*, St. Petersburg (June). CANADA: *Ontario*, Ottawa (June, July); *Quebec*, Meach Lake (June).

This species forms one of a group of closely related species (*delassalis* to *vetustella*) that feed upon *Amorpha* and have similar male genitalia but differ markedly in the number, arrangement, and relative sizes of the granulate patches of the female bursa. These differences appear to be constant and the specific character holds even in series of individuals from widely different localities. The male genitalia exhibit some minor differences, especially in the relative size and position of the two cornuti; but here individual variation makes the apparent differences untrustworthy for specific differentiation. During dissection of the male organs a simple transtilla can be faintly seen in all the species of the group, but it is so weakly sclerotized that it is not visible or but partially distinguishable in balsam mounts. The structure is obsolescent and cannot be considered "present" in the sense in which it is in *Meroptera* for example or even in a few other species of *Nephopteryx*.

258. Nephopteryx inconditella (Ragonot), new combination

FIGURE 825

Salebria contatella inconditella Ragonot, Monograph, pt. 1, pp. 348, 350, 1893.—McDunnough, Check list, No. 6205b, 1939.

Thorax and forewing pale ash gray with a faint bluish tint; some reddish scaling at extreme base of wing and a small spot of the same shade at middle of lower fold; pale antemedial line distinguishable from inner margin to cell, deeply notched at vein 1b, its black borders complete from inner margin to costa, the inner border broad and fusing with the narrow outer one near costa; subterminal line distinct, sinuate-serrate, narrowly bordered by obscure blackish lines; discal spots obscure but usually distinguishable, separated; terminal dots weak, confluent; on most specimens a narrow, dark transverse shade extending from costa at inner edge of subterminal line to middle of inner margin. Hind wings translucent, whitish with a faint ocherous tint, the veins slightly darkened; a narrow brownish shade along terminal margin. Alar expanse, 25–30 mm.

Male genitalia of the *fernaldi* type but clasper somewhat more strongly sclerotized than in the seven preceding species. Female genitalia with a single, small, round, granulate patch on ventral surface of bursa very near junction of bursa and ductus bursae.

TYPE LOCALITY: Colorado (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado; Arizona*, Huachuca Mts., Palmerlee, and four Arizona specimens with only the state locality and without dates, one of these a pseudotype of "*Pinipestis albovittella* Hulst."

The species was described as a pale western variety of *contatella* (Grote), to which it is apparently most nearly related and which, except for its paler ground color, it resembles. Its female genitalia however clearly indicate a distinct species. The ground color of forewing is intermediate between that of *subcaesiella* (=*contatella*) and that of *dammersi*.

259. Nephopteryx subcaesiella (Clemens), new combination

FIGURES 339, 826

Pempelia subcaesiella Clemens, Proc. Acad. Nat. Sci. Philadelphia, p. 206, 1860.

Pempelia contatella Grote, North Amer. Ent., vol. 1, p. 49, 1880.—Comstock, *in* Rep. [U. S.] Comm. Agr. for 1880, p. 261, 1881 (in part).

Salebria contatella (Grote), Bull. U. S. Geol. Geogr. Surv. Terr., vol. 6, no. 3, p. 590, 1882.—Beutenmüller, Canadian Ent. vol 22, p. 16, 1890 (larva).—Hulst, Phycitidae of N. Amer., p. 152, 1890; U. S. Nat. Mus. Bull. 52, p. 424, 1903.—Packard, U. S. Dep. Agr. Fifth Rep. Ent. Comm., p. 361, 1890.—Ragonot, Monograph, pt. 1, p. 348, 1893.—Forbes, Cornell Mem. 68, p. 626, 1923.—McDunnough, Canadian Ent., vol. 78, p. 109, 1946.

Salebria virgatella subcaesiella (Clemens) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5631a, 1916—McDunnough, Check list, No. 6205a, 1939.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 453, 1950.

Color and maculation similar to those of *inconditella* but the ground color of forewing a much darker gray, basal area contrastingly paler gray; the reddish scaling on base of wing ranging from wine to rusty ocherous, always present but sometimes reduced to a few scales, rarely extended for a short distance onto the thorax; inner black border of antemedial line somewhat broader and more diffused than on *inconditella*, complete to costa

(unbroken at any part of its length); following the antemedial line a pale grayish spot (sometimes very faint but usually more contrasted than in *inconditella*); discal spots distinct, black, separated. Hind wing smoky white to smoky fuscous or brown, darker on females than on males, a distinct dark shade along termen. Alar expanse, 21–28 mm.

Male genitalia as in *inconditella* and *virgatella* except for the armature of the penis. In both *inconditella* and *virgatella* there are two moderately stout cornuti situated on penis, one to the side and slightly behind the other. In *subcaesiella* the second cornutus is greatly reduced. McDunnough (1946) states that there is only one cornutus in *subcaesiella* (*contatella*). That could easily be the case on individual specimens, but the normal condition is two cornuti on penis. Every preparation I have seen shows at least a vestige of the second cornutus. In all three species the lateral elements of transtilla are indicated, but very weakly sclerotized. Female genitalia without granulate patch or patches on bursa.

TYPE LOCALITIES: Not given, presumably Pennsylvania (*subcaesiella*, in Acad. Nat. Sci. Philadelphia); "New England" (*contatella*, in BM).

FOOD PLANT: *Robinia pseudoacacia*. Wisteria also recorded as food plant.

DISTRIBUTION: UNITED STATES: *Maine*, Augusta (May, June), Orono; *New Hampshire*, Hampton (July); *Massachusetts*, Amherst (June), Framingham (May), Martha's Vineyard (July, Aug.), Newton Highlands; *New Jersey*, Essex County Park (June), New Lisbon (Aug.); *Pennsylvania*, New Brighton (May, July, Aug.), Oak Station (June), Pittsburgh (May, June, July); *Maryland*, Plummers Isl. (June, Aug.), Somerset Heights (Aug.); *District of Columbia*, Washington (Apr., May, July); *Virginia*, Falls Church (Aug.), Snickers Gap (July); *North Carolina*, Black Mountain (July), Tryon (May); *Tennessee*, no specific locality (May); *Illinois*, Decatur (July), Elkhart, Oconee (July); *Iowa*, Iowa City (Aug.), Sioux City (June); *Missouri*, "Cent. Mo." (Aug.), Kirkwood (Apr., May), St. Louis (June); *Arkansas*, Washington County ("July–Aug."). CANADA: *Nova Scotia*, Smith's Cove (recorded by McDunnough, 1946).

I have not seen any Canadian examples but McDunnough's description leaves no doubt of what he had. He notes the differences in the cornuti and larval characters between *subcaesiella* (*contatella*) and *virgatella quinquepunctella*) and treats them as a distinct species. The difference in their female genitalia and the consistent difference in maculation of forewing are added evidence that they are not merely races of one variable species.

260. Nephopteryx virgatella (Clemens), new combination

FIGURE 827

Pempelia virgatella Clemens, Proc. Acad. Nat. Sci. Philadelphia, p. 205, 1860.

Pempelia contatella quinquepunctella Grote, North Amer. Ent., vol. 1, p. 50, 1880.—Comstock, *in* Rep. [U. S.] Comm. Agr. for 1880, pp. 261–262, 1881 (part; larva).

Salebria contatella quinquepunctella (Grote) Hulst, Phycitidae of North Amer., p. 152, 1890; U. S. Nat. Mus. Bull. 52, p. 424, 1903.—Ragonot, Monograph, pt. 1, p. 348, 1893.—Forbes, Cornell Mem. 68, p. 626, 1923.

Salebria virgatella (Clemens) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5631, 1916.—McDunnough, Check list, No. 6205, 1939.

Salebria quinquepunctella (Grote) McDunnough, Canadian Ent., vol. 78, p. 109, 1946 (larva).

Ground color of forewing (on most specimens) a trifle paler than that of *subcaesiella*, gray with a faint brownish or purplish tint; a reddish (or pale purplish) brown shade along lower fold, cutting the antemedial line and its black borders; a similar, narrower, shorter streak on median fold; outer black border of antemedial line between top of cell and inner margin reduced to two black dots, one on the lower margin of cell, the other on vein 1b and enclosed within the pale patch following the antemedial line; both these dots and the black discal dots at end of cell well contrasted; subterminal line faint, not appreciably darkly bordered, interrupted at the folds. Hind wing smoky white to brown; the veins more or less darkened and a smoky brown shade along termen. Alar expanse, 22–26 mm.

Male genitalia similar to those of *inconditella*; both cornuti moderately stout and situated one to the side of and slightly behind the other. Female genitalia with two strong granulate patches on bursa, a rather large one on middle of dorsal surface curving around left side onto ventral surface, and a smaller ventral patch near junction of bursa and ductus bursae.

TYPE LOCALITIES: Not given, presumably Pennsylvania (*virgatella*, in Acad. Nat. Sci. Philadelphia); New York (*quinquepunctella*, in BM).

FOOD PLANT: *Robinia pseudoacacia*.

DISTRIBUTION: UNITED STATES: *Maine; Massachusetts*, Amherst (June), Martha's Vineyard (June, July, Aug.); *New York*, Orient (Long Island, Aug., Sept.) and one specimen with only state locality; *New Jersey*, Essex County Park (Aug.); *Pennsylvania*, Buena Vista (Aug.); New Brighton (May, July); *West Virginia*, Jefferson County (Aug.); *District of Columbia*, Washington (June); *Virginia*, Berryville (May); *North Carolina*, Tryon; *Illinois*, Elkhart, Putnam County (May); *Missouri*, St. Louis; *Arkansas*, Washington County ("July–Aug."). CANADA: *Ontario*, London, Trenton (June); *Nova Scotia*, Bridgetown (July), Smith's Cove.

The differences separating *virgatella* from *subcaesiella*, of which it was long considered only a variety, are discussed under the latter species.

261. Nephopteryx carneella Hulst

FIGURE 823

Nephopteryx carneella Hulst, Ent. Amer., vol. 3, p. 131, 1887.

Nephopteryx inquilinella Ragonot, N. Amer. Phycitidae, p. 8, 1887; Monograph, pt. 1, p. 200, 1893.—Hulst, Ent. Amer., vol. 5, p. 156, 1889; Phycitidae of N. Amer., p. 145, 1890.—McDunnough, Check list, No. 6171, 1939.

Salebria carneella (Hulst), Phycitidae of N. Amer., p. 153, 1890.—Ragonot, Monograph, pt. 1, p. 367, 1893.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.—Forbes, Cornell Mem. 68, p. 627, 1923.—McDunnough, Check list, No. 6204, 1939.

♀ Ground color of forewing bluish gray, the gray shade most obvious in median area and as a narrow band preceding the inner border of the antemedial line; base maroon red, this shade more or less suffusing the gray thorax; antemedial line obscure, bordered inwardly by a broad madder-red band which extends to costa; a similar red shade in outer area bordering the faint sinuate subterminal line and some red suffusion over median part of the lower fold; discal spots distinct, separated, black; terminal dots very faint more or less confluent. Hind wing smoky white with a faint yellowish tint; somewhat darker on females; a fine brown line along termen. Alar expanse, 20–23 mm.

Male genitalia of the *fernaldi* type; the two cornuti lie side by side, one slightly shorter and more slender than the other. Female genitalia with bursa and remainder of genitalia considerably smaller than in preceding species; two granulate patches, one large, one considerably smaller, placed opposite each other on lateral margins of the bursa.

TYPE LOCALITIES: Maine [?] (*carneella*, in AMNH, ex Rutgers; the male type bears no locality label, but in his original description Hulst gives New Mexico as the type locality; this, as pointed out by Barnes and McDunnough, is probably an error or pure guesswork on Hulst's part); Wisconsin (*inquilinella*, in Paris Mus.).

FOOD PLANT: *Salix* (*carneella*); galls of sawfly (*Euura Salicisnodum*) on willow.

DISTRIBUTION: UNITED STATES: *Maine*, Monmouth (July), and two examples with only state locality; *Massachusetts*, Amherst (June), Martha's Vineyard (Apr.); *Indiana*, Hessville (June); *Wisconsin; Michigan*, Dickinson County. CANADA: *Ontario*, Ottawa (June), Trenton (July); *Manitoba*, Aweme (May).

Hulst was correct the first time (1889) in making *inquilinella* a synonym of his *carneella*. The genitalia of their male types are identical.

262. Nephopteryx basilaris Zeller

FIGURES 341, 829

Nephopteryx basilaris Zeller, Verh. zool.-bot Ges. Wein, vol. 22, p. 548, 1872.—Grote, N. Amer. Ent., vol. 1, p. 51, 1880.—Hulst, N. Amer. Phycitidae, p. 145, 1890.

Salebria basilaris (Zeller) Ragonot, Monograph, pt. 1. p. 353, 1893.—Forbes, Cornell Mem. 68, p. 627, 1923.—McDunnough, Check list, No. 6209, 1939.

Forewing pale ash gray to dark gray with a faint bluish tint; basal area pale wood brown or pale orange, a black shade along its inner margin expanding upward at antemedial line to middle of cell; the lower fold in basal area streaked with red or reddish brown with some scattering of similarly colored scales on the pale area above; antemedial line distinct to top of cell, well contrasted, grayish white, nearly vertical, inwardly dentate between cell and inner margin; margined outwardly by a narrow black line; subterminal line faint but distinguishable, sinuate-dentate, followed in outer area (on some specimens) by a broad reddish shade; discal dots obscured; a row of small blackish dots along terminal margin. Hind wings white with a faint ochreous or smoky tint; the veins very faintly darkened; a thin brownish line along termen. Alar expanse, 24–27 mm.

Male genitalia resembling those of *subcaesiella;* the clasper and lateral elements of transtilla somewhat stronger; the smaller cornutus on penis longer and stouter but also on some specimens reduced to a mere vestige. Female genitalia with two granulate patches on ventral surface of bursa, a weaker granulation of the surface connecting them.

TYPE LOCALITY: Massachusetts (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Maine*, Augusta (June), Orono; *New Hampshire*, Hampton (June); *Massachusetts*, Martha's Vineyard (July), Wilmington (June); *New York*, Catskill Mts., Ilion (June); *New Jersey*, Newark; *Illinois*, Lacon (June); *Indiana*, Hessville (May, July); *Michigan*, one example, state locality only; *Colorado*, Fort Collins (July), and one example state locality only; *Utah*, Provo Canyon (July). CANADA: *Ontario*, Budbury, Hymers (July), Trenton (July); *Manitoba*, Aweme (June), McCreary, Winnipeg.

A strikingly marked species, the most easily identified in the genus. The maxillary palpus of the male is, as noted by Ragonot (Monograph, p. 354), not strictly in the form of an aigrette. The scales are moderately long and slender, but not hairlike, intermediate between those of a squamous and a typical aigrettelike palpus. The labial palpus is grooved on inner surface of the second segment as in most species having maxillary palpi of the aigrette type.

263. Nephopteryx termitalis (Hulst), new combination

FIGURES 342, 828

Pempelia termitalis Hulst, Trans. Amer. Ent. Soc., vol 13, p. 162, 1886.

Salebria termitalis (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889.—Hulst, Phycitidae of N. Amer., p. 153, 1890.

Salebria levigatella Hulst, Canadian Ent., vol. 24, p. 61, 1892.—Forbes, Cornell Mem. 68, p. 626, 1923.—McDunnough, Check list, No. 6207, 1939. (New synonymy.)

Myrlaea termitalis (Hulst) Ragonot, Monograph, pt. 1, p. 401, 1893.—McDunnough, Check list, No. 6223, 1939.

Forewing dark suffused gray (darker than on *basilaris*); basal area dull reddish orange with little black on most specimens except along costal edge; on others some black scaling at extreme base and, narrowly, along inner margin; antemedial line nearly obliterated by its black borders which are more or less fused and from a broad, nearly vertical band from inner margin to costa, not strongly contrasted against the dark ground color of the wing; subterminal line, discal and terminal dots obscure.

Thorax dark gray, on some specimens more or less suffused by the orange color of the basal area of forewing. One specimen before me (a male from Inyo County, Calif.) has the entire thorax and base of forewing to the black inner border of the antemedial line a dull madder-red, and the outer third of wing faintly suffused with the same reddish shade. Hind wing dull

ocherous white to smoky white. Alar expanse, 23–27 mm.

Alar expanse, 23–27 mm.

Male genitalia with apical process of gnathos triangulate. Transtilla weak but distinguishable. Clasper erect and slightly curved, slender, digitate. One moderately sized and one much smaller cornutus on penis. Female genitalia with a single moderately large granulate patch on posterior lateral corner of bursa and extending in weaker granulation transversely across the middle of the lower surface.

TYPE LOCALITIES: Colorado (*termitalis*, in AMNH, ex Rutgers); "Amherst, Massachusetts" [sic] (*levigatella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado*, Glenwood Springs, Gunnison County near Altmont, and two examples (♂, ♀) with only the state locality; *Utah*, Spanish Fork (July); *Arizona*, Prescott (June); *California*, Inyo County (June), Placer County (June). CANADA: *Ontario*, Trenton (July), *Manitoba*, Winnipeg; *Alberta*, Bilby (June); *British Columbia*, Clinton (June).

Hulst also gives Massachusetts and Wisconsin as localities for his *levigatella*. His type of the latter however has no locality label. A female of *levigatella* from the Fernald Collection is in the National Collection. It also bears a Hulst "type" label, but no locality or date. The type of *termitalis* is a male, not a female as given in Hulst's original description. Genitalia of conspecific females from western localities agree in every detail with those of the type of *levigatella* so there can be no question of the synonymy of the two Hulst names.

The labial palpi appear a trifle oblique (less tightly appressed to the face than on most of the preceding species) which may account for Ragonot's reference of the species to *Myrlaea*.

264. Nephopteryx termitalis yuconella (Dyar), new status

Salebria yuconella Dyar, Ins. Insc. Menstr., vol. 13, p. 12, 1925.—McDunnough, Check list, No. 6194, 1939.

A slightly darker more suffused local race of *termitalis;* the basal area of forewing almost entirely suffused with blackish except for a narrow grayish white shade along inner margin of the black inner border of the antemedial line; no appreciable red or orange shading anywhere on forewing or thorax. Alar expanse, 25–27 mm.

GENITALIA: Male and female as in typical *termitalis*.

TYPE LOCALITY: Near Fort Yukon, Alaska (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: ALASKA: Dawson (June), Fort Yukon.

Specimens of *yuconella* as of typical *termitalis* show a strong tendency to become greasy with age, indicating that their larvae are borers; but nothing is known about the biology of either form.

265. Nephopteryx bifasciella Hulst

FIGURES 343, 831

Nephopteryx bifasciella Hulst, Ent. Amer., vol. 3, p. 132, 1887.
Salebria bifasciella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 366, 1893.—Hulst, Phycitidae of N. Amer., p. 154, 1890.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.—McDunnough, Check list, No. 6214, 1939.
Salebria nogalesella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 35, 1905.—McDunnough, Check list, No. 6215, 1939. (New synonymy.)

Forewing ash gray with a fine powdering of black scales, giving the wing a faint pale bluish tint; the black borders of the transverse lines strongly contrasted; antemedial line distinct, at least from below upper vein of cell, narrow, slightly oblique and somewhat angulate at middle, its outer black border complete, slightly broadened at costa, its inner black border narrow, extending from inner margin only to top of cell; subterminal line sinuate, bordered inwardly by a narrow black line, and outwardly by a much fainter, paler dark line; discal dots usually distinguishable but faint, separate or confluent (sometimes both ways on the same specimen); dots along terminal margin very faint, more or less confluent. Hind wing white with a very faint ocherous or smoky tint, slightly darker on female than on male. Alar expanse, 20–22 mm.

Male genitalia with apical process of gnathos triangulate. Clasper sharply curved and running close and parallel to surface of harpe, simple and strongly sclerotized. Cornuti rather short, but individually variable in size. There is also some slight variability in the size and shape of the apical process of gnathos. The genitalia of the type of *bifasciella* and those of its synonym *nogalesella* are more nearly alike than those of any other two males before me. Female genitalia with bursa nearly round, armed with two large granulate patches, arranged as in figure 831 but with the position of the anterior patch (at closed end of bursa) somewhat variable. In one specimen from Palmerlee there is a third patch on the right side of bursa and the bursa itself is narrower and considerably elongated. These differences probably represent nothing more than individual aberrations. Males from the same locality are normal.

TYPE LOCALITIES: Arizona (*bifasciella*, in AMNH, ex Rutgers); Nogales, Ariz. (*nogalesella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Baboquivari Mts. (July), Huachuca Mts. (July, Aug.), Nogales (July), Palmerlee, Redington, "Southern Arizona" (Aug.), and two examples with only the state locality.

266. Nephopteryx uvinella (Ragonot), new combination

FIGURES 344, 824

Meroptera uvinella Ragonot, N. Amer. Phycitidae, p. 8, 1887; Monograph, pt. 1, p. 315, 1893.—Hulst, Phycitidae of N. Amer., p. 148, 1890.—McDunnough, Check list, No. 6183, 1939.

Salebria afflictella Hulst, Canadian Ent., vol. 32, p. 170, 1900.—Forbes, Cornell Mem. 68, p. 625, 1923.—McDunnough, Check list, No. 6200, 1939. (New synonymy.)

Meroptera liquidambarella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 108, 1904.

Meroptera afflictella (Hulst) Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 34, 1905.

Forewing fuscous (gray-brown), the median area heavily dusted with white giving it a pale ash gray color; basal area of the ground color, rarely with some red scaling in the median fold; dark base followed by an oblique, straight, whitish band; this latter bordered outwardly by a broad, somewhat diffused, dark brown or blackish band through which may be distinguished faint white traces of the true antemedian line; subterminal line with a very slight central bulge, rarely somewhat crenulate, whitish gray, bordered inwardly by a diffused brown shade and outwardly by a narrow brown line; discal dots more or less fused; blackish terminal dots confluent. Hind wings pale to dark smoky fuscous. Alar expanse, 14–18 mm.

Male genitalia distinguished chiefly by the armature of the penis. On the paratype of *afflictella* from Montclair, N. J., there appears to be two cornuti, one closely appressed to the other; but in other preparations before me (including the types of *uvinella* and *liquidambarella*) the two cornuti are completely fused into a single rather short and stout, longitudinally ribbed cornutus. The clasper is a slender, curved, sharply pointed, smooth, sclerotized hook. Vestiges of a divided transtilla distinguishable on most preparations.

Female genitalia small (approximately the size and form of those of *carneella*); bursa with two moderately sized granulate patches, the bursal lobe giving off the ductus seminalis also granulate and partially (smoothly) sclerotized; this lobe as usual arises from the dorsum of bursa but is deflected to the left.

TYPE LOCALITIES: United States (*uvinella*, in USNM) Elizabeth, N. J. (*afflictella*, in AMNH, ex Rutgers); Washington, D. C., (*liquidambarella*, in USNM).

FOOD PLANT: *Liquidambar styraciflua* (sweetgum). Larva a leaf-tier.

DISTRIBUTION: *Connecticut*, East River (May), Stamford (Aug.); *New Jersey*, Elizabeth (Aug.), Lakeland (May), Montclair (June, Aug.), New Lisbon (June); *District of Columbia*, Washington (May, Aug.); *Virginia*, Skyland (July); *North Carolina*, Greensboro (Aug.); *Georgia*, Savannah (Sept.); *Florida*, Lakeland (May, June).

Ragonot's *uvinella* has been an unknown entity ever since its description and was suspected of being only a variety of *Meroptera pravella*. Fortunately the type was secured by Dr. Barnes when the Oberthür Collection was sold. It lacks one forewing but is otherwise intact and its habitus and genitalia leave no doubt that it is the same as the sweet-gum feeder described by Hulst and Dyar. The type of *afflictella* is a female. The types of *uvinella* and *liquidambarella* are both males. The genitalia of all of them are before me.

267. Nephopteryx celtidella (Hulst), new combination

FIGURES 345, 830

Salebria celtidella Hulst, Phycitidae of N. Amer., p. 155, 1890.—Beutenmüller, Canadian Ent., vol. 22, p. 17, 1890 (larva).—Ragonot, Monograph, pt. 1, p. 354, 1893.—Forbes, Cornell Mem. 68, p. 626, 1923.—McDunnough, Check list, No. 6206, 1939.

Ground color ocherous (clay color) more or less shaded with fuscous gray over submedian and (on especially dark females) outer basal areas; the ground color especially well contrasted at base and in the central area about the discal spots, also on thorax, at extreme base of wing and on thorax sometimes of a tawny shade; antemedial line far out towards middle of wing, oblique, sinuate, faint, indicated chiefly by its narrow black borders which are more or less broken into dots on the veins; subterminal line sinuate-serrate, bordered inwardly by a row of black (somewhat confluent) dots and outwardly by a row of small black wedges on the veins; discal dots distinct, well separated, black; a row of distinct black dots along termen. Hind wing pale to rather dark smoky fuscous. Alar expanse, 18–22 mm.

Male genitalia with apical process of gnathos smaller than that of preceding species (not triangulate). Clasper rather short, bent across surface of harpe, blunt. Sclerotized lateral elements of transtilla distinguishable, rather long, slender.

Female genitalia with a round, moderately large granulate patch on ventral surface of bursa and a smaller patch near junction of bursa and ductus bursae and the base of the lobe giving off the ductus seminalis.

TYPE LOCALITY: New York (in AMNH, ex Rutgers).

FOOD PLANT: *Celtis*. Larva a leaf-tier.

DISTRIBUTION: UNITED STATES: *New York*, Long Island; *Maryland*, Plummers Isl. (May, July); *Florida*, Palm Beach (Feb.); *Texas*, Brownsville (July), Victoria (May), Zavalla County (Apr.); *Mississippi*, "Agr. College" (Apr.), Starkville (July); *Missouri*, St. Louis (Aug.); *Illinois*, Oconee (Aug.).

A distinct species distinguished from any of the species with aigrettelike maxillar palpi on the male by its clay-colored, black-mottled forewings. Its habitus is nearest to that of *rubrisparsella* in the group with squamous, male maxillary palpi.

Genus *Nephopteryx*, Species 268–271: *N. rubrisparsella* to *N. bisra*

[Males with squamousmaxillary palpi.]

268. Nephopteryx rubrisparsella (Ragonot)

FIGURES 346, 832

Pristophora rubrisparsella Ragonot, N. Amer. Phycitidae, p. 6, 1887.

Pristophora rufibasella Ragonot, N. Amer. Phycitidae, p. 7, 1887.

Sciota croceella Hulst, Ent. Amer., vol. 4, p. 115, 1888.

Nephopteryx rubrisparsella (Ragonot), Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 284, 1893.—Hulst, Phycitidae of N. Amer., p. 145, 1890.—Forbes, Cornell Mem. 68, p. 623, 1923.—McDunnough, Check list, No. 6169, 1939.

Psorosa texanella Hulst, Canadian Ent., vol. 32, p. 174, 1900.
Hulstea texanella (Hulst), U. S. Nat. Mus. Bull. 52, p. 432, 1903.—McDunnough, Check list, No. 6342, 1939. (New synonymy.)

Similar to *celtidella* in color and maculation except: Ocherous basal area of forewing more or less shaded with reddish purple and similar suffusions over much of the median and outer areas; also a broad blackish suffusion over the area of the antemedial line and extending somewhat beyond it; the inner dark border of subterminal line more nearly continuous and the outer bordering dashes much fainter except in dark and very well marked examples. Alar expanse, 17–20 mm.

Male genitalia figured from type of *texanella* Hulst, which agree in every detail with those of typical *rubrisparsella* and of the male type of *croceella*. They differ from those of *celtidella* in having a longer, more strongly sclerotized clasper, and different cornuti (shown in lateral view in our figures). The cornuti lie side by side in both *celtidella* and *rubrisparsella*, but in the former species they are of equal length while in *rubrisparsella*, one cornutus is much shorter than the other—not too reliable a character, but apparently consistent here. Transtilla, on dissection, distinguishable as a complete band, but central area very weak and in balsam preparation only the well sclerotized lateral elements easily seen.

Female genitalia with a broad granulate band partially encircling middle of bursa, similar to that in *subfuscella* except that in *subfuscella* it is chiefly over the ventral surface of bursa while in *rubrisparsella* it is on the dorsal.

TYPE LOCALITIES: United States (*rubrisparsella*, in Paris Mus.); Texas (*rufibasella*, in Paris Mus.); Blanco County, Tex. (*croceella* and *texanella*, in AMNH, ex Rutgers).

FOOD PLANT: *Celtis*.

DISTRIBUTION: *Texas*, Black Jack Springs, Blanco County, Kerrville (June); *Oklahoma; Missouri*, St. Louis (June); *Illinois*, Lacon (July), Putnam County (July); *West Virginia*, Jefferson County (Aug.); *Maryland*, Plummers Isl.; *District of Columbia*, Washington (May, June).

Very close to *celtidella* and distinguished from it chiefly by its genitalia and squamous male maxillary palpi. Hulst's *texanella* was described from an abnormal specimen with vein 4 lacking in the hind wing. I have before me two similar abnormal females (from Oklahoma and Illinois) and in the following species (*gilvibasella*) a couple of examples, out of a long series of normal specimens, that also have vein 4 absent.

The type of *croceella* in addition to the Hulst name label also bears the following label in Ragonot's handwriting: "*Nephopteryx rubrisparsella* Rag.=*rufibasella* Rag."

269. Nephopteryx gilvibasella Hulst

FIGURE 836

Nephopteryx gilvibasella Hulst, Phycitidae of N. Amer., p. 145, 1890.—Ragonot, Monograph, pt. 1, p. 289, 1893.—McDunnough, Check list, No. 6172, 1939.
Salebria lacteella Hulst, Canadian Ent., vol. 32, p. 71, 1900.—Barnes and McDunnough, Contributions, vol. 3, p. 197, 1916.

Much paler than the preceding species (*rubrisparsella*) and without its blackish shadings. Ground color pale gray with a very faint bluish tint; extreme base of wing ocherous orange, this shade extended somewhat on inner margin and indicated on many specimens in median area over the lower fold; a broad band of the same color immediately preceding the antemedial line and extending from inner margin to middle of cell; above it a blackish shade extending to costa; lower half of antemedial line clearly indicated, narrow, whitish, bordered outwardly by a narrow black line which fuses towards costa into the blackish shade above the ocherous patch; subterminal line faintly bordered inwardly by a faint blackish line; discal dots small, separated, sometimes obscure, but usually distinct; a row of weak but discernible blackish dots along termen. Hind wing subpellucid; whitish with a very faint ocherous tint; a weak, pale brown line along termen; the veins not appreciably darkened. Alar expanse, 17–20 mm.

Male genitalia similar to those of *rubrisparsella*. The eighth-segment tufts much simpler, reduced to two lateral pairs with scales of a uniform shape and size.

Female genitalia with a broad granulate band on bursa similar to that in *rubrisparsella;* bursa bulged into a small, strongly granulate lobe at its left posterior angle (this lobe opposite to that giving off ductus seminalis); also a narrow row of moderately long spines across upper side of bursa at junction of bursa and ductus bursae.

TYPE LOCALITIES: Not given (*gilvibasella*, in AMNH, ex Rutgers); Blanco County, Tex. (*lacteella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Blanco County (Sept.), Brownsville (Mar., July), San Benito (Mar., Apr., May, July, Aug., Sept.).

The species is close to but distinct from *rubrisparsella*. The types of *gilvibasella* and *lacteella* are both females with identical genitalia. A long series from Brownsville and San Benito are before me.

270. Nephopteryx crassifasciella Ragonot

FIGURES 347, 835

Nephopteryx crassifasciella Ragonot, N. Amer. Phycitidae, p. 8, 1887; Monograph, pt. 1, p. 285, 1893.—Hulst, Phycitidae of N. Amer., p. 146, 1890.—McDunnough, Check list, No. 6170, 1939.
Nephopteryx decipientella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 34, 1905.—McDunnough, Check list, No. 6162, 1939. (New synonymy.)
Nephopteryx crataegella Barnes and McDunnough, Contributions, vol. 3, p. 222, 1917.—McDunnough, Check list, No. 6164, 1939. (New synonymy.)

Forewing ash gray more or less suffused by somber purplish or gray brown, shading into blackish brown on the borders of the transverse lines; the pale color limited to a rather narrow band preceding the inner border of the antemedial line, part of the median area following

the antemedial line and surrounding the discal dots, and some faint pale dusting immediately preceding terminal margin; extreme base of wing purplish brown with a shading (in some specimens) of reddish scales, especially towards inner margin; antemedial line pale gray, distinguishable only from inner margin to middle of cell, bordered inwardly by a broad, vertical, blackish brown band which extends to costa, and outwardly by a narrow black line which fuses into the inner dark border towards costa; subterminal line sinuate, pale gray with narrow, black-brown borders; discal dots distinct, sometimes partially fused. Hind wing light to dark smoky brown; the veins slightly darkened and a dark line along termen. Alar expanse, 16–17 mm.

Male genitalia with clasper short, blunt, curved. Cornuti moderately long, approximately the same size and lying side by side. A long slender arm projecting from each dorsolateral angle of vinculum. Female genitalia with two large, opposing, roundly oval, granulate patches on bursa, and some rather strong, darkly pigmented spining on the lobe giving off the ductus seminalis.

TYPE LOCALITIES: California [?] (*crassifasciella*, lost?); unknown (*decipientella*, in USNM); Lakeland, Fla. (*crataegella*, in USNM).

FOOD PLANTS: *Vaccinium*, *Crataegus*.

DISTRIBUTION: *Maryland*, Plummers Isl. (May); *District of Columbia*, Washington (May); *Georgia*, Sapeloe (Sept.); *Florida*, Lakeland (May).

A male from the District of Columbia (reared from *Vaccinium* by Chambliss, May 10, 1895) and a similar female from Plummers Isl., Md., in the National Collection agree in every detail with Ragonot's figure and description of *crassifasciella* and were so identified by Dyar. His *decipientella* was described from a single specimen without locality label. It is merely a dark-suffused male with the pale coloration limited to a more restricted area about the discal spots and some light dusting between the outer veins. The Georgia example (reared from *Vaccinium*) is a female and matches the type of *decipientella* except for venation. It is another of the all too frequent phycitid freaks with vein 4 missing from hind wing and 7–8 long stalked. The Barnes and McDunnough type of *crataegella* (also a male and reared from *Crataegus*) differs from typical *crassifasciella* only in a somewhat more extended and lighter coloration of the pale areas of forewing. All three males before me agree in genitalic structure.

The species is easily identified by the peculiar development of the vinculum, not found in any other American species in the genus.

Dr. Bourgogne informs me that the type of *inquilinella* could not be found at Paris. It is probably lost, and I suspect that the California citation in Ragonot's Monograph was probably a guess. I have seen nothing from the Pacific Coast States that could possibly be his species.

271. Nephopteryx bisra Dyar

FIGURE 833

Nephopteryx bisra Dyar, Ins. Insc. Menstr., vol 7, p. 51, 1919.

Forewing pale gray-brown; base shaded with blackish; a straight, narrow, oblique whitish line along inner margin of the inner border of the antemedial line, the latter a thin, oblique, notched, whitish line, obscured towards costa; its inner border a wide blackish band reaching to costa; its outer border a narrow black line; a pale patch on inner margin following the antemedial line; subterminal line distinct, whitish gray, sinuate, margined by narrow blackish brown inner and outer lines; discal spots fused into a lunate mark with a pale surrounding shade; a blackish line along termen. Hind wing pale gray-brown, paler than ground color of forewing; veins not appreciably darkened; a narrow, dark (brownish) line along termen. Alar expanse, 21 mm.

Female genitalia with a large granulate patch covering most of dorsal surface of bursa, a smaller latero-ventral patch and some scattered granulations at left, posterior angle on ventral side; bursa otherwise rather densely and finely spinose.

TYPE LOCALITY: Orizaba, México (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type. The placement in the second group of *Nephopteryx* is provisional, pending discovery of a male. In the type, vein 10 of forewing is shortly stalked with the stem of 8–9.

69. Genus Tlascala Hulst

Tlascala Hulst, Phycitidae of N. Amer., p. 146, 1890.—Forbes, Cornell Mem. 68, p. 623, 1923. (Type of genus: *Nephopteryx reductella* Walker.)

Tongue well developed. Antenna weakly pubescent; on male, with sinus and enlarged scale tuft in base of shaft. Labial palpus upturned, not appressed to face, cylindrical, smooth scaled, reaching above vertex; second segment of male not hollowed; third segment moderately long, acuminate. Maxillary palpi of both sexes squamous, appressed to face. Forewing with most of inner border of antemedial line consisting of raised scales; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle, about equidistant from 2 and 4; 4 and 5 very shortly stalked or connate, rarely (in individual specimens) closely approximate at base; 6 from below upper angle of cell, straight; 8–9 long stalked (for three-fourths of their lengths); 10 from the cell approximate to or connate with the stalk of 8–9 at base, and approximate to it for some distance beyond base; male without costal fold. Hind wing venation similar to that of *Meroptera* and *Nephopteryx*. Eighth abdominal segment of male with compound scale tufts.

Male genitalia with strongly sclerotized, broadly triangulate clasper with a row of irregular teeth along its outer margin. Penis armed with two, equally sized, stout, sharply curved, thornlike cornuti. Otherwise as in *Nephopteryx*.

Female genitalia without signum; bursa finely and densely spined over most of inner surface and with a cluster of longer and stronger spines near middle of lateral margin; ductus bursae short (less than half the length of bursa); armed on ventral surface by an elongate pair of granulate plates; at genital opening a strongly sclerotized, centrally interrupted genital plate, attached to a narrow, sclerotized collar (incomplete dorsally and ventrally) and supplemental to the regular eighth-segment collar; ductus seminalis from bursa near junction of bursa and ductus bursae.

The genus is close to and has several characters in common with both *Meroptera* and *Nephopteryx*, resembling the former in the well developed genital plate of the female genitalia and the strong, serrate clasper of the male, differing from both genera in the rough scaling on forewing, the ungrooved labial palpi and much stouter antennal tuft of the male, the sharply curved cornuti on penis, and the supplemental collar attached to the female genital plate. As here defined it contains only its American type species.

272. Tlascala reductella (Walker)

FIGURES 28, 348, 834

Nephopteryx reductella Walker, List, vol. 27, p. 63, 1863.—Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 283, 1893.

Pempelia gleditschiella Fernald, *in* Comstock, *in* Rep. [U. S.] Comm. Dep. Agr. for 1880, p. 262, 1881.—Packard, U. S. Dep. Agr. Fifth Rep. Ent. Com., p. 652, 1890.

Tlascala reductella (Walker) Hulst, Phycitidae of N. Amer., p. 146, 1890.—Forbes, Cornell Mem. 68, p. 624, 1923.—McDunnough, Check list, No. 6180, 1939.

In color and maculation similar to the European *Nephopteryx rhenella* except for the raised scaling of the subbasal black bar.

Forewing dull ash gray with purplish brown shading at extreme base and paler brownish shading on outer median and terminal areas; antemedial line complete but faint, narrow, oblique, slightly indented on lower half, preceded by a broad black band of rough scales and followed by a narrow black band; subterminal line obscure, sinuate-dentate, faintly bordered by dark inner and outer lines; discal dots distinct, blackish, separated; a row of faint blackish dots along termen. Hind wing pale smoky fuscous; the veins very slightly darkened and a narrow dark line along termen. Alar expanse, 17–23 mm.

Male genitalia with cornuti set side by side near outer end of penis, their apices turned away from each other. Female genitalia as given for the genus.

TYPE LOCALITIES: Honduras [sic] (*reductella*, in BM); District of Columbia (*gleditschiella*, in USNM).

FOOD PLANT: *Gleditsia*. Larva a leaf-tier.

DISTRIBUTION: *District of Columbia* (May, July); *Maryland*, Plummers Isl. (June); *North Carolina*, Hiltonhead Isl. (Aug.); *Pennsylvania; Illinois*, Decatur (Mar., Apr., May, July), Quincy (May); *Iowa*, Ames; *Kansas*, Lawrence (May); *Missouri*, St. Louis (May); *Texas*, Kenedy (Apr.), Paris (May), Victoria (July), Zavalla County (Apr.); *Louisiana*, Crown Point (June, larva), New Orleans (larva, June).

Walker gives Honduras as the type locality. I rather doubt the correctness of this citation, for I have never seen anything from Central America that even remotely resembled the species. I have not seen his types, but have no reason to question the correctness of Ragonot's reference of *gleditschiella* to synonymy.

70. Tulsa, new genus

Type of genus: Nephopteryx finitella Walker.

Characters of *Tlascala* except:

Forewing with some rough scaling in the median area beyond the outer margin of the antemedian line, sometimes a small tuft on lower fold, always a few roughened scales in the discal spots; veins 4–5 approximate at base and for a short distance beyond. Male genitalia with sacculus of harpe considerably enlarged, strongly sclerotized, densely and finely spined along entire lower margin, and produced at apex; clasper a thin, dished plate produced into an elongate, curved, sharply pointed claw at each lower angle. Uncus broadened at apex. Transtilla complete, very weakly but evenly sclerotized throughout. Cornuti straight, set one before the other. Female genitalia with several lines of fine spines running from bursa into ductus bursae almost to genital opening; genital plate and its attached supplemental collar strongly wrinkled (more so than shown in the figures); no granulations in ductus bursae.

The genus is very close to *Tlascala* and I propose the new name with some misgiving; but the habitus of the moths and their genitalia, male and female, differ so much from those of the type of *Tlascala* that something more than a species-group difference is indicated. When larvae and host relations of the *Tulsa* species are known we shall probably find additional supporting characters for the genus. Specifically the genitalia are remarkably similar, offering little or nothing to distinguish the species. Four are here recognized.

273. Tulsa finitella (Walker), new combination

FIGURE 349

Nephopteryx finitella Walker, List, vol. 27, p. 53, 1863.—Ragonot, Monograph, pt. 1, p. 282, 1893.

Tlascala finitella (Walker) Hulst, Phycitidae of N. Amer., p. 147, 1890.—Forbes, Cornell Mem. 68, p. 624, 1923.—McDunnough, Check list, No. 6177, 1939.

Elasmopalpus melanellus Hulst, Phycitidae of N. Amer., p. 157, 1890.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916 (makes synonym of *finitella*).

Forewing very dark gray with the blackish borders of the antemedial and postmedial lines but slightly contrasted; some slight dusting of white on subbasal, medial, and terminal areas; antemedial line somewhat stronger, its inner blackish bordering line more or less interrupted on the veins, its outer border continuous but faint; discal dots tending to coalesce; an obscure row of blackish dots along termen; raised scales con-

spicuous on lower half of inner border of antemedial line and as a patch on middle of lower fold; a raised scale or two in the discal spots. Hind wing pale smoky fuscous with a darker shading towards termen; the veins slightly darkened; the entire wing darker on northern examples. Alar expanse, 21–25 mm.

Male genitalia with no distinguishing specific features. Female genitalia similar to those of *umbripennis* but smaller (about the size of *infinitella*) and with more decided wrinkling of the genital plate and its supplemental collar.

TYPE LOCALITIES: United States (*finitella*, in BM); *Florida* (*melanellus*, in AMNH, ex Rutgers).

FOOD PLANT.—Blueberry. This record is from a reared female (Brunswick, Ga., Quaintance No. 31501) in the National Collection. The larva, however, may have been accidentally on that plant.

DISTRIBUTION: UNITED STATES: *Florida*, Charlotte Harbor (Mar.), Fort Myers (Apr.), Miami (Mar.), St. Petersburg (Apr.), Tampa, also examples with only state locality; *Georgia*, Brunswick (June); *North Carolina*, Raleigh (June); *Virginia*, Richmond (May); *District of Columbia*, Washington (May, June); *New Jersey*, Essex County (May), Newark (May); *Massachusetts*, Martha's Vineyard (Aug.); *Indiana*, Hessville (June). CANADA: *Ontario*, Trenton; *Quebec*, Kazubazua (June). Walker also reports the species from *Nova Scotia*.

The type of *melanellus* in the Rutgers Collection is a female without abdomen. Matching cotypes (♂ and ♀) from Mrs. Slosson's material are in the National Collection. There can be no question of the synonymical reference by Barnes and McDunnough.

274. Tulsa umbripennis (Hulst), new combination

FIGURES 350, 842

Pinipestis umbripennis Hulst, Canadian Ent., vol. 27, p. 57, 1895.
Ortholepis gillettella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 107, 1904.
Tlascala umbripennis (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 195, 1916.—McDunnough, Check list, No. 6178, 1939.

Fore and hind wings dark brown with a somewhat glossy sheen not possessed by the other species of the genus; discal dots on forewing confluent, forming a bar on discocellular vein; raised scales and maculation as in *finitella*. Alar expanse, 25–26 mm.

Male genitalia, figured from type of *gillettella*, agree in every detail with those of the male type of *umbripennis*. Female genitalia with bursa copulatrix slightly larger than that of any of the other Tulsa species except *oregonella*.

TYPE LOCALITIES: Colorado (*umbripennis*, in AMNH, ex Rutgers; *gillettella*, in USNM).

FOOD PLANT: Unknown.

Known only from the type locality. A series before me is from Chimney Gulch, Colo. (June and July). The types of *umbripennis* and *gillettella* have only the state locality, but the latter was probably from the neighborhood of Fort Collins.

275. Tulsa oregonella (Barnes and McDunnough), new combination

FIGURE 351

Tlascala oregonella Barnes and McDunnough, Contributions, vol. 4, p. 175, 1918.—McDunnough, Check list, No. 6179, 1939.

Forewing a dull, powdery, slate gray; basal area a trifle paler; the transverse lines somewhat more distinct and better defined than on *umbripennis*; inner black border of antemedial line slightly narrower than in preceding species; dark borders of subterminal line very faint; discal dots separated. Hind wing smoky gray-brown, paler than that of *umbripennis* and not glossy. Alar expanse, 26–28 mm.

Female genitalia similar to those of *umbripennis*.

TYPE LOCALITY: Crater Lake, Oreg. (July; type in USNM).

FOOD PLANT: Unknown.

Known only from the type series.

276. Tulsa infinitella (Dyar), new combination

FIGURE 841

Tlascala infinitella Dyar, Ins. Insc. Menstr., vol. 7, p. 52, 1919.

Similar to *oregonella* except: Forewing slightly darker; antemedial line obscure; the discal dots confluent, forming a blackish line of slightly roughened scales. Hind wing as in southern specimens of *finitella;* pale smoky fuscous at base with a darker shading towards termen. Alar expanse, 27 mm.

Female genitalia like those of *finitella* except lateral elements of genital plate smoother.

TYPE LOCALITY: Orizaba, México (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type.

Genus 71: *Homoeographa*

[Venational division C. veins 4 and 5 shortly stalked or weakly anastomosed for a short distance beyond cell. Hind wing with discocellular vein of cell vertical, straight. Antenna of male with sinus and scale tuft in base of shaft. Labial palpus obliquely upturned, second segment laterally flattened and broadly scaled, on male grooved to hold maxillary palpus. Maxillary palpus of male in the form of an aigrette. Eighth abdominal segment of male with compound scale tufts. Male genitalia without transtilla; clasper present, digitate; penis armed with two moderately stout cornuti. Female genitalia without signum; bursa with deep, convoluted, sclerotized folds; genital opening simple.]

71. Genus Homoeographa Ragonot

Homoeographa Ragonot, Nouv. Gen., p. 24, 1888; Monograph, pt. 1, pp. xlvi, 432, 1893. (Type of genus: *Homoeographa lanceolella* Ragonot.)

Tongue well developed. Antenna pubescent; male with sinus and strong tuft in base of shaft. Labial palpus obliquely upturned, reaching well above vertex; second segment flattened and broadly scaled, on male grooved to hold the maxillary palpus; third segment short, partially hidden in scaling of second. Maxillary palpus of male in the form of an aigrette; of female

Female genitalia without signum; bursa finely and densely spined over most of inner surface and with a cluster of longer and stronger spines near middle of lateral margin; ductus bursae short (less than half the length of bursa); armed on ventral surface by an elongate pair of granulate plates; at genital opening a strongly sclerotized, centrally interrupted genital plate, attached to a narrow, sclerotized collar (incomplete dorsally and ventrally) and supplemental to the regular eighth-segment collar; ductus seminalis from bursa near junction of bursa and ductus bursae.

The genus is close to and has several characters in common with both *Meroptera* and *Nephopteryx*, resembling the former in the well developed genital plate of the female genitalia and the strong, serrate clasper of the male, differing from both genera in the rough scaling on forewing, the ungrooved labial palpi and much stouter antennal tuft of the male, the sharply curved cornuti on penis, and the supplemental collar attached to the female genital plate. As here defined it contains only its American type species.

272. Tlascala reductella (Walker)

FIGURES 28, 348, 834

Nephopteryx reductella Walker, List, vol. 27, p. 63, 1863.—Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 283, 1893.

Pempelia gleditschiella Fernald, *in* Comstock, *in* Rep. [U. S.] Comm. Dep. Agr. for 1880, p. 262, 1881.—Packard, U. S. Dep. Agr. Fifth Rep. Ent. Com., p. 652, 1890.

Tlascala reductella (Walker) Hulst, Phycitidae of N. Amer., p. 146, 1890.—Forbes, Cornell Mem. 68, p. 624, 1923.—McDunnough, Check list, No. 6180, 1939.

In color and maculation similar to the European *Nephopteryx rhenella* except for the raised scaling of the subbasal black bar.

Forewing dull ash gray with purplish brown shading at extreme base and paler brownish shading on outer median and terminal areas; antemedial line complete but faint, narrow, oblique, slightly indented on lower half, preceded by a broad black band of rough scales and followed by a narrow black band; subterminal line obscure, sinuate-dentate, faintly bordered by dark inner and outer lines; discal dots distinct, blackish, separated; a row of faint blackish dots along termen. Hind wing pale smoky fuscous; the veins very slightly darkened and a narrow dark line along termen. Alar expanse, 17–23 mm.

Male genitalia with cornuti set side by side near outer end of penis, their apices turned away from each other. Female genitalia as given for the genus.

TYPE LOCALITIES: Honduras [sic] (*reductella*, in BM); District of Columbia (*gleditschiella*, in USNM).

FOOD PLANT: *Gleditsia*. Larva a leaf-tier.

DISTRIBUTION: *District of Columbia* (May, July); *Maryland*, Plummers Isl. (June); *North Carolina*, Hiltonhead Isl. (Aug.); *Pennsylvania; Illinois*, Decatur (Mar., Apr., May, July), Quincy (May); *Iowa*, Ames; *Kansas*, Lawrence (May); *Missouri*, St. Louis (May); *Texas*, Kenedy (Apr.), Paris (May), Victoria (July), Zavalla County (Apr.); *Louisiana*, Crown Point (June, larva), New Orleans (larva, June).

Walker gives Honduras as the type locality. I rather doubt the correctness of this citation, for I have never seen anything from Central America that even remotely resembled the species. I have not seen his types, but have no reason to question the correctness of Ragonot's reference of *gleditschiella* to synonymy.

70. Tulsa, new genus

Type of genus: Nephopteryx finitella Walker.

Characters of *Tlascala* except:

Forewing with some rough scaling in the median area beyond the outer margin of the antemedian line, sometimes a small tuft on lower fold, always a few roughened scales in the discal spots; veins 4–5 approximate at base and for a short distance beyond. Male genitalia with sacculus of harpe considerably enlarged, strongly sclerotized, densely and finely spined along entire lower margin, and produced at apex; clasper a thin, dished plate produced into an elongate, curved, sharply pointed claw at each lower angle. Uncus broadened at apex. Transtilla complete, very weakly but evenly sclerotized throughout. Cornuti straight, set one before the other. Female genitalia with several lines of fine spines running from bursa into ductus bursae almost to genital opening; genital plate and its attached supplemental collar strongly wrinkled (more so than shown in the figures); no granulations in ductus bursae.

The genus is very close to *Tlascala* and I propose the new name with some misgiving; but the habitus of the moths and their genitalia, male and female, differ so much from those of the type of *Tlascala* that something more than a species-group difference is indicated. When larvae and host relations of the *Tulsa* species are known we shall probably find additional supporting characters for the genus. Specifically the genitalia are remarkably similar, offering little or nothing to distinguish the species. Four are here recognized.

273. Tulsa finitella (Walker), new combination

FIGURE 349

Nephopteryx finitella Walker, List, vol. 27, p. 53, 1863.—Ragonot, Monograph, pt. 1, p. 282, 1893.

Tlascala finitella (Walker) Hulst, Phycitidae of N. Amer., p. 147, 1890.—Forbes, Cornell Mem. 68, p. 624, 1923.—McDunnough, Check list, No. 6177, 1939.

Elasmopalpus melanellus Hulst, Phycitidae of N. Amer., p. 157, 1890.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916 (makes synonym of *finitella*).

Forewing very dark gray with the blackish borders of the antemedial and postmedial lines but slightly contrasted; some slight dusting of white on subbasal, medial, and terminal areas; antemedial line somewhat stronger, its inner blackish bordering line more or less interrupted on the veins, its outer border continuous but faint; discal dots tending to coalesce; an obscure row of blackish dots along termen; raised scales con-

spicuous on lower half of inner border of antemedial line and as a patch on middle of lower fold; a raised scale or two in the discal spots. Hind wing pale smoky fuscous with a darker shading towards termen; the veins slightly darkened; the entire wing darker on northern examples. Alar expanse, 21–25 mm.

Male genitalia with no distinguishing specific features. Female genitalia similar to those of *umbripennis* but smaller (about the size of *infinitella*) and with more decided wrinkling of the genital plate and its supplemental collar.

TYPE LOCALITIES: United States (*finitella*, in BM); *Florida* (*melanellus*, in AMNH, ex Rutgers).

FOOD PLANT.—Blueberry. This record is from a reared female (Brunswick, Ga., Quaintance No. 31501) in the National Collection. The larva, however, may have been accidentally on that plant.

DISTRIBUTION: UNITED STATES: *Florida*, Charlotte Harbor (Mar.), Fort Myers (Apr.), Miami (Mar.), St. Petersburg (Apr.), Tampa, also examples with only state locality; *Georgia*, Brunswick (June); *North Carolina*, Raleigh (June); *Virginia*, Richmond (May); *District of Columbia*, Washington (May, June); *New Jersey*, Essex County (May), Newark (May); *Massachusetts*, Martha's Vineyard (Aug.); *Indiana*, Hessville (June). CANADA: *Ontario*, Trenton; *Quebec*, Kazubazua (June). Walker also reports the species from *Nova Scotia*.

The type of *melanellus* in the Rutgers Collection is a female without abdomen. Matching cotypes (♂ and ♀) from Mrs. Slosson's material are in the National Collection. There can be no question of the synonymical reference by Barnes and McDunnough.

274. Tulsa umbripennis (Hulst), new combination

FIGURES 350, 842

Pinipestis umbripennis Hulst, Canadian Ent., vol. 27, p. 57, 1895.
Ortholepis gillettella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 107, 1904.
Tlascala umbripennis (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 195, 1916.—McDunnough, Check list, No. 6178, 1939.

Fore and hind wings dark brown with a somewhat glossy sheen not possessed by the other species of the genus; discal dots on forewing confluent, forming a bar on discocellular vein; raised scales and maculation as in *finitella*. Alar expanse, 25–26 mm.

Male genitalia, figured from type of *gillettella*, agree in every detail with those of the male type of *umbripennis*. Female genitalia with bursa copulatrix slightly larger than that of any of the other Tulsa species except *oregonella*.

TYPE LOCALITIES: Colorado (*umbripennis*, in AMNH, ex Rutgers; *gillettella*, in USNM).

FOOD PLANT: Unknown.

Known only from the type locality. A series before me is from Chimney Gulch, Colo. (June and July). The types of *umbripennis* and *gillettella* have only the state locality, but the latter was probably from the neighborhood of Fort Collins.

275. Tulsa oregonella (Barnes and McDunnough), new combination

FIGURE 351

Tlascala oregonella Barnes and McDunnough, Contributions, vol. 4, p. 175, 1918.—McDunnough, Check list, No. 6179, 1939.

Forewing a dull, powdery, slate gray; basal area a trifle paler; the transverse lines somewhat more distinct and better defined than on *umbripennis*; inner black border of antemedial line slightly narrower than in preceding species; dark borders of subterminal line very faint; discal dots separated. Hind wing smoky gray-brown, paler than that of *umbripennis* and not glossy. Alar expanse, 26–28 mm.

Female genitalia similar to those of *umbripennis*.

TYPE LOCALITY: Crater Lake, Oreg. (July; type in USNM).

FOOD PLANT: Unknown.

Known only from the type series.

276. Tulsa infinitella (Dyar), new combination

FIGURE 841

Tlascala infinitella Dyar, Ins. Insc. Menstr., vol. 7, p. 52, 1919.

Similar to *oregonella* except: Forewing slightly darker; antemedial line obscure; the discal dots confluent, forming a blackish line of slightly roughened scales. Hind wing as in southern specimens of *finitella;* pale smoky fuscous at base with a darker shading towards termen. Alar expanse, 27 mm.

Female genitalia like those of *finitella* except lateral elements of genital plate smoother.

TYPE LOCALITY: Orizaba, México (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type.

Genus 71: *Homoeographa*

[Venational division C. veins 4 and 5 shortly stalked or weakly anastomosed for a short distance beyond cell. Hind wing with discocellular vein of cell vertical, straight. Antenna of male with sinus and scale tuft in base of shaft. Labial palpus obliquely upturned, second segment laterally flattened and broadly scaled, on male grooved to hold maxillary palpus. Maxillary palpus of male in the form of an aigrette. Eighth abdominal segment of male with compound scale tufts. Male genitalia without transtilla; clasper present, digitate; penis armed with two moderately stout cornuti. Female genitalia without signum; bursa with deep, convoluted, sclerotized folds; genital opening simple.]

71. Genus Homoeographa Ragonot

Homoeographa Ragonot, Nouv. Gen., p. 24, 1888; Monograph, pt. 1, pp. xlvi, 432, 1893. (Type of genus: *Homoeographa lanceolella* Ragonot.)

Tongue well developed. Antenna pubescent; male with sinus and strong tuft in base of shaft. Labial palpus obliquely upturned, reaching well above vertex; second segment flattened and broadly scaled, on male grooved to hold the maxillary palpus; third segment short, partially hidden in scaling of second. Maxillary palpus of male in the form of an aigrette; of female

squamous. Forewing smooth; 11 veins; vein 2 from before the lower outer angle of cell; 3 from the angle, separated from 4–5; 4 and 5 shortly stalked or weakly anastomosed for less than half their lengths from cell; 6 from below upper angle of cell, slightly bent at base; 8 and 9 stalked for over half their lengths; 10 from the cell, connate or closely anastomosed at base with the stalk of 8–9. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, long; 4 and 5 stalked for about four-fifths of their lengths; 7 and 8 anastomosed for three-fourths of their lengths; cell short, one-third the length of wing; discocellular vein vertical, straight. Eighth abdominal segment of male with compound ventral scale tufts.

Male genitalia with uncus subtriangulate and with blunt, moderately broad, notched apical margin. Apical process of gnathos a moderately stout hook with a slender, digitate basal projection. Transtilla absent. Harpe with costa sclerotized throughout, but not produced at apex; cucullus simple, curved, apex bluntly pointed; clasper present, simple, erect, digitate. Penis armed with two moderately stout cornuti, about one-third as long as aedeagus. Vinculum about twice as long as broad, evenly tapering to its truncate, strongly sclerotized, anterior margin. Vinculum U-shaped with somewhat enlarged base.

Female genitalia with bursa elongate, narrow, signum absent, two or three deep, convolute sclerotized folds at posterior half, the sclerotization extending for a short distance into ductus bursae; genital opening simple. Ductus seminalis from bursa, near junction of bursa and ductus bursae.

The genus is easily distinguished by its hind wing venation and genitalia. The male genitalia indicate a close relationship to the *Nephopteryx* group of genera. However the characteristic hair brush on the harpe of the latter are absent from *Homoeographa*. It contains only one known tropical American species.

277. Homoeographa lanceolella Ragonot

FIGURES 352, 839

Homoeographa lanceolella Ragonot, Nouv. Gen., p. 25, 1888; Monograph, pt. 1, p. 433, 1893.

Forewing gray heavily dusted with white on costal half; antemedial line indicated by a narrow, white, inwardly notched line between cell and inner margin and above that by its incompleted outer border, a black line oblique from costa to cell thence inwardly angled to lower vein of cell; subterminal line faint, sinuate, indicated chiefly by blackish gray bordering streaks from costa, the inner one the longer and continued as a weak blackish shading to inner margin; discal dots small, separated, blackish gray; in outer area black streaklets bordering vein 1b above and veins 3 and 6 below. Hind wing semitranslucent smoky white; the veins slightly darkened and a narrow dark line along termen. Head ashy white. Alar expanse, 21 mm.

Female genitalic characters as given for the genus.

TYPE LOCALITY: Callao, Perú (type in Paris Mus.).

FOOD PLANT: Unknown.

Known only from the type series in the Muséum National d'Histoire Naturelle, Paris, and the British Museum.

Genera 72–76: *Telethusia* to *Pyla*

[Venational division B. Veins 4 and 5 of forewing usually separated at base (shortly stalked in *Actrix*); 10 from the cell, separated at base from stalk of 8–9. Hind wing with cell less than half the length of wing (about one-thid in *Pyla*). Antenna of male with sinus and scale tuft in base of shaft. Labial palpus oblique or upturned. Maxillary palpus various (minute, squamous or aigrettelike). Male genitalia with transtilla usually absent, if present (*Phobus*, *Stylopalpia*) incomplete or its median area very weakly sclerotized; harpe with sclerotized costa sometimes produced at base, never at apex; clasper absent or more or less developed (strongly so in many species of *Pyla*); aedeagus frequently divided (bifid) or spined; penis unarmed or finely scobinate or finely and weakly spined, rarely (*Phobus*) with a single cornutus. Female genitalia without signum; bursa frequently smooth or weakly spined, occasionally with some sclerotized folds continued from ductus bursae; the latter more or less sclerotized in part, in many *Pyla* species broadly expanded towards genital opening.]

72. Telethusia, new genus

TYPE OF GENUS: *Pempelia ovalis* Packard.

Tongue well developed. Antenna pubescent; on male with sinus and enlarged scale tuft in base of shaft. Labial palpus obliquely upturned, reaching to vertex on male, above vertex on female; laterally flattened and broadly scaled; second segment of male grooved on inner side to hold the tongue; third segment considerably shorter than second, bluntly pointed, more or less deflected forward and partially hidden in scaling of second segment. Maxillary palpus minute (a mere vestige). Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, nearer to 4 than to 2; 4 and 5 separated at base, parallel for a short distance beyond; 6 from below upper angle of cell, straight; 8 and 9 stalked for half or nearly half their lengths; 10 from the cell separated from the stalk of 8–9 at base and divergent from it shortly beyond; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, connate at base with the stalk of 4–5; 4 and 5 stalked for about half their lengths; 7 and 8 contiguous or weakly anastomosed for a short distance beyond cell; cell less than half the length of wing; discocellular vein curved, outwardly produced at lower angle of cell. Eighth abdominal segment of male with compound scale tufts.

Male genitalia with uncus subtriangulate; apex bluntly rounded. Apical process of gnathos a short, stout hook. Transtilla absent. Harpe simple; clasper rudimentary. Aedeagus simple, straight, not tapering; penis unarmed except for a small comb of very weak, short, slender spines. Vinculum stout, longer than greatest width, tapering slightly to truncated terminal margin.

Female genitalia with ovipositor strongly sclerotized; apophyses (supporting rods) of ovipositor and eighth

segment collar stout; bursa elongate, finely scobinate over two-thirds of its inner surface but without signum or other sclerotization; ductus bursae unsclerotized except for a narrow, weak band near genital opening; ductus seminalis from junction of bursa and ductus bursae. At least half of membrane between collar and ovipositor finely and densely spinose.

The genus is erected for a species hitherto referred to *Nephopteryx*. It differs from the latter in its vestigial maxillary palpi, the lack of cornutus or cornuti of penis or the hair brush on harpe of its male genitalia, the hardened ovipositor of female, the shorter stalking of veins 8 and 9, and the somewhat more separated condition at base of veins 4 and 5 of forewing.

278. Telethusia ovalis (Packard), new combination

FIGURES 353, 843

Pempelia ovalis Packard, Ann. Lyc. Nat. Hist. New York, vol. 10, p. 269, 1873.

Nephopteryx latifasciatella Packard, Ann. Lyc. Nat. Hist., New York, vol. 10, p. 269, 1873.

Nephopteryx ovalis (Packard) Grote, Bull., U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 696, 1878; North Amer. Ent., vol. 1, p. 11, 1879.—Hulst, Phycitidae of N. Amer., p. 144, 1890.—Ragonot, Monograph, pt. 1, p. 269, 1893.—Forbes, Cornell Mem. 68, p. 623, 1923.—McDunnough, Check list, No. 6163, 1939.

Nephopteryx ovalis geminipunctella Ragonot, Monograph, pt. 1, p. 270, 1893.

Nephopteryx modestella Hulst, Canadian Ent., vol. 34, p. 170 1900.—Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.

Forewing ashy gray-white with a distinct powdery appearance, the white dusting conspicuous on median and basal areas; antemedial line oblique, zigzag (twice notched), narrow, white, bordered inwardly by a broad dark fuscous (blackish gray) band which is interrupted by a streak of dull ocherous orange at lower fold (this ocherous shade also continued along fold in median area); antemedial line bordered outwardly by a blackish gray bar at costa and similarly colored dots on cell and just above inner margin; subterminal line sinuate bordered inwardly by a more or less broken blackish gray line and outwardly by a broader blackish gray, brownish, or brownish ocherous shade (the latter when present interrupted by blackish streaklets on the veins), both borders strongly accented at costa; on most specimens a narrow, oblique, dark shading across median area from costal inner margin of subterminal line; discal dots distinct, separated, blackish, the lower sometimes expanded into a black smudge; a row of black dots along termen. Hind wing pale smoky fuscous, more whitish in some specimens, darker and somewhat brownish gray in others. Alar expanse, 20–28 mm.

Genitalia as given for the genus.

TYPE LOCALITIES: Maine (*ovalis* and *latifasciatella*, in MCZ); Washington State (*geminipunctella*, in Paris Mus.); Massachusetts (*modestella*, in AMNH, ex Rutgers).

FOOD PLANTS: *Antennaria, Eriophyllum ignotum.* These records from Washington specimens reared by J. F. G. Clarke. Presumably on other Compositae.

DISTRIBUTION: UNITED STATES: *Maine*, Orono (July), Wales (July); *New Hampshire*, Durham, Hampton (Aug.), Fort Washington (July); *Vermont*, Clarenton; *Massachusetts*; *Connecticut*, East River (July); *New York*, Catskill Mts., Ilion (June, July); *Colorado*, Gunnison County (near Altmont, July); *Utah*, Stockton (June, July); *Montana*, Missoula (Aug.); *Washington*, Bellingham (June), Chuckanut Bay (Whatcom County, June), Godman Springs (Blue Mts., July), Kamiack Butte (May), Pullman (June, July); *California*, Placer County (June), San Jacinto Mts. (July), Tuolumne Meadows (July, Aug.). CANADA: *Ontario*, Trenton (July); *Alberta*, Banff (June, July); *British Columbia*, Wellington.

The species is variable in color, especially in the Western areas of the United States and Canada. Most of the specimens from Washington and British Columbia have the white dusting on forewing more conspicuous and the dark markings more strongly contrasted than on eastern examples. However, there are intergrades, and no sharp line can be drawn on color between the two areas. In the Tuolumne Meadows of California there is a larger (26–28 mm.) and somewhat paler form. Specimens from Colorado, Alberta, and occasionally from Washington form another darker and duller variety, the forewing showing little or no brown shading, the pattern markings a dull black, and the pale areas more gray than whitish and less strongly contrasted against the dark markings than in other Washington or eastern specimens. Three specimens before me from California have the transverse dark lines much weaker and the over-all color an ashy gray with a slight bluish tint. The Utah examples are the most distinctive of all the forms, their hind wings decidedly paler, the forewing a very pale ashy gray and all the darker pattern markings more or less obscured or obliterated. I do not think that these varieties represent anything but color forms or that any one of them is entitled to a subspecific designation. More and wider collecting throughout the Middle and Far West will probably turn up still other color variants. The species itself, despite its variability, is easily identified by its genitalia.

279. Telethusia rhypodella (Hulst), new combination

Glyptoteles rhypodella Hulst, Ent. Amer., vol. 3, p. 137, 1887.

Nephopteryx rhypodella (Hulst), Phycitidae of N. Amer., p. 144, 1890.—Ragonot, Monograph, p. 1, p. 270, 1893.—Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.—McDunnough, Check list, No. 6165, 1939.

There are no specimens in the Rutgers Collection or elsewhere that I have seen matching Hulst's description, nor any available Oregon examples that could be referred to *rhypodella*. The alleged type at Rutgers, a female without locality label and bearing only the number 42, is a typical representative of *Phobus curvatella* (Ragonot). Unfortunately the Hulst "types" are frequently as unreliable as his type designations and this particular type is probably spurious. Hulst's descriptions, on the other hand, are usually more reliable and I

suspect that when sufficient Oregon material is available we shall find that *rhypodella* is merely one of the numerous color forms of *ovalis*.

TYPE LOCALITY: "Oregon" (type lost?).

FOOD PLANT: Unknown.

73. Phobus, new genus

TYPE OF GENUS: *Dioryctria brucei* Hulst.

Characters of *Telethusia* except: Eighth abdominal segment of male with a pair of ventrolateral hair tufts. Penis of male genitalia armed with a single cornutus; usually also a cluster of very fine, minute, slender spines at apex of aedeagus (but not on membranous penis). Transtilla represented at least by its lateral elements, sometimes the median area is recognizable but is very weakly sclerotized and the completed band not a constant character. Female genitalia with ovipositor normal (not strongly sclerotized); apophyses of ovipositor and eighth-segment collar slender; bursa copulatrix simple (smooth); membrane between collar and ovipositor smooth.

The foregoing differences seem to justify separation from *Telethusia*, with which the genus is very closely related.

280. Phobus brucei (Hulst), new combination

FIGURES 354, 844

Dioryctria brucei Hulst, Canadian Ent., vol. 27, p. 55, 1895.
Ambesa lallatalis Hulst (not Hulst), U. S. Nat. Mus. Bull. 52, p. 422, 1903.
Tacoma lallatalis Dyar (not Hulst), Proc. Ent. Soc. Washington, vol. 6, p. 227, 1904.
Nephopteryx lallatalis brucei (Hulst) McDunnough, Check list, No. 6160, 1939.

Forewing whitish more or less dusted and shaded with blackish or fuscous scales, making the general color cream white (with some pale brownish shading on paler, weakly marked examples) to ashy gray with a faint bluish gray tint (on well-marked specimens); the transverse lines irregular and more or less interrupted and not strongly contrasted; antemedial line oblique, serrate, interrupted at lower fold by a pale olivaceous-ocherous shade which extends rather broadly the length of the fold and also cuts the subterminal line; a similar but somewhat weaker shade fills the cell; outer margin of antemedial line consisting of a thin blackish line curving outwardly from costa to top of cell, a small blackish dot or dash on lower vein of cell and a similar blackish marking on vein 1b; subterminal line markedly serrate, deeply indented (almost to cell) below costa, on well-marked (darker) specimens bordered inwardly by a black line from costa at least to cell, this line frequently continued along top of cell to the black outer marking of antemedial line, forming a continuous, long, narrow hook along the median and postmedian subcostal area; below the lower fold the blackish outer border of the subterminal line is also continued back, as a black line under vein 1b to and fusing with a narrow blackish line on the outer edge of the antemedial line forming a narrow, oval marking on lower margin between the transverse lines; on dark examples a more or less conspicuous, blackish, quadrate patch inwardly bordering the antemedial line at inner margin; on pale specimens this patch pale brown, more or less obscured; discal dots obscured, rarely distinguishable; a row of small narrow black or brownish dots along termen. Hind wings subpellucid with a faint ocherous tint; the veins not appreciably darkened; a faint narrow dark shade along termen. Alar expanse, 26–29 mm.

Male genitalia with cornutus small, slender. Female genitalia with bursa very short, not much longer than ductus bursae.

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado; Utah*, Eureka (June, July), Stockton (June, July, Sept.); *Nevada*, Ormsby, and one female with only the state locality (a pseudotype of *lallatalis* Hulst); *California*, San Luis Obispo; *Washington*, Pullman (July).

All specimens of this species in the National Collection had been identified as *lallatalis* Hulst on Dyar's misidentification of the latter species. As a result Dyar referred *brucei* as a synonym of *lallatalis*. Hulst, however, was primarily to blame for the confusion; for he had identified and sent out as "types" of *lallatalis* specimens of both *brucei* and *Interjectio denticulella*. The true *brucei* resembles superficially both *lallatalis* and *denticulella* in some of its more striking details of maculation, but is easily distinguished from both by its male and female genitalia.

281. Phobus funerellus (Dyar), new combination

Salebria funerella Dyar, Ins. Insc. Menstr., vol. 13, p. 12, 1925.—McDunnough, Check list, No. 6193, 1939.

Forewing blackish to dark brownish gray more or less dusted with white on basal, median, and terminal areas; the white dusting very faint and scattered on the type series from Southern California, which have a uniform blackish gray ground color, much stronger on specimens from Washington, British Columbia, and New Mexico; transverse lines and thin blackish borders complete (not interrupted as in *brucei*), sinuate; the antemedial line oblique, sharply serrate, narrow, whitish gray, bordered outwardly by a narrow black line and inwardly by a broad, unbroken blackish or (on paler examples) dark gray-brown band, this band distinguishable and contrasted even on the darkest, most suffused examples; subterminal line serrate but not deeply indented below costa, bordered inwardly by a narrow, continuous black line, the latter not continued inwardly below costa or on vein 1b as it is on *brucei;* subterminal line bordered outwardly by a rather broad dark band; discal dots usually distinct, black, more or less confluent; a row of blackish dots along termen. Hind wing brown; the veins darkened and a narrow blackish line along termen. Alar expanse, 24.5–30 mm.

Genitalia similar to those of *brucei*.

TYPE LOCALITY: Southern California (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES; *California* (Southern California without more definite locality, the type series), Clarksville (El Dorado County, June); *Washington*, Pullman; *New Mexico*, Fort Wingate (July). CANADA: *British Columbia*, Departure Bay (Aug.), Duncans (Vancouver Isl., July), Nicola (July), Wellington (June). Also one male without state locality labeled "Larima Co. [sic], Aug., 1901, Schaus collector."

The species is distinct and easily distinguished from *brucei* on the color and pattern of forewing, especially by the broad black band extending from inner margin to costa before the antemedial line and by the shallow indentation of the subterminal line below costa.

282. Phobus curvatellus (Ragonot), new combination

FIGURES 355, 845

Nephopteryx curvatella Ragonot, N. Amer. Phycitidae, p. 7, 1887.—Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.—McDunnough, Check list, No. 6166, 1939.
Nephopteryx rhypodella Ragonot (not Hulst), Monograph, pt. 1, p. 270, 1893.

Forewing ashy bluish gray; the transverse lines complete, narrow, white, obscure except on the well-marked darker examples, indicated chiefly by the fine, black outer border of the antemedial line and similar black inner border of the subterminal line; preceding the antemedial line a quadrate blackish spot on inner margin; limited above by a weak, smaller, pale, somewhat oilvaceous shade in the lower fold, this pale shade not interrupting the antemedial line itself; indentations of subterminal line as in *funerellus;* discal dots obscure, the lower one sometimes distinct (under magnification) and frequently with a dark shade below it which forms a round dark spot, to the naked eye one of the more conspicuous markings on the wing; a row of more or less confluent black dots along termen. Hind wing translucent, whitish with a smoky shade towards apex; the veins darkened; a fine brown line along termen. Alar expanse, 26–30 mm.

Male genitalia with cornutus of the same length as that of *brucei* and *funerellus* but somewhat stouter. Genitalia otherwise like those of the species following (*incertus*). Female genitalia with bursa very long, and narrow throughout its length, but little wider than the ductus bursae.

TYPE LOCALITY: America Septentrionalis (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Loma Linda (June, July), Los Angeles County (1,060 ft., June), Monachee Meadows (Tulare County, July), Mount Lowe (July), San Gabriel Mts. (1,700 ft., July); *Arizona*, Nogales (May), Santa Rita Mts. (May); *Utah*, Bellevue (Washington County, May, June); *Colorado*, Silverton (July).

The spurious type of *Telethusia rhypodella* (Hulst) in the Rutgers Collection belongs here. It is discussed under the treatment of *rhypodella* (p. 137).

283. Phobus incertus, new species

FIGURES 356, 846

Color and markings of forewing as in *curvatellus* except duller, lacking the bluish tint of the latter species; the quadrate dark spot preceding the antemedial line also continued as a broad band to costa, though frequently interrupted by a pale shading at lower fold.

Male genitalia with cornutus appreciably stouter and longer than that of any of the other species of the genus. Bursa copulatrix of the female genitalia less than half the length of that of *curvatellus* but twice the length of that of *brucei* or *funerellus*.

TYPE LOCALITY: Strawberry Valley (6,000 ft.), San Jacinto Mts., Calif. (type in USNM, 61348).

Described from male type and five male and five female paratypes from the type locality, collected by F. Grinnell, Jr., June 16, 17, and 18, 1908.

Except for the genitalic differences this might easily be a higher altitude race of *curvatellus*, but the differences in size of cornutus and length of bursa seem to be constant characters and greater than to be expected in variants of one species.

74. Actrix, new genus

TYPE OF GENUS: *Tacoma nyssaecolella* Dyar.

Tongue well developed. Antenna weakly pubescent; on male with sinus and scale tuft in base of shaft. Labial palpus upcurved, slender, reaching above vertex; second segment somewhat flattened and very slightly rough scaled, not grooved on male; third segment about two-thirds the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle, approximately equidistant from 2 and 4 at base; 4 and 5 shortly stalked; 6 from below upper angle of cell, straight; 8 and 9 very long stalked; 10 from the cell, approximate to the stalk of 8–9 for some distance; male without costal fold. Hind wing with vein 2 from before but near lower outer angle of cell; 3 from the angle, connate or (on occasional specimens) shortly fused with the stalk of 4–5; 4 and 5 stalked for two-thirds of their lengths; 7 and 8 strongly anastomosed beyond cell for half or a trifle more than half their lengths; cell slightly less than half the length of wing; discocellular vein curved, extended outwardly at lower angle of cell. Eighth abdominal segment of male with pair of ventrolateral hair tufts.

Male genitalia with uncus broader than long, its outer lateral angles slightly lobed. Apical process of gnathos broad, shieldlike, its lateral arms greatly reduced. Transtilla absent. Harpe without clasper. Aedeagus straight, divided towards apex, the projecting divided elements strongly sclerotized; penis with some very weak scobinations, but otherwise unarmed. Vinculum short, stout, about as long as greatest width, evenly rounded to blunt terminal margin.

Female genitalia with bursa small, covered with dense slender spines on posterior half, otherwise very finely spinose, without signum; ductus bursae granulate, short, expanded into a broad, strongly sclerotized, contorted plate towards genital opening; ductus seminalis from lobe of bursa near junction of bursa and ductus bursae.

The genus is a further restriction from *Nephopteryx* of authors. Its nearest relationship seems to be *Pyla*, which it resembles in the peculiar modification of the ductus bursae of the female and the aedeagus of the male. Its venation, however, is quite distinct and, except for the strong anastomosis of veins 7 and 8 of hind wing, closer to that of *Tacoma*.

284. Actrix nyssaecolella (Dyar), new combination

FIGURES 357, 838

Tacoma nyssaecolella Dyar, Proc. Ent. Soc. Washington vol. 6, p. 112, 1904.—Forbes, Cornell Mem. 68, p. 621, 1923.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 453, 1950.

Nephopteryx nyssaecolella (Dyar) Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.—McDunnough, Check list, No. 6174, 1939.

Forewing brownish gray ("lilaceous gray") paler in basal area beyond extreme base, in the half of median area just beyond antemedial line, and to a lesser extent in outer area (beyond the subterminal line), these pale areas of an ashy hue, due to a faint peppering of white scales; antemedial line narrow, oblique and very slightly angled at middle, dull white, preceded on inner margin by a subquadrate blackish brown patch and bordered outwardly at costa by a triangulate black patch which (on most specimens) continues as a more or less interrupted black line to inner margin; subterminal line sinuate (bulged at middle) and weakly serrate, dull white, bordered inwardly by a dark shade and outwardly by a narrower dark line, these dark borders especially marked and blackish at costa; discal dots confluent, blackish; a row of more or less confluent black dots along termen. Hind wing pale smoky brown, with a glossy sheen; veins very faintly darkened; a narrow brown line along termen. Alar expanse, 15–18 mm.

Male genitalia with terminal margin of uncus concave, its lateral lobes turned laterally outward. Apical process of gnathos a convex shield, slightly longer than broad and with apical, lateral angles produced backward into bluntly pointed spines. Divided elements of aedeagus produced as short, sharply and oppositely curved hooks. Cucullus of harpe sharply curved towards its apex. Female genitalia distinguished at once by the shape of the ventral sclerotized plate of ductus bursae and the eighth-segment collar, which is complete and strongly sclerotized ventrally.

TYPE LOCALITY: Washington, D. C. (type in USNM).

FOOD PLANT: *Nyssa sylvatica* (larva a leaf-folder).

DISTRIBUTION: *Massachusetts*, Nantucket (July); *Connecticut*, East River (July, Aug.); *Rhode Island*, Weekapaugh (July); *New Jersey*, Anglesea (May, June); *Pennsylvania*, New Brighton (July, Aug.), Oak Station (Aug.); *District of Columbia*, Washington (Aug.); *North Carolina*, Southern Pines (Aug.), Tryon (Aug.).

285. Actrix dissimulatrix, new species

FIGURES 358, 837

Superficially not distinguishable from *nyssaecolella* except (on the specimens before me) a slightly stronger white dusting on median area of forewing especially over inner margin immediately following the antemedial line. This difference can hardly be expected to hold for the species.

The genitalia of both sexes are very different from those of *nyssaecolella*. Male genitalia with terminal margin of uncus evenly rounded, its lateral lobes turned inward and downward, partially encircling the anal tube. Apical process of gnathos heart shaped, without produced angles. Divided elements of aedeagus produced as long, straight, stout thornlike projections, one of which is coarsely scobinate. Female genitalia with a stout pair of strongly sclerotized, curved, lateral arms projecting forward from the ventral sclerotized plate of the ductus bursae.

TYPE LOCALITY: Cape Henry, Va. (type in USNM, 61349).

FOOD PLANT: *Nyssa sylvatica*.

Described from male type and two male and one female paratypes from the type locality, reared by A. Busck, Aug. 10, 16 and 18, 1927, from larvae feeding on the leaves of *Nyssa sylvatica*. Four larvae were preserved from the collection. Three of these are blackish brown in color and are undoubtedly *nyssaecolella*. One larva is yellow with a pale yellowish head and thoracic shield. It is probably *dissimulatrix*. No difference was noted in larval habits between the two forms.

75. Genus Stylopalpia Hampson

Stylopalpia Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 257, 1901. (Type of genus: *Stylopalpia lunigerella* Hampson.)

Tongue well developed. Antenna very shortly pubescent, shaft of male somewhat flattened and with a shallow sinus at base containing a row of short spines more or less concealed by a small, weak scale tuft. Labial palpus obliquely upturned; third segment very long (nearly twice the length of second), slender and porrect in *lunigerella*, much shorter (about half the length of second) and oblique in the other two species, in these reaching a little above vertex, acuminate in all species. Maxillary palpus minute, its scaling slightly expanded. Forewing smooth; 11 veins; vein 2 from before the lower outer angle of cell; 3 from the angle; 4 and 5 separated at base and divergent beyond, 4 but slightly nearer to 5 at base than to 3; 6 from below upper angle of cell, straight; 8 and 9 stalked for slightly more than half their lengths; 10 from the cell, well separated from the stalk of 8–9 at base but just beyond approaching it for a very short distance; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 stalked for about half their lengths; 7 and 8 approximate or contiguous for a very short distance beyond cell; cell less than half the length of wing; discocellular vein

curved, produced at lower angle, a short spur connecting it and vein 3. Eighth abdominal segment with weak compound tufts in *lunigerella*, paired ventral tufts in the other two species.

Male genitalia with uncus subtriangulate, its terminal margin more or less broadly rounded. Apical process of gnathos a simple, rather short, stout hook. Transtilla incomplete, sclerotized only in its reduced lateral elements (the central portion, as shown in the figures, distinguishable but not sclerotized). Harpe with large, strongly sclerotized, erect, scoop-shaped clasper, situated towards base, below costa; cucullus narrow, elongate, very slightly tapering to rounded apex. Anellus shield-shaped, with small lateral lobes. Aedeagus expanding to lateral, flanged projections before apex, the latter flanges, each bearing a cluster of strong spines; penis unarmed. Vinculum stout; slightly longer than broad; tapering slightly to broadly rounded terminal margin.

Female genitalia without signum. Bursa membranous with only a little fine spining at junction of bursa and ductus bursae; ductus bursae weakly sclerotized at, and just before, genital opening, the latter broad; ductus seminalis from middle of ductus bursae.

The genus was originally erected on the peculiar palps of its type species. This character, however, proves to be specific rather than generic. The two species here included do not have it; but agree with the type species on every other detail of venation, antennal structure, and genitalia. The genus can easily be maintained on its combination of male and female genitalic characters.

286. Stylopalpia lunigerella Hampson

FIGURES 30, 359, 848

Stylopalpia lunigerella Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 258, 1901.

Third segment of labial palpus very long, slender and porrect. Eighth abdominal segment of male with compound tufts.

Forewing ocherous (clay color) dusted with blackish, making the general shade dark gray, the ocherous color forming a contrasting band along costa and more or less lightening the lower median area and the base of inner margin; antemedial line indicated by a pale lunulate line between cell and inner margin and, on its upper half, by faint traces of its narrow, blackish, outer border; subterminal line very close to outer margin, slightly bulged at middle, not serrate, preceded by some black streaklets on the veins and whitish or pale ocherous streaklets between them; discal dots separated, blackish; a few of black dots along termen. On female a somewhat broader brownish shade at apex and along termen and some darkening of the outer parts of the veins. Alar expanse, 18–24 mm.

Male genitalia with clasper of harpe considerably longer than deep, serrate along lower and inner margins. Female genitalia with genital opening very broad.

TYPE LOCALITY: Jamaica (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: BAHAMAS, Nassau. PUERTO RICO: Aguirre Central (Apr., June, Aug.), Camuy (Apr.), Coamo Springs (Apr.), Ponce (Sept.), San Germán (June). CUBA: Santiago Province (June, July, Oct.). JAMAICA. MÉXICO: Colima (Jan., June, July).

The species is easily identified by its peculiar palpi, alike in both sexes.

287. Stylopalpia scobiella (Grote), new combination

FIGURE 360, 847

Nephopteryx scobiella Grote, N. Amer. Ent., vol. 1, p. 5, 1890.—Hulst, Phycitidae of N. Amer., p. 143, 1890.—Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 266, 1893.—McDunnough, Check list, No. 6161, 1939.

Lipographis decimerella Hulst, Ent. Amer., vol. 4, p. 117, 1888.

Third segment of labial palpus short, oblique. Except on a few of the grayer specimens, head and thorax distinctly ocherous.

Forewing pale gray to grayish ocherous, extreme base of wing ocherous and a similar pale ocherous shade rather broadly bordering the costa; transverse markings nearly obliterated; antemedial line indicated only by a small lunate white spot on vein 1b, preceded and followed by black dots, a similar blackish dot or streaklet at lower margin of cell (representing a median fragment of the usual black outer border of the antemedial line); subterminal line obscure, a very faint pale line weakly bordered inwardly by a darker shade; lower discal spot a blackish streaklet, upper discal dot usually absent, if present very faint; a row of fine blackish dots along termen. Hind wings whitish with a faint ocherous or smoky tint; the veins little if any darkened; a thin brownish line along termen. Alar expanse, 24–26 mm.

Male genitalia with clasper of harpe broadly oval, not serrate. Terminal margins of uncus and vinculum very broadly rounded, the vinculum not appreciably tapering. Eighth abdominal segment of male with paired ventral tufts. Female with genital opening more constricted than that of *lunigerella*.

TYPE LOCALITIES: Bosque County, Tex. (*scobiella*, in BM); Blanco County, Tex. (*decimerella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Barber (Apr.), Beeville (May), Blanco County (May), Bosque County, Burnet County (Apr., Sept., Oct.), Kerrville, Sabinal (Mar., Apr.), Sapulpa (May), San Diego (Apr.), Victoria (Apr., Sept.), Zavalla County (Apr.); *Colorado*, Glenwood Springs. Also four specimens from Texas with only the state locality. The species probably also occurs in northern México.

288. Stylopalpia argentinensis, new species

FIGURE 361

Labial palpus and eighth abdominal tufts as in *scobiella*. The head and thorax brown.

Forewing pale brown with a strong dusting of white scales faintly peppered with black in median area; basal

area brownish ocherous, shading to brown at extreme base and with a clouding of white in midbasal area; antemedial line complete, well out on wing, oblique, inwardly notched at vein 1b, white, bordered outwardly by a narrow blackish line; subterminal line also complete, further back from termen than in the two preceding species, oblique (parallel to termen), whitish ocherous with a narrow blackish inner border; discal dots distinct, separated, black. Hind wing dark brown; the fringe whitish ocherous with a dark median band. Alar expanse, 24 mm.

Male genitalia similar to those of *scobiella* except: Uncus narrower and tapering to more narrowly rounded terminal margin; vinculum longer in proportion to its width; spines on aedeagus fewer and coarser.

TYPE LOCALITY: "Villa Anna, F. S. C. Fe., Argentina" (type in BM).

FOOD PLANT: Unknown.

Described from unique male, collected by K. J. Hayward, Dec. 1925.

76. Genus Pyla Grote

Pyla Grote, New check list of North American moths, p. 55, 1882.—Ragonot, N. Amer. Phycitidae, p. 9, 1887; Monograph, pt. 1, p. 481, 1893.—Hulst, Phycitidae of N. Amer., p. 161, 1890. (Type of genus: *Nephopteryx scintillans* Grote.)

Tongue well developed. Antenna finely pubescent; on male with sinus and scale tuft in base of shaft. Labial palpus oblique; second segment broadly scaled, somewhat flattened laterally, reaching above vertex; on male with a slight groove to hold the maxillary palpus; third segment short, less than one-third the length of second, porrect. Maxillary palpus of male in the form of an aigrette, semiaigrette (i. e., the scales hairlike but short), or more or less squamous. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle, slightly nearer to 4 at base than to 2; 4 and 5 slightly separated at base, parallel for a short distance beyond cell; 6 from below upper angle of cell straight; 8 and 9 stalked from one-half to a third of their lengths; 10 from the cell, slightly separated at base from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before but rather near lower outer angle of cell; 3 from the angle, connate with 4; 4 and 5 stalked or anastomosed for half or slightly less than half of their lengths; 7 and 8 contiguous or very weakly anastomosed for a short distance beyond cell; cell less than half the length of wing; discocellular vein curved, outwardly produced at lower angle and connected with vein 3 by a short spur. Eighth abdominal segment of male with a pair of ventrolateral hair tufts (fig. 372b), or two or three pairs containing some modified scales (fig. 367c).

Male genitalia with uncus broad, more or less triangulate. Apical process of gnathos a short, stout hook. Transtilla absent. Harpe usually with base of costa produced into a strong projecting hook, or spine, or spined lobe; frequently a strong hooked or spined clasper from median basal area; sacculus simple; costa strongly sclerotized but sclerotization rather abruptly terminated before apex of harpe. Aedeagus usually partially divided (bifurcate) or armed with projecting spine or spines, rarely simple; penis unarmed (except for a very weak cornutus in *fusca*). Vinculum stout, slightly tapered to truncate or more or less broadly rounded terminal margin.

Female genitalia without signum; bursa copulatrix usually simple, sometimes with strongly sclerotized, convolute, longitudinal bands near junction of bursa and ductus bursae and extending a short distance into the ductus; ductus bursae short, widening to broad genital opening, usually strongly and elaborately sclerotized towards genital opening; genital opening rarely simple (*fasciolalis*, *viridisuffusella*); ductus seminalis from bursa near junction of bursa and ductus bursae.

The genus as here defined includes what superficially appears to be two distinct entities, one group of species with gray forewings and another with shiny brown wings, the latter the typical *Pyla* of authors. For convenience of identification I am designating them as species groups. The division is not supported by any consistent structural character or combination of characters. The differences exhibited by the several species in male and female genitalia, male maxillary palpi, and male abdominal tufts are striking, but apparently only of specific significance.

Nothing is known of the food habits or early stages of any of the species except *fusca*, which is recorded from *Erica* in the Old World. I suspect that the *Ericaceae* will prove to be the chief hosts of the genus.

Genus *Pyla*, Species 289–297: *P. fasciolalis* to *P. hanhamella*

[Ground color of forewing gray.]

289. Pyla fasciolalis (Hulst), new combination

FIGURES 362, 363, 849

Pinipestis fasciolalis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 162, 1886.

Nephopteryx fasciolalis (Hulst) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 271, 1893 (?).—Hulst, Phycitidae of N. Amer., p. 144, 1890.—McDunnough, Check list, No. 6167, 1890.

Maxillary palpus of male squamous.

Forewing gray finely powdered with white, giving the wing an ashy gray appearance; antemedial line distinct throughout, whitish, oblique, notched at top of cell and on lower fold, bordered outwardly by a black line beginning as a black smudge on costa, inwardly by a moderately broad black line extending from inner margin to cell; subterminal line well marked, bulged at middle and more or less dentate, bordered inwardly by a blackish band and outwardly by a somewhat broader, fainter dark band, these dark borders strongest near costa; discal dots distinct, small, normally separated, occasionally partially coalesced; a row of small black dots along termen. Hind wing smoky white with a pale brownish tint; veins very faintly darkened; a narrow dark shade along termen. Alar expanse, 27–30 mm.

Male genitalia with harpe simple; clasper vestigial. Aedeagus deeply divided; one of the divided elements slightly forked at apex. Female genitalia with strongly sclerotized, convulute bands in bursa; genital opening simple.

TYPE LOCALITY: British Columbia (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *British Columbia*, Goldstream (Aug.), Necola (July), Saunichton (July).

The only specimen in the Rutgers Collection is a large male (30 mm.) from British Columbia labeled *"Dioryctria fasciolalis* Hulst, Type." I think we may safely assume this to be the actual type although in his original description Hulst gives "Nevada" as the type locality, probably one of his characteristic lapses. A perfect match for the type in color, markings, and genitalia, is found in a specimen from Necola, in the Canadian National Collection. The other records cited above (Goldstream and Saanichton) are from specimens in the U. S. National Collection.

Also before me are four examples of what I take to be a variety of *fasciolalis*—two males from Gunnison County, Colo. (July), and 2 females from Wallace, Idaho (Aug.). Their blackish markings on forewing are a trifle stronger, the vinculum of male genitalia (fig. 363) is somewhat shorter than in typical *fasciolalis*. The convolute bands in the bursa of the female are also a trifle longer. I doubt very much if these differences ndicate anything more than a possible local race.

290. Pyla impostor, new species

FIGURES 364, 850

Maxillary palpus of male in the form of an aigrette.

Forewing color and markings similar to those of *fasciolalis* except: Somewhat duller and darker; white dusting sparser; the transverse pale lines fainter, in some specimens much obscured; their blackish borders less strongly contrasted against the ground color of the wing. Hind wing pale smoky fuscous, the brownish tint of *fasciolalis* very faint or altogether lacking. Alar expanse, 23–30 mm.

Male genitalia with a long, slender, somewhat flattened, outwardly curved clasper on harpe; base of costa not modified. Aedeagus divided for about half its length, moderately slender, the divided elements rigid, pointed and unforked at their apices. Female with convolute, sclerotized folds extending from bursa shortly into ductus bursae; ductus bursae itself partially sclerotized, the sclerotization forming broad ventrolateral bands extending from just beyond the convolute folds of the bursa to genital opening.

TYPE LOCALITY: Slate Peak, Whatcom County, Wash. (6,000–7,000 ft.; type in USNM, 61350; paratypes in USNM and Canadian Nat. Coll.).

FOOD PLANT: Unknown.

Described from male type and one female paratype from the type locality, collected by J. F. G. Clarke, Aug. 2, 1940; and paratypes from the following localities: Bogachiel Peak, Olympic Mts., Wash., Aug. 9, 1936, Dr. A. F. Braun (♀); Chimney Gulch, Golden, Colo., Oslar (♂); Colorado with only the state locality (a pseudotype, ♂, of *fascialis* Hulst, from the Fernald Collection); Big Belt Mts., Mont., July 18, 1928, J. McDunnough (♂); upper Gallatin Canyon, Mont., 7,000 ft., July 4, 1928, J. McDunnough (♂); Banff, Alberta, July 20, 1925, Owen Bryant, (♂); Lethbridge, Alberta, July 3, 1922, H. L. Seamans (♂); Moraine Lake, Alberta, July 3, 4, 7, 1923, J. McDunnough (4 ♂ and 2 ♀); Waterton Lakes, Alberta, July 23, 28, 1923, J. McDunnough (♂ and ♀); Hope Mts., British Columbia, July 22, 1932, A. N. Gartrell (♂); Mount Revelstoke, British Columbia, 6,000 ft., July 12, 1923, E. E. Buckell (♂).

Most of the foregoing were in our collections as *fasciolalis* on the basis of the false Hulst type in the National Museum. It is superficially like *fasciolalis*, but a distinct mountain-top species easily identified by its genitalia.

291. Pyla aequivoca, new species

FIGURES 366, 855

Maxillary palpus of male in the form of an aigrette.

Superficially like *impostor;* the ground color of the male forewing a trifle more brownish gray, and the dark outer border of antemedial line somewhat broader and diffused into the ground color at costa, differences that could not be expected to hold in any extended series. Distinguished by its genitalia. Alar expanse, 26–29 mm.

Male genitalia with clasper arising from midbasal area of harpe as in *impostor*, but much shorter and angulate. Anellus U-shaped, its lateral arms long and slender. Aedeagus much shorter and somewhat stouter; its divided elements broader, decidedly flattened, terminating in sharp spines and more or less laterally spined towards apices. Eighth abdominal segment of male with two pairs of hair tufts.

TYPE LOCALITY: Banff, Alberta, Canada (type in Canadian Nat. Coll., paratype in USNM, 61351).

FOOD PLANT: Unknown.

Described from male type and three male paratypes from the type locality, collected by C. B. D. Garrett, June 21 and 30 and July 6, 1922; and one male paratype from Hymers, Ontario June 8, 1915. In addition to the type series I have before me a female from the Canadian National Collection collected at Aweme, Manitoba, Aug. 26, 1921, by Norman Criddle. Its genitalia differ markedly from those of *impostor*. The membrane of bursa is thickened near junction with ductus bursae but lacks the sclerotizations of *impostor;* the ventrolateral bands of the ductus bursae are differently shaped and fuse into the ventrolateral sclerotizations of the intersegmental area before the eighth-segment collar. While I have little doubt that this female is conspecific with the males, I am not designating it as a paratype.

292. Pyla insinuatrix, new species

FIGURES 365, 856

Maxillary palpus of male in the form of an aigrette.

Forewing paler than in the preceding species, due to stronger white dusting, giving the paler areas a faint bluish tint; transverse lines and dark markings more strongly contrasted; the white antemedial line especially well marked on its lower half, its inner black border below cell expanded into a moderately wider blackish band or patch; blackish inner and outer borders of subterminal line well marked, especially the former; discal dots conspicuous, tending to coalesce. Hind wing subpellucid smoky white, darkening towards apex and termen; the veins very faintly darkened and a narrow dark line along termen. Alar expanse, 24–26 mm.

Male genitalia with uncus hoodlike, constricted towards base. Harpe with a strong, outwardly produced, spined, knob from base of costa; no appreciable clasper. Aedeagus slender, with a very slight bifurcation at apex; the bifurcate projections straight. Two pairs of ventrolateral tufts on eighth abdominal segment; some of the hairs broadly expanded at their apices (as in *aenigmatica*, fig. 367c).

Female genitalia with bursa copulatrix membranous except for a very faint sclerotization of the lobe giving off the ductus seminalis; ductus bursae flattened, weakly sclerotized, expanding at genital opening into sclerotized, scobinate ventrolateral lobes.

TYPE LOCALITY: Aweme, Manitoba, Canada (type in Canadian Nat. Coll.; paratypes in USNM, 61352).

FOOD PLANT: Unknown.

Described from male type and four male and two female paratypes from the type locality, collected by Norman Criddle July 13 and Aug. 10, 1925; Aug. 10, 1921; Aug. 10, 1925; Aug. 19, 1915).

293. Pyla aenigmatica, new species

FIGURES 367, 853

Maxillary palpus of male in the form of a semiaigrette (the hairs short).

Forewing as on *insinuatrix* except darker, the ground color like that of *impostor;* the transverse lines distinct; lower half of antemedial line bordered inwardly by a subquadrate blackish patch, costal half of the outer dark border rather broad and well contrasted, blackish; the dark borders of subterminal line well contrasted towards costa; discal dots confluent; dots along termen minute, weak. Alar expanse, 25–28 mm.

Male genitalia with tegumen having two, strongly spined, protruding lobes on each ventrolateral margin. Harpe with base of costa enlarged and coarsely scobinate; clasper small, semicircular, erect. Aedeagus slender; shortly bifurcate; bifurcate elements at apex spinelike, bent sharply at right angles to the aedeagus. Anellus a semitubular shield with rather long, strongly sclerotized lateral arms. Eighth abdominal segment with two pairs of ventrolateral hair tufts; one pair with the hairs expanded at their apices (forming knoblike clusters).

Female genitalia with bursa membranous. Ductus bursae short, strongly sclerotized along lateral margins, the sclerotizations expanding laterally and at right angles at genital opening into a pair of convolute, finely scobinate lobes.

TYPE LOCALITY: Wellington, British Columbia (type in USNM, 61353; paratype in Canadian Nat. Coll.).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality, "21–VI–04," G. W. Taylor, and paratypes from the following localities: Goldstream, British Columbia, "30–VIII–20" (♀); Salmon Arm, British Columbia, "22–6–20, W. R. B." (♂); Pine Grove, Colo., July 8, 1901, H. G. Dyar, "17310" (♂); East River, Conn., Aug. 21 and Sept. 3, 1908, C. R. Ely (♂ and ♀); Oak Station, Pa., Aug. 20, 1911, Fred Marloff (♂); Watchung Mts., N. J., "6–4–99," W. D. Kearfott (♂).

The hind wings are a trifle darker on the eastern examples, which were, in our collection, identified as *fusca*.

The species is evidently closely related to *insinuatrix*, but is distinct and easily distinguished by its genitalia.

294. Pyla criddlella Dyar

FIGURE 368

Pyla criddlella Dyar, Journ. New York Ent. Soc., vol. 15, p. 110, 1907.—McDunnough, Check list, No. 6241.

Maxillary palpus of male squamous.

Forewing blackish gray, semilustrous, unicolorous except for a slight darkening of the ground color bordering the transverse lines; the latter very faint, but slightly lighter than the ground color; discal and terminal dots obscured. Hind wing brownish gray. Alar expanse, 18 mm.

Male genitalia with harpe simple except for a greatly reduced, upcurving, triangulate clasper. Aedeagus deeply bifurcate; the right divided element (in ventral view) produced into a sharp abruptly curved hook. A single pair of ventrolateral hair tufts on eighth abdominal segment.

TYPE LOCALITY: Aweme, Manitoba, Canada (June; type in USNM).

FOOD PLANT: Unknown.

Known only from the male type.

295. Pyla fusca (Haworth), new combination

FIGURES 369, 852

Phycis fusca Haworth, Lepidoptera Brittanica, pt. 3, p. 493, 1828.
Phycita fusca (Haworth) Stephens, Illustrations of British entomology, Haustellata, vol. 4, p. 310, 1834.
Pempelia fusca (Haworth) Stainton, Manual of British butterflies and moths, vol. 2, p. 176, 1859.—Packard, Ann. Lyc. Nat. Hist. New York, vol. 10, p. 271, 1873.
Nephopteryx moestella Walker, List, vol. 27, p. 53, 1863.
Eudorea (?) *frigidella* Packard, Proc. Boston Soc. Nat. Hist., vol. 11, p. 53, 1866.
Salebria fusca (Haworth) Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 156, 1865.—Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 695, 1878; North Amer. Ent., vol. 1, p. 11, 1879.—

Staudinger and Rebel, Catalog der Lepidopteren des palaearctischen Faunengebietes, vol. 2, p. 34, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 211, 1910.—Meyrick, Revised handbook of British Lepidoptera, p. 380, 1928.—Ford, Guide to the smaller British Lepidoptera, p. 10, 1949.

Pinipestis cacabella Hulst, Ent. Amer., vol. 3, p. 133, 1887.

Laodamia fusca (Haworth) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 408, 1893.—Hulst, Phycitidae of N. Amer., p. 156, 1890; U. S. Nat. Mus. Bull. 52, p. 425, 1902.—Forbes, Cornell Mem. 68, p. 628, 1923.—McDunnough, Check list, No. 6227, 1939.

Salebria triplagiatella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 109, 1904.—Barnes and McDunnough, Contributions, vol. 3, p. 196, 1916.

Dioryctria fusca (Haworth) Pierce and Metcalfe, The genitalia of the British Pyrales, p. 3, pl. 2, 1938.

Maxillary palpus of male in the form of an aigrette.

Forewing blackish gray, generally of a duskier hue than that of any of the preceding species; transverse lines usually faint and a dull whitish gray, rarely contrasted against the ground color and when so, chiefly the lower half of antemedial line; the latter bordered outwardly at costa and inwardly at inner margin by blackish patches more or less contrasted against the ground color of the wing; a similar dark shade inwardly bordering the subterminal line; discal and terminal dots tending to coalesce, black. Hind wing dusky white between the veins; the latter appreciably darkened; a smoky shade along termen. Alar expanse, 25–30 mm.

Male genitalia with harpe simple except for a thin, saucer-shaped, erect clasper with a toothlike projection from its upper inner angle. Aedeagus slender with its anterior end abruptly expanded and anterior margin straight (as in *hypochalciella*); one side produced into an extended, strongly sclerotized arm, sharply bent and pointed at apex (as in *criddlella*)[5]; penis armed with a single, moderately long, hairlike cornutus. Three pairs of ventrolateral hair tufts on eighth abdominal segment of male, some of the hairs broadly expanded at their apices.

Female genitalia with bursa membranous; ductus bursae sclerotized for most of its length, the sclerotizations extending for a short distance into the bursa; genital opening simple except for some weak granulations on and behind the ductus bursae.

TYPE LOCALITIES: England (*fusca*, in BM); eastern Canada (*moestella*, in BM); Caribou Is., Labrador (*frigidella*, in MCZ); "New York"[6] (*cacabella*, in AMNH, ex Rutgers); Winnipeg, Manitoba (*triplagiatella*, in USNM).

FOOD PLANTS: *Erica* and probably some other *Ericaceae*. The only authentic Old World record is *Erica* (Meyrick 1938, Ford 1949). Ragonot (Monograph, p. 408) records *Vaccinium myrtellus* and *Salix caprea* as probabilities; but these plants only on the basis of food accepted in the laboratory by larvae hatched from eggs from gravid females by Porritt (Ent. Monthly Mag., vol. 19, p. 11, 1882). A female in the U. S. National Museum from Ottawa, Canada, was reared by James Fletcher (Aug. 1889) from a "black larva" found on *Betula*. I suspect, however, that the larva had migrated to that plant. We have no other New World rearing records.

DISTRIBUTION: Holarctic. In the Old World from Great Britain to Japan. The American records from specimens are: UNITED STATES: *Maine*, Orono; *New Hampshire*, Hampton (June), Mount Washington (July); *Massachusetts*, Framingham (July), Martha's Vineyard (Aug.); *New York*, Rochester (June), Waterville (Aug.); *Colorado*, Glenwood Springs (Aug.); *Washington*, Pullman. CANADA: *Newfoundland*, Port aux Basque (Aug.), St. George Bay (Harry's River and Stephenville, Aug.), Spruce Brook (Aug.); *Labrador*, Caribou Isl., Hopedale, Nain; *Nova Scotia*, Baddeck (Cape Breton Isl., Aug.); *Quebec*, Chelesea (May); *Ontario*, Albany River (St. Martin's Falls), Hymers (Aug.), Ottawa (June, Aug.); *Manitoba*, Aweme (June, July, Aug.), Winnipeg; *Alberta*, Banff (July), Calgary (Aug.), Edmonton (May); *British Columbia*, Fraser Mills (June), Kaslo (July, Aug.), Shawnigan Lake (Aug.), Victoria (July). ALASKA: Cordova, Fort Yukon, Juneau (July), Rampart (July).

The species can be readily distinguished by its aedeagus, threadlike cornutus, and the peculiar sclerotization of its ductus bursae. On habitus and all its structural characters it is closely related to the gray-winged species of *Pyla*. Superficially it could easily be confused with *impostor*, *equivoca*, or *aenigmatica*. It is not congeneric with *faecella* (Zeller), the type of *Laodamia*, to which genus Ragonot referred it. The latter differs markedly in male and female genitalia (figs. 427 and 885), and on venation falls into our venational group D. Both *Pyla* and *Laodamia* have the cell of hind wing short; but in *Laodamia* vein 3 is appreciably longer in relation to vein 2 (fig. 52).

Packard's *frigidella* was retained by Ragonot as a separable variety from *fusca*, but it is at most only one of its color variants and is not entitled to any trinomial designation as a race.

Several Old World references and synonyms have been omitted from the above synonymy. I do not question them, but have not been able to verify them. Anyone interested will find the names and references in Hulst (Phycitidae of N. Amer., 1890) and Ragonot (Monograph, 1893).

296. Pyla hypochalciella (Ragonot), new combination

FIGURES 370, 854

Nephopteryx ovalis hypochalciella Ragonot, N. Amer. Phycitidae, p. 7, 1887.—Hulst, Phycitidae of N. Amer., p. 144, 1890.

Nephopteryx hypochalciella Ragonot, Monograph, pt. 1, p. 272, 1893.—McDunnough, Check list, No. 6168, 1939.

Pyla blackmorella Dyar, Ins. Insc. Menstr., vol. 9, p. 68, 1921.—McDunnough, Check list, No. 6248, 1939. (New synonymy.)

Maxillary palpus of male in the form of an aigrette.

Forewing very dark gray-brown, the dark areas of some of the darkest specimens almost black; a very faint

[5] This extension of aedeagus was misidentified by Pierce and Metcalfe (1938) as a cornutus. They overlooked the true cornutus attached to the vesica.

[6] So given in Hulst's original description. The male type, however, bears no locality label.

powdering of white on costal half of median area and, narrowly, along terminal margin; the transverse lines powdery, grayish white, obscure on some specimens; antemedial line oblique, expanded slightly towards costa, without distinct inner dark border and with but faint indication of a blackish brown outer bordering shade towards costa; subterminal line more or less obscured, on well-marked examples preceded by a thin blackish line and followed by a broad band of the darkest prevailing ground color; discal dots black, well separated; a row of small black dots along termen, tending to fuse and on a few specimens forming a fine black line. Hind wing a uniform very dark satiny brown; the cilia paler, shading from pale brown to white at their tips. Alar expanse, 22–26 mm.

Male genitalia having harpe with an erect clasper armed along its outer margin with a row of stout spines (in the figure this looks like an enlargement of the base of costa, but it arises below costa and the base of the costa itself is simple). Anellus bearing two pairs of comblike, heavy spines, one pair ventral, one dorsal, the latter situated behind the former. Aedeagus slender; its anterior end abruptly expanded and the anterior margin straight; apical fourth bifid, the divided elements terminating in laterally curved horns. A single pair of simple hair tufts on eighth abdominal segment of male.

Female genitalia with bursa membranous; ductus bursae partially flattened, sclerotized throughout, the sclerotization expanding abruptly into a wide funnel at genital opening.

TYPE LOCALITIES: "Washington Territory" (*hypochalciella*, in Paris Mus.); Mount Tzouhalem, southern Vancouver Isl., British Columbia (*blackmorella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Washington*, Friday Harbor (June, July). CANADA: *British Columbia* (southern Vancouver Isl.), Cowichan District (June), Duncans (June), Mount Malahat (June), Mount Tzouhalem (June).

The species is easily identified by its peculiarly armed anellus. In ground color of forewing it and the species following (*hanhamella*) are intermediate between typical gray- and brown-winged members of the two *Pyla* species groups. However, except for a very faint trace of it in *hanhamella*, they both lack the bronzy luster on forewing so characteristic of the typical brown group.

297. Pyla hanhamella Dyar

FIGURES 371, 860

Pyla hanhamella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 109, 1904.—McDunnough, Check list, No. 6239, 1939.

Maxillary palpus of male subsquamous (a short brush of hairs mixed with flattened scales).

Forewing color and markings as in *hypochalciella* except for traces of a metallic sheen at base. Hind wing pale brown; cilia white with a fine dark subbasal line. Alar expanse, 20–24 mm.

Male genitalia having clasper of harpe a moderately long, erect spike; costa at base simple (not produced). Aedeagus slightly bent towards middle; shortly bifid at apex, the divided elements coarsely scobinate. A single pair of simple hair tufts on eighth abdominal segment.

Female genitalia with the lobe of bursa giving off the ductus seminalis partially sclerotized, otherwise membranous; ductus bursae flattened, sclerotized throughout, concavely bent at middle, the sclerotization terminating in a sinuate, thickened, narrow, liplike band along the lower margin of the genital opening.

TYPE LOCALITY: Winnipeg, Manitoba (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Manitoba*, Aweme (June, July), Winnipeg (June).

Genus *Pyla*, Species 298–306: *P. scintillans* to *P. viridisuffusella*

[Ground color of forewing bronzy brown.]

298. Pyla scintillans (Grote)

FIGURES 29, 372, 373, 857

Nephopteryx scintillans Grote, Papilio, vol. 1, p. 18, 1881.
Pyla scintillans (Grote), New check list of North American moths, p. 55, 1882.—Hulst, Phycitidae of N. Amer., p. 161, 1890.—Ragonot, Monograph, pt. 1, p. 482, 1893.—McDunnough, Check list, No. 6235, 1939.
Pyla feella Dyar, Ins. Insc. Menstr., vol. 9, p. 68, 1921.—McDunnough, Check list, No. 6247, 1939. (New synonymy.)

Maxillary palpus of male subsquamous (the scales short, flattened, forming a small expanded brush).

Forewing dark bronzy brown; the scaling shiny, metallic; transverse lines absent, indicated only on well marked specimens by very faint, moderately broad, blackish brown bands (vestiges of their dark borders); discal and terminal dots obsolete. Alar expanse, 20–26 mm.

Male genitalia having harpe with strong clasper, developed as a stout outwardly curved hook with an extended, elongate, bladelike base, the latter more or less serrate. Considerable individual variation is shown in the clasper and the shape of its base. In one example, from Inyo County (presumably a variety of *scintillans* but possibly a distinct species), the clasper hook is markedly longer than in the examples figured, and the bladelike base narrower. Costa of harpe produced at base into a pointed, stout, very coarsely spined projection. Aedeagus bifid for less than half its length; one of the divided elements with a short, thornlike spine projecting from lateral margin before apex; the other with 2 or 3 similar spines from lateral margin near apex (usually 3, rarely 2, a single specimen from El Dorado County, exhibiting only one). A single pair of ventrolateral abdominal hair tufts on eighth segment.

Female genitalia with bursa small, membranous throughout; ductus bursae very short, expanded abruptly into a sclerotized cup, its lower surface developed as a pair of flattened, pointed, elongate-oval blades which project beyond genital opening. Only trifling individual

differences can be distinguished between Dyar's *feella* and females from other California localities.

TYPE LOCALITIES: Summit, Sierra Nevada Mts., Calif. (*scintillans*, in BM); Bullfrog Lake (10,634 ft.), Sierra Nevada Mts., Calif. (*feella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Cisco (Placer County, July), Deer Park Springs (Lake Tahoe, July), El Dorado County (July), Inyo County (July), Mineral-king (Tulare County, July, Aug.), Sierra Nevada Mts. (Bullfrog Lake and Summit, Aug.), Tuolumne Meadows (July).

299. Pyla sylphiella Dyar

FIGURES 375, 858

Pyla sylphiella Dyar, Ins. Insc. Menstr., vol. 9, p. 68, 1921.—McDunnough, Check list, No. 6246, 1939.

Maxillary palpus of male subsquamous.

Superficially like *scintillans*, averaging a trifle darker; but distinguished only by its genitalia. Alar expanse, 19–25 mm.

Male genitalia with clasper of harpe similar to that of *scintillans*; produced enlargement of base of costa considerably stouter and more coarsely spined. Aedeagus with only a pair of lateral spines from adedeagus near its apex (one spine from each of the divided elements opposite and pointed away from each other). These differences are slight but appear to be consistent through long series. Female genitalia with ventral surface of the cup-shaped portion of ductus bursae bent into broad, deep, strongly sclerotized folds.

TYPE LOCALITY: Mount Rainier, Wash. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Washington*, Mount Rainier (Aug.), Paradise Valley (Mount Rainier, Aug.), Sheep Lake (Yakima County, Aug.), Skyline Ridge (Mount Baker District, Aug.), Slate Peak (Whatcom County, Aug.). CANADA: *British Columbia*, Mount Cheam (Aug.), Mount McLean (Aug.).

The species is very close to *scintillans* but apparently distinct. The male genitalia differ only in minor details and the color and maculation offer little if anything to separate the two; but the female genitalia are markedly different and, from the specimens available, *sylphiella* appears to have a more northerly distribution.

300. Pyla rainierella Dyar

FIGURES 374, 859

Pyla rainierella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 109, 1904.—McDunnough, Check list, No. 6243, 1939.

Maxillary palpus of male subsquamous.

Moths averaging a trifle smaller than the preceding species (*sylphiella*), but certainly distinguished from it only by genitalia. Alar expanse, 16–20 mm.

Male genitalia with production from base of costa of harpe considerably smaller and less coarsely spined than that of either *sylphiella* or *scintillans*. Aedeagus short, the apices of its divided elements bent abruptly downward as sharp, parallel, spinelike hooks. Female genitalia with the sclerotized portion of the cup-shaped area of ductus bursae developed laterally as triangulate plates.

TYPE LOCALITY: Mount Rainier, Wash. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Washington*, Mount Rainier (Aug.), Paradise Valley (Mount Rainier, July), Sheep Lake (Yakima County, Aug.), Slate Peak (Whatcom County, Aug.), Table Mountain (Aug.).

Like *sylphiella*, this species is chiefly distinguished by its female genitalia, the sclerotized area of ductus bursae at genital opening resembles somewhat that of *fasciella* but differs in shape and is like that of no other species in the genus. The aedeagus easily separates the male of *fasciella* from either *scintillans* or *sylphiella*.

301. Pyla aeneella Hulst

FIGURES 376, 864

Pyla aeneella Hulst, Canadian Ent., vol. 27, p. 55, 1895.—McDunnough, Check list, No. 6242, 1939.

Maxillary palpus of male in the form of a semiaigrette (the hairs short).

Forewing unicolorous, without any trace of dark transverse shadings or discal spots; brown with a bronzy green irridescence. Hind wing concolorous with forewing. Alar expanse 23–25 mm.

Male genitalia with costa of harpe at base produced into a thin, rounded lobe with finely serrate edge; clasper erect, short, stout, thornlike. Aedeagus short, broadest at middle, divided to middle; the divided elements rather broadly flattened and abruptly, asymmetrically bent at their apices. Female genitalia with ductus bursae broadly cup-shaped from shortly beyond its junction with bursa; the ventral surface weakly sclerotized, granulate, and with slight infoldings on the lower median area.

TYPE LOCALITY: Colorado (in AMNH, ex Rutgers).

DISTRIBUTION: *Colorado; Utah*, Silver Falls (July), Stockton (May, June).

A good series of the Utah specimens is in the National Collection. The genitalia of the females agree in every detail with those of the Colorado type in the Rutgers Collection. The metallic iridescence of the forewings is conspicuous but its greenish tint is very faint.

302. Pyla aeneoviridella Ragonot

FIGURES 378, 862

Pyla aeneoviridella Ragonot, N. Amer. Phycitidae, p. 9, 1887; Monograph, pt. 1, p. 482, 1893.—Hulst, Phycitidae of N. Amer., p. 161, 1890.—Barnes and McDunnough, Contributions, vol. 2, p. 222, 1914.—McDunnough, Check list, No. 6237, 1939.

Maxillary palpus in the form of a semiaigrette (the scales somewhat flattened, not so decidedly hairlike as in *aeneella*).

Forewing unicolorous bronzy brown, without dark markings of any kind; the iridescent scaling with a faint greenish tint and somewhat more strongly concentrated at the base of the wing than in the median

and outer areas. The color of both the fore and hind wings is similar to that of *aeneella* and the two species can only be safely distinguished by their genitalia. Alar expanse, 23–29 mm.

Male genitalia with an angulate, serrate and coarsely spined projection from costal base of harpe; clasper outbent, strongly spined and more or less serrate. Aedeagus short, slightly bent at middle and with a single stout, stubby spine projecting from one side (extent of individual variation shown in figs. 378a, b). Female genitalia with a weak sclerotization of the lobe of bursa giving off the ductus seminalis; ductus bursae with ventral surface of cup-shaped area more strongly sclerotized than that of *aeneella* and differently sculptured.

TYPE LOCALITY: Evanston, Wyo. (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado*, Tennessee Pass (July); *Wyoming*, Big Horn Mts. (July), Evanston, Yellowstone Park (July, Aug.); *Montana*, Bozeman (July), Glacier Park (June); *Oregon*, Wallowa Mts. (Arnold Lake, July); *Washington*, Olympic Mts. (Hurricane Ridge, June, July). CANADA: *Alberta*, Laggan (July).

The Washington and Oregon specimens are considerably darker than those from the other localities, the specimens from Oregon having almost black hind wings and blackish brown forewings.

In his original description and in his Monograph Ragonot gives "N. Y." as the type locality. This was a misreading of the label of his type. The correction was made by Barnes and McDunnough in the reference cited above.

303. Pyla metalicella Hulst

FIGURES 377, 863

Pyla metalicella Hulst, Canadian Ent., vol. 27, p. 54, 1895.—McDunnough, Check list, No. 6236, 1939.

Maxillary palpus of male in the form of a semiaigrette (the hairs rather short).

Appreciably lighter than *aeneoviridella*. The forewing a unicolorous light bronzy brown with greenish yellow iridescence; discal dots more or less distinct, separated, blackish; no other markings. Average size larger than that of *aeneoviridella*. Alar expanse, 25–32 mm.

Male genitalia with a long, somewhat flattened, outwardly curved clasper on harpe (similar to that of *impostor*, but proportionally longer); costa of harpe at base simple. Aedeagus very shortly divided at apex; a pair of very short, sharp, straight spines on ventral surface near apex.

Female genitalia with lobe of bursa giving off ductus seminalis weakly sclerotized; cuplike area of ductus bursae, funnel shaped (triangulate), strongly sclerotized over its entire ventral surface and containing a broad, centrally located, funnel-shaped fold. Individual variations in this fold are shown in figs. 863 and 863a.

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado*, Silverton (July, Aug.), and two specimens with only the state locality; *Utah*, Silver Lake (July). The Silverton locality is represented in the National Collection by 17 specimens. Also in the National Collection is a female from Colorado (Bruce), labeled "*Pyla aeneella* Hulst, Type," another of Hulst's pseudotypes and possibly part of his original "type" series of *aeneella*. The actual type of *metalicella* is a male with only the state locality. Its genitalia agree in every detail with those from Silverton specimens.

304. Pyla fasciella Barnes and McDunnough

FIGURES 379, 861

Pyla fasciella Barnes and McDunnough, Canadian Ent., vol. 49, p. 405, 1917.—McDunnough, Check list, No. 6244, 1939.

Maxillary palpus of male minute, squamous.

Forewing blue-black, some paler bluish iridescence over basal area and (in strong light) a faint, brownish iridescence in outer area; antemedial line represented by a narrow oblique black band near, but before middle; subterminal line a similar curved band well back from and parallel with termen; the area between the two black bands darker than remainder of wing, forming a faint, broad, median, black fascia; discal dots obsolete. Hind wings very dark brown, shiny. Alar expanse, 21–24 mm.

Male genitalia without clasper on harpe; base of costa of harpe produced into a knoblike projection, finely spinose along margin. Aedeagus simple. A single pair of ventrolateral hair tufts on eighth segment. Female genitalia similar to those of *rainierella* except that the paired plates of ductus bursae at genital opening are narrower and differently shaped.

TYPE LOCALITY: Mount Shasta, Calif. (type in USNM).

FOOD PLANT: Unknown.

Known only from northern California. Represented in the National Collection by the type series from Mount Shasta, 7,000 ft., July—three males and two females (not four males and two females as given in the original description); and one male from Bartle, Calif. (June 14, 1939, Grace H. and John L. Sperry). In their original description the authors give the expanse as "24–31 mm." This is probably a printer's error, for the largest specimen before me is a scant 24 mm.

305. Pyla nigricula, new species

FIGURE 380

Maxillary palpus of male minute, squamous.

Superficially like *fasciella* except: Transverse dark lines of forewing obsolete, only the antemedial black band very faintly indicated; no contrasted dark median fascia; the entire median and outer areas a dark purplish brown. Alar expanse, 26 mm.

Male genitalia with uncus broader and squattier than that of *fasciella*. Projection from costal base of harpe differently shaped, bluntly pointed; clasper developed as a stout, smooth, curved, pointed hook. Aedeagus simple.

TYPE LOCALITY: Verdi, Nev. (type in USNM, 61354).

FOOD PLANT: Unknown.

Described from unique male collected by A. H. Vachell, "June 1 to 10." This specimen had been in our collection under *scintillans* Grote.

306. Pyla viridisuffusella Barnes and McDunnough

FIGURES 381, 851

Pyla viridisuffusella Barnes and McDunnough, Canadian Ent., vol. 49, p. 406, 1917.—McDunnough, Check list, No. 6245, 1939.

Maxillary palpus of male in the form of a short aigrette.

Forewing heavily suffused with light, bronzy green, irridescent scaling, especially strong over basal area and in a line indicating the subterminal line; two transverse blackish bands, an oblique, antemedial one and another forming an inner border to the subterminal line; discal dots, when distinguishable, confluent, forming a line along discocellular vein. Hind wing very dark brown. Alar expanse, 17–20 mm.

Male genitalia with harpe simple. Aedeagus bifurcate to middle, the divided elements asymmetrical (one longer than the other). Female genitalia with a pair of strongly sclerotized, convolute bands extending from posterior end of bursa well into ductus bursae; genital opening simple.

TYPE LOCALITY: Tuolumne Meadows, Tuolumne County, Calif. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Humphreys Basin (Fresno County, Aug.), Johnsons Park (Sierra Nevada Mts.), Kernick Meadows (9,250 ft., July), Mineralking (Tulare County, July, Aug.), Tuolumne Meadows (July, Aug.).

The most brilliant of the *Pyla* species. Its genitalia, both male and female most resemble those of *fasciolalis* Hulst.

Genera 77 and 78: *Dioryctria* and *Oryctometopia*

[Venational division D. Forewing with veins 4 and 5 closely approximate for a short distance from cell (*Dioryctria*), or connate or very shortly stalked (*Oryctometopia*); vein 6 straight or bent towards base; 10 from the cell. Hind wing with cell less than one-third the length of wing; discocellular vein curved; veins 4 and 5 stalked for at least half their lengths. Male antenna with a shallow sinus or slight incurvation in base of shaft, containing a row of fine spines or a weak scale tuft. Male genitalia with transtilla incomplete or absent; harpe with costa strongly sclerotized and produced at apex (*Dioryctria*) or with one or more short, stout, thornlike spines from lower margin of sacculus.]

77. Genus Dioryctria Zeller

Dioryctria Zeller, Isis von Oken, 1846, p. 632.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 148, 1865.—Ragonot, Ent. Monthly Mag., vol. 22, pp. 52, 56, 1885; Monograph, pt. 1, p. 187, 1893.—Hulst, Phycitidae of N. Amer., p. 134, 1890.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 213, 1910.—Forbes, Cornell Univ. Agr. Exp. Station, Mem. 68, p. 619, 1923.—Meyrick, Revised Handbook of British Lepidoptera, p. 383, 1928.—Bisset, *in* Pierce and Metcalfe, Genitalia of the British Pyrales, p. 57, 1938 (notes Ragonot's fixation (1885) of type of genus).—Janse, Journ. Ent. Soc. South Africa, vol. 4, p. 161, 1941. (Type of genus: *Tinea abietella* Denis and Schiffermüller.)

Pinipestis Grote, Canadian Ent. vol. 10, p. 19, 1878; Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 699, 1878.—Hulst, Phycitidae of N. Amer., p. 136, 1890. (Type of genus: *Nephopteryx zimmermani* Grote.)

Tongue well developed. Antenna finely pubescent or very shortly ciliate, rarely unipectinate (in males of some Old World species, *pinea* Staudinger, *mendacella* Standinger); on all males a shallow sinus in base of shaft, containing a short row of minute black, thornlike spines, more or less concealed by rough scaling. Labial palpus upturned, reaching to or a trifle above vertex; second segment grooved on inner side; third segment short (less than one-third the length of second), acuminate. Maxillary palpus of male small and squamous or (rarely) in the form of an aigrette. Forewing smooth or with two or more tufts or raised (ruffed) scales; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle, slightly nearer to 4 than to 2 at base; 4 and 5 from the cell, approximate at and for about one-fourth their distance from cell; 6 bent towards base and from close to upper angle of cell (in type species, straight and from well below the angle on some specimens); 10 from the cell, approximate to the stalk of 8–9 for some distance beyond cell; 8 and 9 long stalked; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle, long (almost as long as 2); 4 and 5 stalked for half or slightly more than half their lengths; 7 and 8 closely approximate for less than half their lengths beyond cell; rarely shortly anastomosed; cell less than one-third the length of wing; discocellular vein curved, outwardly extended at lower angle. Eighth abdominal segment of male with compound ventral scale tufts.

Male genitalia decidedly elongated (least so in *gulosella*). Uncus broad, stout, its terminal margin more or less broadly rounded. Apical process of gnathos a short, stout hook. Transtilla incomplete or absent; its lateral elements, when distinguishable, slender and usually attached to costal base of harpe. Harpe with costal area broadly sclerotized and produced at apex; cucullus narrowly elongate, bluntly pointed or very narrowly rounded at apex; sacculus short, simple; clasper present, erect, usually finely haired at or near apex, but not bearing strong spines, thorns, or serrations. Anellus with well-developed lateral lobes. Aedeagus long, moderately stout; penis with strong cornuti, consisting of numerous straight, slender spines (as long or nearly as long as width of aedeagus) and usually one or more longer, stouter spines placed back of them on the penis. Vinculum stout; longer than broad (frequently considerably elongated), gradually tapering to a moderately broad, rounded, or abruptly angled terminal margin.

Female genitalia with well-developed signa, consisting of two or three clusters of strong, slender spines, their bases in each of the clusters more or less fused into sclerotized plates; the clusters in end of bursa near

ductus bursae and one of them frequently in or extending into the ductus; ductus bursae flattened, strongly sclerotized over most of its length, the sclerotization more or less longitudinally wrinkled and terminating just before the simple genital opening; ductus seminalis from bursa near the junction of bursa and ductus bursae.

Dioryctria is one of the most, if not the most, distinct and sharply defined genus in the Phycitidae; and is so despite the variations in structure exhibited by its male antennae, male maxillary palpi, and its wing scaling. Its male and female genitalia have a characteristic habitus, difficult to describe, but easily observed in slides or figures. There is also a maculation character of the forewing common to nearly all the species; the usual black dots at end of cell are absent, being replaced by a white spot or line on the discocellular vein. The only North American species without such a marking is *clarioralis*, where a considerable area about the end of cell is clouded with a dark suffusion. The raised-scale character upon which Grote distinguished his genus *Pinipestis* from *Dioryctria* consists of a mere ruffing of the scales on two or three spots on the forewing. It is at best an elusive character, subject to opinion as much as to observation, and in some of the forms (*zimmermani*, *cambiicola*) the tufts may be either raised or flattened on unspread specimens. Naturally, on spread specimens they are usually flattened, whatever was their condition in nature. Ragonot was perfectly justified (1893) in relegating *Pinipestis* to synonymy.

As here defined the genus is of world-wide distribution in the Northern Hemisphere and all the species whose larval habits are known are borers in conifers. Most of the American species are represented in the National Collection by numerous specimens reared in connection with the forest-insect investigations of the U. S. Bureau of Entomology and Plant Quarantine.

307. Dioryctria abietella (Denis and Schiffermüller)

FIGURES 51, 382, 865

Tinea abietella Denis and Schiffermüller, Systematische Verzeichniss der Schmetterlinge der Wienergegend . . . , p. 138, 1776.—Fabricius, Mantissa insectorum . . . , vol. 2, p. 245, 1787; Entomologica systematica . . . , vol. 3, pt. 2, p. 302, 1793.

Tinea decuriella Hübner, Sammlung europäischer Schmetterlinge, p. 35 and Lepidoptera 8, Tineae 2, pl. 11, fig. 74, 1796.

Phycis abietella (Denis and Schiffermüller) Zincken, *in* Germar and Zincken, Mag. der Ent., vol. 3, p. 160, 1818.—Treitschke, Die Schmetterlinge von Europa, vol. 9, p. 177, 1832.—Ratzeburg, Die Forst-Insecten . . . , vol. 2, p. 244, pl. 15, fig. 2, 1840.

Dioryctria abietella (Denis and Schiffermüller) Zeller, Isis von Oken, p. 736, 1846.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 148, 1865.—Ragonot, Ent. Monthly Mag., vol. 22, p. 52, 1885; Monograph, pt. 1, p. 198, 1893.—Hulst, Phycitidae of N. Amer., p. 135, 1890.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 213, 1910.—Joannis, Ann. Soc. Ent. France, vol. 85, p. 259, 1916; Bull. de la Station de Recherches forestièrs du Nord de l'Afrique, vol. 1, p. 192, 1921.—Forbes, Cornell Mem. 68, p. 621, 1923.—Meyrick, Revised handbook of British Lepidoptera, p. 384, 1928.—Pierce and Metcalfe, Genitalia of the British Pyrales, p. 2, pl. 1, 1938.—Keen, U. S. Dep. Agr. Misc. Publ. 273, p. 39, 1938.—McDunnough, Check list, No. 6129, 1939.—Janse, Journ. Ent. Soc. South Africa, vol. 4, p. 161, 1941.—MacKay, Canadian Ent., vol. 75, p. 94, 1943.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 451, 1950.

Pinipestis abietivorella Grote, Bull. U. S. Geogr. Geol. Surv. Terr., vol. 4, p. 701, 1878.

Pinipestis reniculella Packard (*not* Grote), U. S. Dep. Agr. Ent. Bull. 13, p. 21, 1887; U. S. Dep. Agr. Fifth Rep. Ent. Comm., p. 854, 1890.

Myelois elegantella Hulst, Canadian Ent., vol. 24, p. 59, 1892.

Maxillary palpus of male squamous.

Forewing smooth; bluish gray, dusted with white, the white dusting of variable intensity, when pronounced, more or less concentrated in basal area, along the outer border of antemedial line, the inner border of subterminal line and, weakly, along terminal margin; transverse lines white, distinct, narrow; antemedial line oblique, inwardly angled at cell and vein 1b, preceded on costa by a blackish shade and bordered outwardly by a black line, and usually preceded by a pale patch on inner margin, this often no more than a smear of olivaceous white scales and never so conspicuous or well contrasted as in *reniculella;* subterminal line sinuate-angulate, preceded and followed by blackish bordering lines; discal mark a white, lunate spot; a fine black line along terminal margin. Hind wing dusky white, darkened slightly towards outer margin and on the veins. Alar expanse, 20–30 mm.

Male genitalia with uncus subtriangulate and rather narrow in normal position; a short, slight incurvation of the lateral margins near base, and the lateral margins themselves infolded. (When uncus is flattened in preparations and the lateral folds pushed out, the uncus appears as in fig. 382, but never takes the form of the flattened unci of the species which have a longer incurvation of the lateral margins, such as *zimmermani*). Harpe with one or more spines projecting from the terminal margin of the sclerotized costal area below its apex (there is considerable individual variation in this feature, a few examples of which, from small American specimens, are shown in figs. 382c–e). Penis armed with a single stout spine behind anterior spine cluster.

Female genitalia chiefly distinguished by a longitudinal fissure on the ventral surface of the sclerotized portion of ductus bursae, variations of which are shown in figures 865 and 865a. The females of *sysstratiotes* from Guatemala also show traces of such a fissure but this species is only doubtfully distinct from *abietella*.

TYPE LOCALITIES: Austria (*abietella*, location unknown); Germany (*decuriella*, type lost); Amherst, Mass. (*abietivorella*, in BM); Seattle, Wash. (*elegantella*, in AMNH, ex Rutgers).

FOOD PLANTS: Pine, spruce, fir; in the spruces and firs (*Abies*, *Pseudotsugha*, etc.) chiefly in the cones. The favored host seems to be *Pinus* of which it attacks all species. The larvae exhibit a variety of habits. They are both primary and secondary. They bore into new and otherwise uninfested terminals and into terminals that have been attacked by *Rhyacionia buoliana* or the white pine weevil (*Pissodes strobi.*) They attack both healthy and diseased cones. They bore into and feed

on the cambium of smooth bark on the trunks and branches; and also feed in the galls on any part of the tree.

DISTRIBUTION: Apparently throughout the range of the genus *Pinus* in the Northern Hemisphere. American records from specimens (moths) before me as follows: UNITED STATES: *Maine*, Orono (Aug.); *Massachusetts*, Amherst, Framingham (Oct.), Martha's Vineyard (Sept.), Pepperell (Aug.); *Connecticut*, Bradford, Lyme (Aug.), New Haven (June); *New York*, Long Island (Garden City, Oct., Great Neck, July), Warrensburg (Sept.); *New Jersey*, Lakehurst (May); *District of Columbia*, Washington (July, Aug.); *Florida*, Alton (June), Eustis (June, July), Gainesville (June), Orlando (June), "So. Florida" (June, July, Aug.); *Illinois*, Dundee; *Nebraska*, Halsey (Apr., June, Aug.); *Montana*, Dillon (July), Elliston, Evaro (Mar.); *Colorado*, Glenwood Springs; *Arizona*, Prescott (July); *California*, Berkeley, Patrick's Creek (Sept.), Sacramento, Shasta Retreat (July); *Oregon*, Ashland (July, Aug., Sept., Oct.), Salem (Aug.), Colestin (June), Silver Lake (Aug.), Sprague River (July); *Washington*, Hoquiam, Pullman, Rock Lake (Whitman County, Sept.); Seattle. CANADA: *Labrador*, Dublin Shore (Lunenburg County); *Quebec*, Montreal (June); *Saskatchewan*, Lutherland (June, Aug., Sept.); *British Columbia*, Kaslo (June). GUATEMALA: A series of males and females in the U. S. National Museum, reared from pine cones, May 1927, by J. G. Salas and labeled simply "Guatemala, C. A."

The species is of considerable economic importance, especially to young pine trees in our Western States, and particularly in reforestation areas. It has an extensive literature in the Old World. I have listed here only the more important references and have omitted purely European synonyms. For additional references the reader is referred to Ragonot (Monograph, p. 198), Hulst (Phycitidae of N. Amer., 1890), the Journal of Economic Entomology, and the Review of Applied Entomology. The most satisfactory information on life history and larval habits will be found in the MacKay (1943) and Craighead (1950) papers.

308. Dioryctria sysstratiotes Dyar

FIGURE 866

Dioryctria sysstratiotes Dyar, Ins. Insc. Menstr., vol. 7, p. 43, 1919.

Forewing smooth, similar to that of *abietella* except: A pale brownish suffusion in median area forming a rather large patch below discal spot; a similar brownish shade outwardly bordering subterminal line; the patch preceding antemedial line on inner margin, more distinct, larger, pale olivaceous brown. Hind wing somewhat darker, translucent smoky white with a very faint brownish tint towards outer margin.

Alar expanse, 23–28 mm.

Female genitalia as in *abietella* except no (or only a faint trace of) median ventral cleft in ductus bursae.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: presumably *Pinus*. No rearing records.

DISTRIBUTION: GUATEMALA: Cayuga (June), Chejel (June), Purulhá (July).

Known only from females. Doubtfully distinct from *abietella* except as a race or color form. Its exact status will have to await discovery of a male.

309. Dioryctria reniculella (Grote)

FIGURES 383, 867

Pinipestis reniculella Grote, North Amer. Ent., vol. 1, p. 67, 1880.

Dioryctria reniculella (Grote), Ragonot, Monograph, pt. 1, p. 200 1893.—Forbes, Cornell Mem. 68, p. 620, 1923.—McDunnough, Check list, No. 6131, 1939.—Brown, Canada Dep. Agr. Publ. 712, Techn. Bull. 31, p. 13, 1941.—MacKay, Canadian Ent., vol. 75, p. 94, 1943.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 451, 1950.

Maxillary palpus of male squamous.

Forewing smooth; in color and maculation similar to that of *abietella* except: Ground color pale brownish gray; the transverse lines and discal spot more sharply contrasted, more distinctly white; usually a rather large olivaceous patch on inner margin preceding the antemedial line; hind wing darker, pale smoky fuscous. Alar expanse, 22–26 mm.

Male genitalia with uncus tonguelike; more elongate and narrower than that of any other American species; its terminal margin very narrowly rounded; no incurvation of the lateral margins (its shape not appreciably altered by flattening in slide preparations). A very slight spur from the lower outer angle of the sclerotized costal area of harpe, but no other spines from below apex of costa. Penis armed only with anterior spine cluster; no single stout spine on penis behind the anterior cluster.

Female genitalia with only one strong spine cluster, that at junction of bursa and ductus bursae; girdle of spines in bursa before junction with ductus, weak, broken, and the spines themselves greatly reduced.

TYPE LOCALITY: New York (type in BM).

FOOD PLANTS: Various spruces; rarely in balsam fir and tamarack. Reported as occasional in jack pine, but such records are doubtful. The larvae feed in terminals and cones and to a lesser extent upon the foliage of the terminals.

DISTRIBUTION: UNITED STATES: *Maine*, Blue Hill (July), Sebec Lake (July); *Connecticut*, East River (July), New Haven (June, July); *New York; Illinois*, Putnam County (July); *Michigan*, East Lansing (Aug.); *Colorado*, Estes Park (July); *California*, Fallen Leaf Lake (Aug.), Mount Lowe (July); *Washington*, Bellingham (Aug.), Hoquiam, Kamiack Butte (Aug.), Pullman (July, Aug.). CANADA: *Nova Scotia*, Cape Breton (Aug.); *Quebec*, St. Therese Isl. (St. John's County, July); *Ontario*, Westree; *Saskatchewan* (June); *British Columbia*, Seton Lake (June, July), Victoria (July).

The species is easily distinguished by its genitalia. In the past it has been frequently confused with *abietella* and until 1893 was treated by Hulst and Ragonot as a synonym of the latter. The larvae of the two species often occur together in spruce cones, so there is no safe way to separate them on their larval

habits. However, *reniculella* is primarily a spruce feeder, while *abietella* shows a marked preference for the pines. Both species are borers, as are all the *Dioryctria* species. It is unfortunate that Miss MacKay in her otherwise excellent paper (1943) should refer to *reniculella* as "The spruce foliage worm." It does feed to some extent upon the foliage of terminal shoots; but likewise, and more frequently within the terminals themselves and in the cones, and in economic literature is quite properly referred to as "the spruce cone moth." It is a strictly American species limited in distribution, apparently, to the northern United States and Canada.

310. Dioryctria ponderosae Dyar

FIGURES 384, 868

Dioryctria ponderosae Dyar, Ins. Insc. Menstr., vol. 2, p. 2, 1914.—McDunnough, Check list, No. 6130, 1939.

Maxillary palpus of male squamous.

Forewing smooth; like that of *abietella* except: Blackish markings more strongly contrasted; a broad black band inwardly bordering the antemedial line, a similar band on some specimens of *abietella* but not so broad nor so well contrasted; subterminal line outwardly angled at middle; the white transverse lines and discal spot well contrasted. Hind wing white, clouded with smoky fuscous towards outer margin; the veins slightly darkened. Alar expanse, 27–30 mm.

Male genitalia with uncus considerably shorter and broader than that of either *abietella* or *reniculella;* its terminal margin broadly rounded; lateral margins incurved near its base. Harpe with apex of sclerotized costa produced into a blunt, curved hook, no spine from lower outer angle of the sclerotized costal area; clasper reduced. Female genitalia distinguished by its short ductus bursae.

TYPE LOCALITY: Lamedeer, Mont. (type in USNM).

FOOD PLANT: *Pinus ponderosa*. Larva a borer in the cambium of the bark.

DISTRIBUTION: *Montana*, Lamedeer (June), *Colorado*, Glenwood Springs (June, July, Aug.); *California*, American River (May).

A distinct species known only from a half-dozen specimens from the above localities. It belongs definitely with the smooth-winged *Dioryctria*, although a few roughened scales can be distinguished in the black inner borders of the antemedial line on a couple of the specimens. Its genitalia separate it easily from all other smooth-winged species. The name has been misapplied to a color variety of *zimmermani*. This misidentification is discussed under the latter name. The Missoula, Mont., female (Hopkins U. S. No. 11508) mentioned by Dyar in his description of *ponderosae* belongs to this variety of *zimmermani*.

311. Dioryctria majorella Dyar

FIGURES 385, 871

Dioryctria majorella Dyar, Ins. Insc. Menstr., vol. 7, p. 43, 1919.
Dioryctria muellerana Dyar, Ins. Insc. Menstr., vol. 7, p. 85, 1919 (new synonymy).

Maxillary palpus of male squamous.

Forewing smooth, similar in color and markings to that of *sysstratiotes* except: Somewhat more suffused; the whitish markings fainter and a duller, more sordid white; the pale discal spot obscure; the blackish inner border of the subterminal line and the blackish band preceding the antemedial line broader. Hind wing smoky white, the veins faintly darkened. Alar expanse, 28–33 mm.

Male genitalia distinguished by greatly increased width of the sclerotized costal area of harpe; a short spur projects from the outer margin of this sclerotized area just below its apex. *D. erythropasa* has a similar harpe; but differs markedly in other details of the genitalia—differently shaped uncus, narrower clasper, and different spining of penis.

Female genitalia differ from those of *sysstratiotes* only in insignificant details. The female genitalia of both species differ from those of *abietella* chiefly in the greater broadening and thickening of the membrane of ductus bursae near its junction with bursa copulatrix.

TYPE LOCALITIES: Jalapa, México (*majorella*, ♀, in USNM); Zacualpán, México (*muellerana*, ♂, in USNM).

FOOD PLANT: Pine.

Known only from Dyar's two types and a pair (♂ and ♀) from British Honduras. The Honduran specimens are smaller than the Mexican types and in wretched condition, but their genitalia are a perfect match in all details. In his description of *muellerana* Dyar suggested that it might be the male of *majorella*. This synonymy is proven by the Honduran examples. They were reared from cones of *Pinus caribaea*.

312. Dioryctria disclusa Heinrich

FIGURE 872

Dioryctria disclusa Heinrich, *in* Farrier and Tauber, Iowa State Coll. Journ. Sci, vol. 27, p. 495, 1953.

Maxillary palpus of male squamous.

Forewing smooth; basal area to antemedial line orange yellow; area beyond brownish red, more or less shaded or suffused with yellowish orange (on some specimens the ground color of the entire wing yellowish orange), usually the red shade most conspicuous in the area between subterminal line and termen; transverse lines narrow, white; a white streak along lower margin of cell between the transverse lines; antemedial line faint, oblique, nearly straight; subterminal line stronger, set well out, rather near terminal margin, outwardly angulate between veins 6 and 1b; discal mark (when distinguishable) a white line along discocellular vein; some very short white dashes on terminal margin; cilia smoky white. Hind wing smoky white to pale smoky gray, the paler examples showing a very faint ocherous tint; veins slightly darkened; cilia whitish. Alar expanse, 24–29 mm.

Male genitalia like those of *auranticella*. Female genitalia essentially like those of *auranticella*. The differences shown in the figures for the two species are the extremes and represent, at most, individual variations.

TYPE LOCALITY: Tryon, N. C. (type in USNM).

FOOD PLANTS: *Pinus* spp. Larvae feeding in the cones.

DISTRIBUTION: *Massachusetts,* Martha's Vineyard (June); *New Jersey,* Lakehurst (July); *District of Columbia; West Virginia,* Roosevelt (June), *North Carolina,* Raleigh (June), Tryon (June); *Iowa,* Ames (June).

Examples of this species have been in the National Collection as *auranticella* and it was on the basis of this misapplication of Grote's name that Dyar described his *xanthaenobares*. The true *auranticella* is strictly a western species, while the distribution of *disclusa,* as far as I know, is limited to the eastern and central areas of the United States.

The paper by Farrier and Tauber gives all the information known on the life history, food habits, and behavior of the insect.

313. Dioryctria auranticella (Grote)

FIGURES 386, 873

Nephopteryx auranticella Grote, Ann. Mag. Nat. Hist., ser. 5, vol. 11, p. 57, 1883; Trans. Kansas Acad. Sci., vol. 8, p. 57, 1883.
Dioryctria miniatella Ragonot, N. Amer. Phycitidae, p. 4, 1887.—Hulst, Ent. Amer., vol. 5, p. 156, 1889.
Dioryctria auranticella (Grote) Hulst, Phycitidae of N. Amer., p. 134, 1890.—Ragonot, Monograph, pt. 1, p. 194, 1893. McDunnough, Check list, No. 6126, 1939.
Dioryctria xanthaenobares Dyar, Proc. Ent. Soc. Washington, vol. 13, p. 81, 1911.—Keen, U. S. Dep. Agr. Misc. Publ. 273, p. 38, 1938.—McDunnough, Check list, No. 6127, 1939.—Heinrich, *in* Farrier and Tauber, Iowa State Coll. Journ. Sci., vol. 27, p. 495, 1953.

Maxillary palpus of the male in the form of an aigrette.

Forewing smooth; color and markings similar to those of *disclusa,* but on the average somewhat paler, the ground color ranging from yellowish orange to brownish red; on the darker suffused, reddish examples the yellowish color of the basal area is less contrasted than in ordinary *disclusa*. Very pale examples of the two species cannot be distinguished superficially. In size *auranticella* averages larger. Alar expanse, 27–33 mm.

Male genitalia with apex of cucullus of harpe extending beyond apex of the sclerotized costa. Female genitalia exhibiting only slight and comparative differences from those of *disclusa*.

TYPE LOCALITIES: New Mexico (*auranticella,* in Univ. Kansas); Arizona (*miniatella,* in Paris Mus.); *Kaslo,* British Columbia (*xanthaenobares,* in USNM).

FOOD PLANTS: *Pinus* spp. Larvae feed chiefly in the cones, sometimes in the twigs. The favored host seems to be *Pinus ponderosa*.

DISTRIBUTION: UNITED STATES: *New Mexico,* state locality only; *Arizona,* Mohave County (July); *Colorado,* Glenwood Springs (Aug.), Rocky Mountain National Park (July); *Utah,* Eureka (July, Aug.); *Idaho,* Coeur d'Alene (July); *Montana,* Bitterroot River (July), Camas (July); *California,* Gasquets (May), Pasadena, Warner Mts. (July); *Oregon,* Monumental Pass (Aug.), Silver Lake (Aug.); *Washington,* Pullman (July), Rock Lake (June, July), Seattle; *Nebraska,* Halsey (Aug.), Valentine (July, Aug.). CANADA: *British Columbia;* Kaslo (Aug.), Trout Creek (Ibapah Mts.). The Nebraska records, our most easterly, are from examples reared from *Pinus ponderosa* in reforested areas. The insect was probably introduced there on western nursery stock.

The species is represented by a large series of specimens in the National Collection, a majority of them reared from cones in connection with the forest insect investigations of the U. S. Bureau of Entomology and Plant Quarantine. The type of *auranticella* in the Snow Collection at the University of Kansas is a pale female in rather poor condition. Three other similar females, in better condition are in the Rutger's College Collection. All of these are labeled simply "New Mexico, Snow, Coll." Females of *auranticella* are not separable from those of *disclusa,* especially the pale, yellowish examples, except by their locality labels. On average specimens the white streak along the lower margin of the cell of forewing is shorter in *auranticella,* not reaching beyond the outer angle of the cell; but this feature is not constant in either species. Between males there is never any need for confusion; for *auranticella* is the only known American species with aigrettelike maxillary palpi.

A similar maxillary palpus occurs in *Dioryctria laurata* (Heinrich) from Japan (described as a *Salebria* in Proc. Ent. Soc. Washington, vol. 30, p. 61, 1928). The unique male type has the labial palpi erect and appressed close to the face and a strong scale tuft in the sinus of the antennal shaft. Hence the original reference to *Salebria*. It is probably a snyonym of *Dioryctria pryeri* Ragonot (Monograph, pt. 1, p. 194, 1923), described from a single female from the Holland Collection, now in the Carnegie Museum, Pittsburgh. I have never seen this specimen.

314. Dioryctria erythropasa (Dyar)

FIGURES 387, 869

Pinipestis erythropasa Dyar, Ins. Insc. Menstr., vol. 2, p. 112, 1914.
Dioryctria erythropasa (Dyar) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5564, 1917.—McDunnough, Check list, No. 6128, 1939.

Maxillary palpus of male squamous.

Forewing with some roughened (raised) scale tufts in median area (one in lower fold and another in cell just beyond antemedial line and a slight roughening of the white scales of the discal spot), otherwise smooth; ground color red-brown of a somewhat darker, more rosy shade and lacking any of the orange suffusion common to *auranticella* and *disclusa;* more or less dusted with white in median area, the white concentrated into a broad patch extending from inner margin to top of cell just beyond antemedial line; the transverse lines thin, white; antemedial line oblique, irregularly and very weakly dentate; subterminal line nearly vertical, slightly denticulate, bordered inwardly by a dark red-brown line; a similar dark line forms an outer border to the antemedial line; discal spot a slightly enlarged, lunate,

white line on discocellular vein; outer area beyond subterminal line red-brown, terminal dots confluent, forming a more or less continuous blackish line along termen; cilia reddish brown. Hind wing smoky white; the veins darkened; a very narrow dark shade along termen; cilia whitish, cut by a dark subbasal line. Alar expanse, 23–28 mm.

Male genitalia of the *majorella* type but with uncus short, broad, its terminal margin angulate. Harpe with slender, digitate clasper. Vinculum narrower, more gradually tapered. Penis with numerous anterior spines, but without the usual enlarged posterior cornutus. Female genitalia with bursa copulatrix greatly reduced, much shorter than ductus bursae.

TYPE LOCALITY: Chiricahua National Forest, Ariz. (type in USNM).

FOOD PLANT: *Pinus chihuahuana*. Larvae feeding in the cones.

DISTRIBUTION: *Arizona*, Chiricahua National Forest (May); Redington (Aug.).

This species, with *pygmaeella*, forms a connecting link between the smooth-winged *Dioryctria* species and those with distinctly roughened scales formerly referred to *Pinipestis*.

315. Dioryctria horneana (Dyar)

FIGURE 874

Pinipestis horneana Dyar, Ins. Insc. Menstr., vol. 7, p. 43, 1919.

Maxillary palpus of male squamous.

Forewing bright red-brown shaded with white, the ground color brighter and more on the red shade than that of any of the foregoing species; a rather broad, diffused, white shade preceding the antemedial line and two rather large, confluent patches following it, one in the cell and another in lower fold; a strong broad oblique white shade extending from inner margin near subterminal line to costal beginning of that line and fusing with and more or less obscuring it; the scales of these white areas as well as those of the white discal spot decidedly roughened; a narrow band of appressed white scales along terminal margin; antemedial line narrow, white, nearly vertical, notched above and below its middle, followed on basal half by a faint, narrow, gray outer bordering line; subterminal white line rather close to outer margin, vertical with a slight bulge at middle; terminal black dots narrow weak, confluent. Hind wing yellowish white with a very faint smoky tint; veins but slightly darkened; a fine, pale brown line along termen. Top of head and collar of thorax red-brown; remainder of thorax whitish. Alar expanse, 25–28 mm.

Genitalia similar to those of *zimmermani*.

TYPE LOCALITY: Herradura, Pinar del Río, Cuba (type in USNM).

FOOD PLANT: *Pinus* sp.

Known only from the female type and a male from the same rearing. Dyar in his original description gives Santiago de las Vegas as the type locality, but was evidently in error. Dr. S. C. Bruner, Chief of the Departmenta Agronómica of Cuba, has given us the correct locality. The species is easily distinguished from others of the *zimmermani* complex by the bright reddish ground color of its forewings and from the other red-winged American species by its strongly tufted forewings.

The labial palpi of the male are more closely appressed to the face than those of most *Dioryctria* species.

316. Dioryctria pygmaeella Ragonot

FIGURES 388, 877

Dioryctria pygmaeella Ragonot, N. Amer. Phycitidae, p. 5, 1887; Monograph, pt. 1, p. 192, 1893.

Pinipestis pygmaeella (Ragonot) Hulst, Phycitidae of N. Amer., p. 136, 1890.—Forbes, Cornell Mem. 68, p. 620, 1923.—McDunnough, Check list, No. 6136, 1939.

Maxillary palpus of male squamous.

Forewing smooth except for a slight roughening of the white scales of the transverse lines and discal spot; purplish gray with irregular patches of dull dark red and a more or less extended white dusting; the red patches consisting of a rather broad band preceding the antemedial line, a similar band from middle of inner margin to cell and a rather broad shade outwardly bordering the subterminal line; the white dusting concentrated over the median areas not occupied by the red median band, in subbasal area just behind the red band, and along termen following the red subterminal shade; transverse lines thin, whitish, rather faint (under magnification, the scales silvery and somewhat roughened); antemedial line oblique, notched at vein 1b, bordered outwardly by a black line which expands at costa into a black patch; subterminal line sinuate-angulate with a broad, black, inner, bordering line; terminal dots fused into a fine black line along termen; white discal spot an oblique lunule; a fine black line along the lower half of the inner margin of the red band preceding antemedial line (but not a raised-scale ridge as stated by Ragonot); also some dusting of black scales on the red of extreme basal area. Hind wing pale smoky gray; the veins darkened and a narrow dark shade along termen. Alar expanse, 15–21 mm.

Male genitalia with a cluster of long strong posterior spines and one or two weak anterior spines on penis. Female genitalia with the spine clusters in bursa consisting of narrow, straight bands of slender spines; ductus bursae sclerotized from junction with bursa almost to genital opening.

TYPE LOCALITY: Florida (type in Paris Mus.).

FOOD PLANT: *Taxodium distichum*. Larvae in the cones. This record from reared series from Maryland (Heinrich, 1920) and Virginia (Busck, 1927) in the U. S. National Museum.

DISTRIBUTION: *Florida*, Winter Park (July); *Virginia*, Cape Henry (Aug.); *Maryland*, Pokomoke (Aug., Sept.). Probably over the range of its host plant.

A distinct, easily recognized species, intermediate between the smooth-winged species and those with definite raised-scale ridges.

317. Dioryctria zimmermani (Grote)

FIGURES 389, 875, 878

Nephopteryx (*Dioryctria*) *zimmermani* Grote, Canadian Ent., vol. 9, p. 163, 1877.

Nephopteryx (*Pinipestis*) *zimmermani* (Grote), Canadian Ent., vol. 10, p. 19, 1878.—Packard, U. S. Dep. Agr. Fifth Rep. Ent. Comm., p. 73, 1890.

Pinipestis zimmermani (Grote), Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 699, 1878; op. cit., vol. 6, p. 589, 1882; N. Amer. Ent., vol. 1, p. 11, pl. 2, fig. 10, 1879.

Nephopteryx zimmermani (Grote) Kellicott, Canadian Ent., vol. 11, p. 114, 1879; Ent. Amer., vol. 1, p. 173, 1885.

Dioryctria zimmermanni (Grote) Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Monograph, pt. 1, p. 190, 1893 (emended spelling of specific name).—Forbes, Cornell Mem. 68, p. 620, 1923.

Pinipestis zimmermanni (Grote) Hulst, Phycitidae of N. Amer., p. 137, 1890.—McDunnough, Check list, No. 6133, 1939.

Salebria delectella Hulst, Canadian Ent., vol. 27, p. 57, 1895.—Ragonot, Monograph, pt. 2, p. 550, 1901. (New synonymy.)

Dioryctria delectella (Hulst) Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 227, 1904.

Retinia austriana Cosens, Canadian Ent., vol. 38, p. 362, 1906.—Busck, Journ. New York Ent. Soc., vol. 15, p. 236, 1907.

Pinipestis delectella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5570, 1916.—McDunnough, Check list, No. 6134, 1939.

Dioryctria ponderosae Heinrich (not Dyar), *in* Keen, U. S. Dep. Agr. Misc. Pub. 273, p. 38, 1938.

Dioryctria zimmermani (Grote) Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 452, 1950.

Maxillary palpus of male squamous.

Forewing with a ridge of raised (roughened) scales preceding and one following the antemedial line, some rough scaling of the discal spots and on some specimens in the outer median area above inner margin and immediately before subterminal line, the raised scaling somewhat variable and nowhere reaching to costa, easily and frequently flattened in the spreading and setting of specimens; color variable, blackish gray with a rather broad, but faint, whitish dusting before the subterminal line and, on some specimens but to a lesser extent, immediately following the antemedial line and narrowly and faintly along the inner margin of the subbasal scale ridge; basal and terminal areas normally shaded with red, the extent and tint of the shading extremely variable and on some specimens almost obliterated or confined to dull patches of an oblivaceous hue; when strongly accented, extended over base and onto the collar of the prothorax, usually most distinct between subbasal scale ridge and antemedial line; the raised-scale ridges themselves, black; transverse lines dull white, always distinguishable but sometimes faint, bordered inwardly and outwardly by black lines which broaden into dark wedges on costa; white discal spot usually distinct; a black line along terminal margin. Hind wing white more or less shaded with smoky fuscous along costa and termen, less so on male than female; a fine dark line along termen; veins only faintly darkened. Alar expanse, 25–33 mm.

Male genitalia with uncus but slightly longer than broad, the lateral margins slightly concave; terminal margin rounded; when flattened in preparation, as in figure 390a of *cambiicola*. Harpe with costa broadly sclerotized and terminating at apex in a long curved pointed hook, a short spine from its lower outer angle; clasper digitate; cucullus narrow, pointed at apex. Penis with posterior spine, long, strong, straight, evenly tapering to a sharp point. Vinculum stout, considerably longer than broad, evenly tapering to roundly angulate terminal margin.

In the female genitalia the variation in the spining of bursa shown in the figures is merely individual and is equaled or exceeded in any series of eastern or western specimens. Ductus bursae much longer than bursa, sclerotized for its entire length except for a short distance from genital opening, the sclerotization ribbonlike, broadening and bent towards bursa, longitudinally ribbed on caudal half and terminating caudally in a produced, bluntly pointed or acutely rounded central projection. Bursa proportionally small; the spine clusters closely grouped at its posterior half; the enlarged lobe giving off the ductus seminalis appreciably thickened.

TYPE LOCALITIES: Buffalo, N. Y. (*zimmermani*, in BM; paratype, ♂, in USNM); Colorado (*delectella*, in AMNH, ex Rutgers); Toronto, Ontario, Canada (*austriana*, in Royal Ontario Mus.).

FOOD PLANT: *Pinus* spp. Most if not all species of pine in this country are attacked. The spruce records given by Packard (1895) have never been verified. They were probably based upon misidentified larvae. I doubt very much that *zimmermani* feeds on anything but pine. The larvae bore into the cambium of the trunk, branches, and twigs, causing considerable damage to the new growth of older trees and sometimes even killing younger trees (8 inches or less in diameter) by completely girdling their boles. The place of attack is usually indicated by a resinous mass of exuded pitch mixed with frass and larval exuviae.

DISTRIBUTION: UNITED STATES: *New York*, Buffalo, Coram (Long Island, Aug.), Warrensburg (Aug.); *Connecticut*, Woodstock (Aug.); *Rhode Island*, Washington County (June); *Massachusetts*, Dover (Aug.), Martha's Vineyard (Aug.); *New Hampshire*, Hampton (Sept.); *North Carolina*, Tryon (Aug.); *Ohio*, Akron (July, Aug.), Lake County (July, Aug.), Mentor (June), Scioto County (July); *Illinois*, Oregon (July, Aug.); *Nebraska*, Ainsworth (Aug.), Halsey (May, June, July, Aug.), Meadville (Aug.), Norden (Aug.), *Wyoming*, Wyoming National Forest (June, July); *Montana*, Banner (July), Missoula (July); *Colorado*, only the state locality (female cotypes of *delectella*, Bruce, collector); *New Mexico*, Taos Junction (July); *Arizona*, Santa Catalina Mts. (Bear Canyon, July), White Mts. (Aug.); *California*, Placerville, San Mateo (June), Ventura; *Oregon*, Butte Falls, Coletin; *Washington*, Friday Harbor (Aug.), Rock Lake (July). CANADA: *Ontario*, Toronto.

The foregoing records are from specimens before me, most of them reared. The range of the species probably extends over the entire northern areas of the United States wherever its hosts occur and presumably over a considerable area in southern Canada.

Hulst's *delectella* was described from Colorado females

which, except for somewhat larger expanse (32 mm.) than average eastern specimens, are typical *zimmermani* in coloration and genitalia. The unfortunate reference to *ponderosae* in the Keen paper (1938) was due to my misidentification of reared specimens from the reforestation areas of Nebraska. These came to us in good series but were spread and the raised scales on the forewings had been flattened, and on most of the examples (as also on some eastern specimens) the characteristic red shading on basal area of forewing was lacking. Superficially they looked like *ponderosae*; but had the typical *zimmermani* genitalia, and unrubbed examples clearly showed the raised scaling.

Economically *zimmermani* is our most important *Dioryctria*. In this country it does more serious damage, especially to young trees, in both the East and the West, than *abietella*. As far as I know it is strictly a bark borer and does not attack the cones. The most complete and accurate account of the life history is that in the Craighead (1950) paper. The life history of the insect in Nebraska is also treated in the Keen (1938) paper under "*ponderosae*."

318. Dioryctria cambiicola (Dyar)

FIGURES 390, 876

Pinipestis cambiicola Dyar, Ins. Insc. Menstr., vol. 2, p. 2, 1914.—McDunnough, Check list, No. 6137, 1939.

Maxillary palpus of male squamous.

Forewing as in *zimmermani* except: Ground color of basal, submedial and terminal areas a dark, dull, reddish brown (somewhat paler on Arizona specimens); the black scaling greatly reduced; the white scaling following antemedial and preceding subterminal lines and bordering terminal margin; the transverse lines and the discal mark, dull silvery. Hind wing smoky fuscous; the veins darkened and a dark line along termen. Alar expanse, 28–32 mm.

Genitalia, male and female, show no specific differences from those of *zimmermani*. The extent of the bend in the female ductus bursae shown by the figures is purely individual and can be easily accented or diminished in preparing the slides.

TYPE LOCALITY: Flathead Reservation, Mont. (type in USNM).

FOOD PLANTS: *Pinus ponderosae*, *P. scopulorum*, *P. coulteri*. The larvae are cambium borers in new growth, causing pitch exudations like those of *zimmermani*.

DISTRIBUTION: *Montana*, Flathead Reservation (July, Aug.); Missoula (July); *Colorado*, Boulder (Sept.), Palmer Park (July, Aug.); *New Mexico*, Las Vegas; *Arizona*, Flagstaff, White Mts. (Aug.); *California*, Julian (Sept.).

The species is doubtfully distinct from *zimmermani* except as a possible race. It differs chiefly in its dark hind wings. It apparently has a limited distribution in our Western States. In his original description Dyar mentions an eastern specimen (presumably from Washington, D. C.) reared from a cone of *Pinus taeda*, Aug. 14, 1882. I have also before me a similar female from Cape Henry, reared June 9, 1927. I suspect that both these examples may be hybrids of *zimmermani* and *amatella*.

319. Dioryctria amatella (Hulst)

FIGURE 879

Nephopteryx amatella Hulst, Ent. Amer., vol. 3, p. 131, 1887.
Dioryctria amatella (Hulst), Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Monograph, pt. 1, p. 191, 1893.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, 1950.
Pinipestis amatella (Hulst), Phycitidae of N. Amer., p. 136, 1890.—McDunnough, Check list, No. 6135, 1939.

Maxillary palpus of male squamous.

Forewing with raised scales as in *zimmermani* but the scale ridges somewhat narrower; ground color a dark wood brown; transverse lines, discal spot, a thin transverse band preceding the subbasal ridge, a blotch following the antemedial line, a similar shade near inner margin of subterminal line on lower half of wing, and a thin zigzag pale shade just within terminal margin, silvery white and strongly contrasted against the ground color; black scaling limited to the subbasal and submedian scale ridges, the thin borders of the transverse lines, a spot at extreme base, and the thin terminal line. Hind wing smoky with a somewhat glossy pale brownish tint; the veins slightly darkened and a thin dark line along terminal margin. Alar expanse, 27–32 mm.

Genitalia essentially like those of *zimmermani*.

TYPE LOCALITY: Florida (type in AMNH, ex Rutgers).

FOOD PLANTS: *Pinus* spp. Larvae feeding in cones and terminals, more often in the cones than terminals and apparently favoring diseased cones.

DISTRIBUTION: *Florida*, Alton (June), Camp Pinchot (June), Fort Mead (May), Lake City (May, June), Monticello (Sept.), Orlando (June), "Southern Florida" (June, July), Starke (May); *Louisiana*, New Orleans (Sept., Nov.), Woodworth (June); *Texas*, Conroe (May); *Mississippi*, Hattiesburg (June), Picayune (May); *Maryland*, Baltimore (Aug.); *District of Columbia*, Washington (July).

Close to but apparently distinct from *zimmermani* and *cambiicola*, distinguished from both by the strong contrast of its white markings. Generally distributed in the Gulf States where its abundance, especially in Florida and Louisiana, makes it something of a pest. A brief account of what is known of its life history is given in the Craighead (1950) paper.

320. Dioryctria albovittella (Hulst)

FIGURE 880

Pinipestis albovittella Hulst, Phycitidae of N. Amer. p. 138, 1900.—Barnes and McDunnough, Contributions, vol. 4, p. 174, 1918.—McDunnough, Check list, No. 6138, 1939.
Dioryctria albovittella Ragonot, Monograph, pt. 1, p. 193, 1893.

Maxillary palpus of male squamous.

Forewing with a narrow black subbasal scale ridge, little if any raised scaling otherwise; forewing gray densely dusted with white, making the extreme basal, median, and terminal areas a pale ash color; transverse lines and discal mark well contrasted, white; antemedial line nearly vertical, slightly notched above and below

middle, bordered outwardly by a thin black line and inwardly by a broad dark shade which includes the black raised-scale ridge; a white blotch on lower half of wing just beyond the antemedial line; subterminal line well defined, median section broadly triangulate, bordered inwardly by a blackish line and outwardly by a narrow dark shade; discal marking a white spot covering discocellular vein; a row of confluent black dots along termen. Hind wing white with a faint ocherous tint; a fuscous shade at apex and, narrowly, along termen. Alar expanse, 23–30 mm.

Male genitalia like those of *zimmermani*. Female genitalia similar to those of *cambiicola*, differing only in trifling details of the spining in the bursa, not exhibiting any consistent differences of a specific character.

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Cones of *Pinus monophylla*. This record from reared Nevada specimens received from the Forest Insect Division of the U. S. Bureau of Entomology and Plant Quarantine under Hopkins U. S. No. 32009.

DISTRIBUTION: *New Mexico*, Jemez Mts. (Aug.), Jemez Springs (Aug.); *Arizona*, Mohave County (July, Aug.); *Colorado; Utah*, Dividend (Aug.), Eureka (Sept.), Ibapah Mts. (Trout Creek, July); *Nevada*, Topaz Lake (Aug.).

Another close relative of *zimmermani* and *cambiicola*, distinguished chiefly by its much paler forewings. In his original description Hulst gives Hot Springs, N. Mex., as the type locality; but this, as pointed out by Barnes and McDunnough (1918) is evidentally a lapsus. The type is a male, labeled "Colo. Bruce."

321. Dioryctria gulosella (Hulst), new combination

FIGURE 392

Acrobasis gulosella Hulst, Phycitidae of N. Amer., p. 126, 1890.—Ragonot, Monograph, pt. 1, p. 109, 1893; pt. 2, p. 520, pl. 50, fig. 11, 1901.

Pinipestis gulosella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5575, 1916.—McDunnough, Check list, No. 6139, 1939.

Maxillary palpus of male squamous.

Forewing with a subbasal scale ridge and small patch of raised scales in median area; dark gray with a fine, sparse, white dusting, making the general color a dark ash gray; transverse lines whitish gray, distinct; antemedial line twice notched, edged outwardly by a thin black line, preceded by an obscure pale patch on lower half of wing, this followed on its inner margin by a black scale ridge continued as a thin black line to costa; subterminal line outwardly angled at middle, bordered inwardly by a black line and outwardly by a narrow dark shade; discal spot white; a narrow black line along termen. Hind wing white, smoky at apex and somewhat along termen (especially on females); the veins more or less darkened; a fine brown line along terminal margin. Alar expanse, 21–27 mm.

Genitalia similar to those of *baumhoferi* except for the shape of the uncus. The latter has a more broadly rounded terminal margin on *gulosella* (compare figs. 391 and 392).

TYPE LOCALITY: Hot Springs, N. Mex. (type in AMNH, ex Rutgers).

FOOD PLANT: Not definitely known, but undoubtedly pine.

DISTRIBUTION: *New Mexico*, Hot Springs (Aug.); *Colorado*, Glenwood Springs (July, Aug.), also one female with only the state locality (Bruce, collector) and bearing a Hulst "type" label. The type from New Mexico is also a female. The Colorado specimens (2 ♂ and 4 ♀) are all in the National Collection. They are a perfect match for Ragonot's figure.

322. Dioryctria baumhoferi, new species

FIGURES 391, 881

Maxillary palpus of male squamous.

Forewing with raised scaling as on typical *zimmermani;* blackish gray with the usual black markings indicated by a more intense darkening of the ground color; the transverse lines faint but distinguishable, gray; antemedial line bordered inwardly by a broad black band including the subbasal scale ridge; a similar blackish, transverse shade across the middle of the wing; subterminal line outwardly angulate at middle, bordered inwardly by a black line and outwardly by a rather broad black shade extended into streaks on some of the veins; a black line along terminal margin; discal spot whitish gray, sometimes very faint. Hind wing smoky gray; the veins darkened and the smoky shade intensified along termen. Alar expanse, 25–28 mm.

Male genitalia having uncus triangulate with narrowly rounded apical margin. Female genitalia of the *zimmermani* type but with ductus bursae shorter in proportion to length of bursa and somewhat broader.

TYPE LOCALITY: Prescott, Ariz. (type in USNM, 61355).

FOOD PLANT: *Pinus ponderosa*. Larvae feeding in new growth.

Described from male type and one male and nine female paratypes from the type locality, reared under Hopkins Nos. 9932C and 18506, June 5, 6, and 11, 1928, by the late L. G. Baumhofer of the Forest Insect Division of the U. S. Bureau of Entomology and Plant Quarantine. Baumhofer's extensive rearings and field studies, especially in the Nebraska National Forest, have contributed what knowledge we have of the biology of the *Dioryctria* species in that area.

The new species is close to *gulosella* Hulst, from which it is distinguished by the much darker color of its fore and hind wings, differently shaped male uncus, and the somewhat stouter spining of the male penis. It may prove to be a local race of *gulosella* but is at least as distinct from it as *cambiicola* is from *zimmermani*.

323. Dioryctria subtracta, new species

FIGURES 393, 882

Maxillary palpus of male squamous.

Forewing with a subbasal ridge of raised scales and

a small tuft in lower fold just beyond antemedial line; dark gray finely peppered with white making the ground color a dark ash gray; the subbasal scale ridge, outer border of antemedial and inner border of subterminal lines, and the small raised patch following antemedial line, black strongly contrasted against the ground color, the outer border of antemedial line somewhat fainter than the other black markings; subbasal scale ridge narrow, reaching almost to costa; between it and antemedial line a broad pale band; antemedial line obscure, indicated chiefly by its blackish outer bordering line which is almost vertical and parallel with the scale ridge; subterminal line also faint, pale gray, outwardly angled at middle, bordered inwardly by a narrow black line; discal spot obscure, a narrow grayish white line on discocellular vein; a fine, strongly contrasted, black line along terminal margin. Hind wing white, on female a faint smoky tint towards apex; the outer parts of the veins faintly darkened and a narrow brown line along terminal margin. Alar expanse, 23–25 mm.

Male genitalia with uncus rather short in proportion to width; its terminal margin broadly rounded. Harpe narrow and rather short. Penis armed with two groups of subterminal spines and a single, straight, slender, rather short posterior spine; one of the anterior groups consisting of a line of short spines along lateral margin of penis near its apex.

TYPE LOCALITY: Fort Wingate, N. Mex. (type in USNM, 61356).

FOOD PLANT: Unknown.

Described from male type and one female paratype from the type locality (July), and one female from Glenwood Springs, Colo. (Sept.) which McDunnough had identified as *gulosella* Hulst. They are superficially similar to the type of that species except for the stronger contrast of the black markings on forewing; but are easily separated by their radically different genitalia. The expanded (bulbous) shape of the caudal end of the female ductus bursae is found in only one other American species of *Dioryctria* (*clarioralis*) and there in a lesser degree.

324. Dioryctria clarioralis (Walker)

FIGURES 394, 883

Nephopteryx clarioralis Walker, List, vol. 27, p. 54, 1863.
Dioryctria clarioralis (Walker) Ragonot, Ent. Amer., vol. 5, p. 114, 1889; Monograph, pt. 1, p. 193, 1893.—Hulst, Phycitidae of N. Amer., p. 136, 1890.—Forbes, Cornell Mem. 68, p. 620, 1923.—McDunnough, Check list, No. 6125, 1939.
Ulophora brunneella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 106, 1904.—Barnes and McDunnough, Contributions, vol. 3, p. 195, 1916 (make synonym of *clarioralis*).

Maxillary palpus of male squamous.

Forewing with a weak subbasal ridge of raised scales (the species has always been included in the smooth-winged *Dioryctria* group, but unrubbed and unpressed examples always show some traces of a raised subbasal ridge); ground color grayish brown with black patches and more or less white shading in the median and terminal areas; a broad blackish band preceding the antemedial line, paling towards inner margin, bordered inwardly by the black raised-scale ridge and outwardly by the thin, black inner border of the antemedial line; the latter thin, oblique, sometimes weakly notched below costa and more rarely at lower fold, white without (or with only an occasional trace, near inner margin) the normal black outer bordering line; a more or less extended black smudge in cell, sometimes extended as far as the black inner border of subterminal line and usually completely obliterating any trace of a white discal spot; some white streaking on lower vein of cell; subterminal line distinct, sharply indented between costa and vein 5, thence vertical and straight to inner margin, whitish with a thin black inner border; a fine line of confluent black dots along terminal margin. Hind wing smoky gray or brownish; the veins more or less darkened; a fine dark line along termen. Alar expanse, 22–29 mm.

Male genitalia with uncus triangulate, appreciably longer than greatest width, evenly tapering to very narrowly rounded apex. Female with ductus bursae broadened near genital opening but less so than in *subtracta*; bursa much larger and more heavily spined than that of *subtracta*, at least as long as ductus bursae.

TYPE LOCALITIES: "United States" (*clarioralis*, in BM); Tryon, N. C. (*brunneella*, in USNM).

FOOD PLANT: *Pinus palustris*. This record from a specimen received from L. A. Hetrick reared from larva feeding in the cone.

DISTRIBUTION: *Florida*, Dunedin (Mar.), Fort Myers (Apr.), Miami; *North Carolina*, Tryon (May, June); *Massachusetts*, Martha's Vineyard (June, July).

Another intermediate between the smooth-winged and rough-scaled species, easily distinguished by its genitalia and wing pattern.

78. Genus Oryctometopia Ragonot

Oryctometopia Ragonot, Nouv. Gen., p. 11, 1888; Monograph, pt. 1, p. 153, 1893.—Janse, Journ. Ent. Soc. South Africa, vol. 4, p. 156, 1941. (Type of genus: *Oryctometopia fossulatella* Ragonot.)

Tongue well developed. Antenna of male with a slight sinus and scale tuft in base of shaft; pubescent. Labial palpus obliquely upturned, reaching to or a trifle above vertex; third segment about two-thirds the length of second, bluntly pointed, more or less deflected forward. Maxillary palpi of both sexes broadly squamous, the scales forming a flat cover over the face. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle, equidistant at base from 2 and 4, parallel with 2 from just beyond base for its remaining length; 4 and 5 connate or very shortly stalked; 6 from below upper angle of cell, straight; 8 and 9 stalked for about two-thirds the length of 8; 10 from the cell, approximate to stalk of 8–9 at base; male with costal fold containing a row of coarse scales. Hind wing with vein 2 from before lower outer angle of cell; 3 from the angle; 4 and 5 stalked for about half their lengths; 7 and 8 closely approximate beyond cell at least for half their lengths; all veins long; cell about one-fourth the length of wing; discocellular vein slightly

curved, not extended at lower angle. Eighth abdominal segment of male with a pair of long, slender, ventrolateral hair tufts.

Male genitalia with uncus subtriangulate. Apical process of gnathos a short, stout, hook. Transtilla absent. Harpe with one or more short stout thornlike spines projecting from lower margin of sacculus. Aedeagus slender, rather long, sinuate. Penis armed with a single thornlike cornutus. Vinculum stout, longer than broad, subtriangulate, narrowed from middle to terminal margin.

Female genitalia with signum consisting of a single round curved plate, densely armed with long, stiff spines and covering the ventral and lateral caudal half of the bursa copulatrix; bursa otherwise membranous; a narrow sclerotized collar about ductus bursae at its junction with bursa, the ductus bursae otherwise unsclerotized; genital opening simple; ductus seminalis from bursa near junction of bursa and ductus bursae.

The genus, so far as we know, is confined to the New World and contains but one tropical American species.

325. Oryctometopia fossulatella Ragonot

FIGURES 53, 395, 900

Oryctometopia fossulatella Ragonot, Nouv. Gen. p. 11, 1888; Monograph, pt. 1, p. 153, 1893.

Phycita moeschleri Ragonot, Nouv. Gen., p. 12, 1888; Monograph, pt. 1, p. 182, 1893.—Möschler, Die Lepidopteren-Fauna von Portorico, p. 328, 1890. (New synonymy.)

Forewing gray to pale brownish gray; the transverse lines obscure but usually distinguishable; antemedial line nearly vertical, far out from base, on well marked specimens irregularly serrate and bordered outwardly by a thin dark line which is more or less broken, preceded by an obscure reddish olivaceous (or reddish brown) patch on inner margin, the latter bordered inwardly by same blackish scaling; a similar obscure reddish brown patch over lower fold just before the subterminal line; subterminal line more distinct than antemedial, sinuate (outwardly bulged at middle), dull whitish gray, bordered inwardly and outwardly by narrow dark lines; discal dots, when distinguishable, small, separated, blackish; a row of obscure blackish dots along termen; on most specimens a dull whitish patch over middle of inner margin. Hind wing translucent white; the veins not appreciably darkened; a contrasting dark shade along costa and narrowly along termen; on males, a fine dark subbasal line through the white cilia. Alar expanse, 15–20 mm.

Genitalia as given for the genus. The thornlike spines on sacculus of the male harpe are individually variable, consisting of one stout, hooked spine and two or more slenderer spines, their number and size varying not only in individuals but on opposite harpes of the same specimen. Cornutus of penis with a flattened platelike base.

TYPE LOCALITIES: "Irazu" [Mount Irazú], Costa Rica (*fossulatella*, in BM); *Puerto Rico* (*moeschleri*, in Paris Mus.).

FOOD PLANT: *Bauhinia mexicana*. Larvae in the pods. This record from Brownsville, Tex., specimens reared by the Division of Foreign Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine.

DISTRIBUTION: UNITED STATES: *Texas*, Brownsville (June). MÉXICO: Chiapas (May), Jalapa, Oaxaca, Tehuacán (Apr.). GUATEMALA: Cayuga (May, June, Sept.), Chejel (June, July, Aug.), Purulhá (July), Volcán Santa María (May, June, July). COSTA RICA: Esperanza (May), Mount Irazú. PANAMÁ: Cabima (May), Corazal (Apr.), La Chorrera (May), Porto Bello (Oct.). VENEZUELA: Aragus (Rancho Grande, May). BRAZIL: Rio de Janeiro ("10–1–31"). PUERTO RICO: Coamo Springs (Apr.), Covado (May), Puerto Real (Vieques Isl., Apr.), San Germán (Apr.). VIRGIN ISLANDS: Kingshill (St. Croix, June).

The species is easily distinguished by its genitalia; but in color and maculation is variable, as the foregoing description indicates. Such variability is purely individual and has no racial or local significance whatsoever. Ragonot described *fossulatella* from a large (20 mm.) male and his *moeschleri* from a small (17 mm.) female color variant, which accounts for his two names and their placement in different genera.

Genera 79–81: *Sarata* to *Lipographis*

[Venational division B. Forewing smooth; veins 4 and 5 separated at base. Hind wing with veins 4 and 5 stalked; cell usually short, about one-third the length of wing (longer in *Lipographis*, about one-half). Labial palpus porrect, broadly scaled, beaklike. Male genitalia with transtilla incomplete or absent; harpe with costa partially sclerotized, not produced, clasper reduced or absent, otherwise simple. Female genitalia with bursa smooth or scobinate, without signum; ductus seminalis from bursa.]

79. Genus Sarata Ragonot

Sarata Ragonot, N. Amer. Phycitidae, p. 11, 1887; Monograph, pt. 1, p. 614, 1893.—Hulst, Phycitidae of N. Amer. p. 168, 1890. (Type of genus: *Sarata dnopherella* Ragonot.)

Tongue well developed. Antenna pubescent; shaft of male cylindrical, slightly swollen at base and smoothly scaled or with a very slight ridge of roughened scales along a few of the basal segments. Labial palpus porrect, beaklike; second segment oblique, laterally flattened, broadly scaled; third segment deflected forward, about the length of second (sometimes a trifle shorter or longer), bluntly acuminate. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 separated at base; 6 from below upper angle of cell, straight; 8 and 9 stalked for from one-half to two-thirds their lengths; 10 from the cell, approximate to the stalk of 8–9 for a considerable distance from base; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle or separated from it by a very short spur; 4 and 5 stalked for two-thirds their lengths; 7 and 8 closely approximate beyond cell for nearly half their lengths; cell about one-third the length of wing; discocellular

vein curved, outwardly produced at lower angle of cell. Eighth abdominal segment of male with a pair of weak, ventrolateral hair tufts.

Male genitalia with uncus triangulate, its apex rounded. Apical process of gnathos terminating in an elongate hook, moderately long and bladelike (except in *incanella* where it is short, and digitate from an enlarged base); lateral arms of gnathos broad and stout. Transtilla incomplete; its lateral elements well sclerotized and short or moderately long and slender, their apices pointed. Harpe, elongate, slender; apex of cucullus rounded; clasper present as a very short, blunt, wartlike projection from near middle of basal margin of cucullus (except in *incanella* where it is broader and more scooplike), the size and shape of the wartlike clasper individually variable; costa not produced, strongly sclerotized only on basal half. Anellus a shallow, broadly U-shaped shield. Aedeagus long, straight, not appreciably tapering or expanded towards apex, stout to moderately slender (*incanella*); penis (except in *incanella*) armed with a single, long, stout, spikelike cornutus, rarely a second elongate slenderer spine (on penis of *incanella* the single cornutus is a short, stout thorn situated near apex). Vinculum stout, as long as or but a trifle longer than broad; terminal margin broad.

Female genitalia with bursa strongly scobinate over much of inner surface and more or less thickened (cartilaginous) at or near anterior end; ductus bursae simple (unsclerotized and unspined throughout), normally distinctly shorter than bursa; ductus seminalis from bursa near its middle well forward of junction of bursa and ductus bursae).

The species here referred to *Sarata* form a homogeneous group. Some of them on the basis of a smooth male antennal shaft have hitherto been listed under the Old World genus *Megasis;* but none agrees with the type of the latter (*rippertella* (Zeller), fig. 428) on genitalic characters or the stalking of veins 4–5 of hind wing, which is always shorter (and frequently incomplete, a mere approximation or anastomosis of the basal half of the veins in *rippertella*). The difference between a smooth antennal shaft and one with some roughened scales towards base is very slight, and should have no weight against the uniformity of the genitalic and venational characters of *Sarata* otherwise. Indeed the species of *Sarata* are much closer to those of *Lipographis* than to the type of *Megasis*.

None of our species has been reared and nothing is known of the food plants of any of them, so that any association of females with males is purely speculative. Such associations as have been made are open to grave suspicion. The females differ from the males not only in size but also in pattern and color, and within any given species of females the color varies more between individuals than it does between the species themselves. For this reason I have treated the males and females separately, giving to the latter new temporary names which can go into synonymy when the sexes are properly associated.

The following three species hitherto listed in *Megasis* or *Sarata* must be referred elsewhere:

Sarata rhoiella Dyar becomes the type of a new genus (*Philodema*).

Sarata umbrella Dyar goes to *Lipographis*.

Megasis indianella Dyar is an anerastiine and a synonym (see p. 315) of *Ragonotia olivella* (Hulst).

Genus *Sarata* (males), Species 326–330: *S. edwardsialis* to *S. incanella*

[Antennal shaft at base smooth scaled.]

326. Sarata edwardsialis (Hulst), new combination

FIGURE 396

Megaphysis edwardsialis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 163, 1886.

Megasis polyphemella Ragonot, N. Amer. Phycitidae, p. 10, 1887; Monograph, pt. 1, p. 545, 1893.

Megasis edwardsialis (Hulst), Ent. Amer., vol. 5, p. 156, 1889; Phycitidae of N. Amer., p. 165, 1890.—McDunnough, Check list, No. 6259, 1939.

Forewing pale grayish brown more or less smudged with darker gray; blackish streaks on several of the veins, especially marked on vein 1b, the lower vein of cell, and the veins immediately preceding and following the subterminal line; the latter faintly indicated; antemedial line obsolete; discal spots poorly defined, often obliterated, where distinguishable, separated; a row of narrow black dots along termen, more or less accented. Hind wing a little lighter grayish brown than ground color of forewing, the veins not appreciably darkened, a slightly darker line along termen; cilia paler, a dull white with a faint fuscous tint. Alar expanse, 35–46 mm.

Male genitalia with uncus evenly tapering to narrowly rounded apex. Apical process of gnathos about half as long as uncus. Elements of transtilla very short. Aedeagus long, stout; penis armed with a single, straight cornutus, nearly as long as aedeagus, also a small supplemental sclerotized patch. Terminal margin of vinculum concave.

TYPE LOCALITIES: Nevada (*edwardsialis*, in AMNH, ex Rutgers); California (*polyphemella*, in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado*, Boulder (Mar.), Glenwood Springs (Mar., Apr.), Salida; *Utah*, Dividend (Mar.), Eureka (Apr., May); *Nevada*; *California*, "Middle California"; *Washington*, Grand Coulee (Apr.), Pullman (Apr.).

Average specimens (40 mm. or more) make this the largest species in the genus. The Ragonot figure of *polyphemella* (Monograph, pl. 19, fig. 8a) is a very good likeness of normal examples, except that hind wing is a trifle too dark.

327. Sarata pullatella (Ragonot), new combination

FIGURE 397

Megasis pullatella Ragonot, N. Amer. Phycitidae, p. 10, 1887; Monograph, pt. 1, p. 547, 1893.

Smaller on the average than *edwardsialis* and darker.

Forewing almost uniformly suffused dark grayish fuscous (blackish gray on some examples); on some specimens the basal and terminal areas paler by contrast and the antemedial line indicated, but very faint, nearly vertical; on occasional specimens a paler brownish shade in the cell; faint blackish streakings on the veins in terminal area (especially on specimens with pale outer area) and more or less of a black streak on lower vein of cell; subterminal line very faint, often completely obscured, when distinguishable indicated chiefly by a broken black shading forming its inner border; discal dots obscured. Hind wing pale to dark gray-brown; the cilia whitish. Alar expanse, 29–36 mm.

Male genitalia figured from type and a typical specimen from Dividend, Utah, to show extent of individual variation. Uncus not so evenly tapering as in *edwardsialis;* its lateral margins slightly angled at middle. Aedeagus less stout and the single long cornutus on penis more slender than those of *edwardsialis;* no supplemental patch on penis.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *Utah*, Dividend (Apr.); *California*, San Diego (Jan.); *Idaho*, Malta; *Washington*, Kamiack Butte (Feb.), Pullman (Apr.).

Easily confused with smaller specimens of *edwardsialis*, and all specimens in the National Collection had been so identified; but otherwise distinguished by its genitalia.

Hulst in his Phycitidae of North America (1890) made *pullatella* a synonym of his *excantalis* and it has since appeared as such in our lists. Since the type of *excantalis* is a female, the synonymy is doubtful, to say the least.

328. Sarata punctella (Dyar), new combination

FIGURE 398

Megasis punctella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 404, 1915.

Forewing pale brownish gray with a slight rufous tint through the cell; antemedial line indicated by an outer border of three black dots, one below costa, a second on lower vein of cell, and a third on vein 1b; subterminal line obscure but usually distinguishable, a whitish spot on costa, preceded and followed by blackish dots and, below, bordered inwardly by short blackish streaklet on veins; on typical specimens some faint, blackish streaklets on the veins of outer area (following the subterminal line); a row of very faint blackish dots along termen; discal dots obsolete or very faint. Some specimens show little or no trace of the blackish markings. Hind wings pale brownish gray ("mouse gray"); the cilia but slightly paler, a narrow dark line along termen. Alar expanse, 25–30 mm.

Male genitalia with uncus elongate, slightly and evenly tapering to rounded apex. Apical process of gnathos appreciably shorter than in preceding species, slender. Elements of transtilla long, slender. Penis armed with two cornuti—one stout, slightly bent or sinuate, about half as long as aedeagus; the other a slender, flattened spine, as long as aedeagus.

TYPE LOCALITY: Tehuacán, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: "Las Vigas" [probably Las Viagas, *Vera Cruz*], Tehuacán (*Oaxaca*, Sept.), Uruapán (*Michoacán*, Mar.). Also three specimens labeled simply "V.5." One of the latter was before Dyar when he described his species. It had been identified by Druce as "*Zophodia inornatella* Rag."

Dyar's short original description is thoroughly adequate and accurate for the type but takes no account of suffused examples which lack the characteristic blackish markings.

329. Sarata punctella septentrionaria, new race

Like typical *punctella* but larger; the Arizona, New Mexico, and Colorado examples a suffused pale gray-brown with the usual dark markings obsolete or nearly so; the Wyoming example more grayish with most of the veins faintly streaked with blackish scaling. The genitalia agree with those of the type of *punctella*. Alar expanse, 32–35 mm.

TYPE LOCALITY: Palmerlee, Ariz. (type in USNM, 61357).

FOOD PLANT: Unknown.

Described from male type from the type locality, "Apr. 1–7," and one male paratype from each of the following localities: Fort Wingate, N. Mex. (Apr. 14, 1908); Golden, Colo., Dyar and Caudell, No. 16259; Medicine Bow, Wyo. July 4, 1936, I. H. Blake, No. "321–11."

Possibly a distinct species but probably only a larger northern variety of *punctella*. When collections are made in the poorly explored areas of northern México the species should show a continuous distribution.

330. Sarata incanella (Hulst), new combination

FIGURE 399

Epischnia incanella Hulst, Canadian Ent., vol. 27, p. 56, 1895.—McDunnough, Check list, No. 6257, 1939.

Megasis aridella Dyar, Proc. Ent. Soc., Washington, vol. 7, p. 35, 1905.—McDunnough, Check list, No. 6263, 1939. (New synonymy.)

Forewing gray heavily dusted with white especially in outer area and along costa at base and middle; the median area between the transverse lines darker than remainder of wing; dark shading also on basal area below costa; black streaking on the veins, especially pronounced in outer area, on vein 1b and upper and lower veins of cell; transverse lines white, distinctly outlined; antemedial line zigzag, nearly vertical, with some blackish shading along outer margin; subterminal line sharply indented at veins 6 and 1b; discal dots separated, blackish; terminal dots faint but distinguishable, separated. Hind wing whitish with a faint smoky tint; a very faint dark line along termen; cilia concolorous with wing. Alar expanse, 31–36 mm.

Male genitalia with uncus as long as greatest width; its apical margin broadly rounded. Apical process of

gnathos a short, slender hook arising from a thickened base. Clasper of harpe broad, squarish. Aedeagus rather short; penis armed with a single small thornlike cornutus. Vinculum with terminal margin broadly and evenly rounded; in all other species of the genus the terminal margin distinctly concave.

TYPE LOCALITIES: Colorado (*incanella*, in USNM); Stockton, Utah (*aridella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado; Utah*, Stockton (May); *California*, Inyo County (May).

The palest of the *Sarata* species, except *tephrella* Ragonot. The genitalia of the types of *incanella* and *aridella* are identical.

Genus *Sarata* (males), Species 331–337: *S. atrella* to *S. tephrella*

[Antennal shaft with a ridge of roughened scales at base.]

331. Sarata atrella (Hulst), new combination

FIGURE 400

Megasis atrella Hulst, Phycitidae of N. Amer., p. 166, 1890.—Ragonot, Monograph, pt. 1, p. 548, 1893.—McDunnough, Check list, No. 6263, 1939.

Vestiture of labial palpi, head, and prothorax a mixture of scales and long hairs.

Forewing blackish gray; transverse lines whitish gray, dull; the antemedial line obscure; subterminal line stronger, always distinguishable, bordered inwardly and outwardly by black streaklets on the veins; discal spots obsolete, obscured in the dark ground color; blackish dots along termen confluent. Hind wing pale to rather dark smoky fuscous, a thin dark line along termen. Alar expanse, 30–33 mm.

Male genitalia with uncus elongate, evenly tapering to narrowly rounded apex. Apical process of gnathos about half as long as uncus, ventrally flattened. Elements of transtilla short. Penis armed with a single strong cornutus, as long as aedeagus, no supplemental sclerotized plate.

TYPE LOCALITY: West Cliff, Colo. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado*, Custer County, West Cliff, and two specimens with only the state locality.

The species is easily distinguished by the hairy vestiture not possessed by any other known species in the genus.

332. Sarata caudellella (Dyar), new combination

FIGURE 401

Megasis caudellella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 110, 1904.—McDunnough, Check list, No. 6261, 1939.

Similar to the foregoing species (*atrella*) except: Without hairy vestiture and with some fine white powdering on the blackish gray ground color of forewing; the transverse lines distinct, oblique and nearly straight; antemedial line followed on costa and preceded at inner margin by obscure dark blotches; subterminal line bordered inwardly by a continuous irregular blackish shade, outwardly by a short, faint, dark streaking of the veins; the veins otherwise not appreciably streaked; discal dots faint, but usually distinguishable, more or less confluent; dots along terminal margin weak, fused into a faint blackish line. Hind wing pale brownish gray, semilustrous; a dark line along termen. Alar expanse, 28–32 mm.

Male genitalia differ from those of *atrella* only in trifling details.

TYPE LOCALITY: Golden, Colo. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado*, Golden (May); *Washington*, Grand Coulee (Apr.). CANADA: *Saskatchewan*, Oxbow (June); *Manitoba*, Aweme (Apr.), Miniota.

Close to but distinct from *atrella*, from which it is distinguished chiefly by its smooth-scaled vestiture and the strong contrast of the whitish transverse lines of forewing, especially the well-marked antemedial line.

333. Sarata dnopherella Ragonot

FIGURE 402

Sarata dnopherella Ragonot, N. Amer. Phycitidae, p. 11, 1887; Monograph, pt. 1, p. 616, 1893.

This and the two species following (*nigrifasciella* and *cinereella*) are very close, separable only by minor color differences and trifling variations in the genitalia of their types. Such variations are more than covered in the series of *nigrifasciella* and *cinereella* before me. I suspect that the names represent nothing but color varieties of one variable species; but am keeping them separate until life-history information and more extensive collections are available and more exact definitions of species and possible races can be made.

Ragonot's *dnopherella* is authentically represented only by its type. His description and figure suggest a grayish brown form suffused with blackish brown and with the transverse lines very weakly contrasted and poorly defined against the ground color. Alar expanse, 32 mm.

Male genitalia with uncus broadly and bluntly triangulate, evenly tapering to narrowly rounded apex. Elements of transtilla moderately long, slender (about half the length of those of *atrella*). Penis armed with a single stout cornutus, slightly more than half as long as aedeagus and preceded basally by a small, weakly sclerotized patch.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

Hulst (Phycitidae of N. Amer., p. 168, 1890) treated *dnopherella* as a synonym of his *perfuscalis* and it so appears in our lists. As *perfuscalis* was described from a female the synonymising of the two names was arbitrary and, under the circumstances, unwarranted. Ragonot (Monograph, p. 616, 1893) very rightly questioned it.

334. Sarata nigrifasciella Ragonot

FIGURE 403

Sarata nigrifasciella Ragonot, N. Amer. Phycitidae, p. 11, 1887; Monograph, pt. 1, p. 615, 1893.—Hulst, Phycitidae of N. Amer., p. 169, 1890.—McDunnough, Check list, No. 6266, 1939.

Forewing pale to dark ashy gray, some specimens tinted with a faint brownish shade (one specimen before me from Mineralking, Calif., a very pale, sordid brownish gray). The transverse lines distinct, but indicated chiefly by the blackish outer border of the antemedial line and a similar inner border to the subterminal line. This character, however, is variable and on the Idaho specimen before me is almost obsolete. Hind wing very pale brown, with a fine dark terminal line. Alar expanse, 29–32 mm.

Male genitalia similar to those of *dnopherella* except for the narrower apical process of gnathos (viewed ventrally). This character, however, is not reliable; for in a typical series of *cinereella* all intergrades are found between the gnathos of typical *nigrifasciella* and that of *dnopherella*.

TYPE LOCALITY: America Septentrionalis (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *New Mexico*, Fort Wingate (Mar.); *Colorado*, Chimney Gulch (June), Platte Canyon (June); *Idaho*, Wallace (Apr.); *California*, Mineralking (July), Yosemite (this specimen labeled *nigrifasciella* in Ragonot's handwriting). CANADA: *Manitoba*, Aweme (Apr.).

This species, if such it be, is distinguished from the preceding and following species chiefly by its more marked transverse lines in forewing and the narrower apical process of its gnathos. Ragonot's description of the females (also from "Amer. Sept.") associated with his male type can be ignored, for they represent two distinct species.

335. Sarata cinereella Hulst

Sarata cinereella Hulst, Canadian Ent., vol. 32, p. 172, 1900.—McDunnough, Check list, No. 6271, 1939.

Forewing dark ash gray, nearly concolorous; the transverse lines obsolete or nearly so; the subterminal line faintly indicated on most specimens and, on one or two, very faint traces of the antemedial line; as on *dnopherella* and *nigrifasciella* there is more or less blackish dusting on the veins. Hind wing pale brownish gray. Alar expanse, 29–33 mm.

Male genitalia of type show a slightly longer cornutus than that of *nigrifasciella*, but other examples intergrade in all characters between the two types.

TYPE LOCALITY: Salida, Colo. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado*, Denver (Mar.), Glenwood Springs, Salida, also three examples with only state locality, two of them bearing Hulst "type" labels (Bruce, collector), and the other a pseudotype of "*Anerastia excantalis* Hulst."

Probably only a suffused form of *nigrifasciella*.

336. Sarata rubrithoracella (Barnes and McDunnough), new combination

FIGURE 404

Megasis rubrithoracella Barnes and McDunnough, Contributions, vol. 2, p. 140, 1913.—McDunnough, Check list, No. 6268, 1939.

Forewing pale brownish gray rather evenly dusted with white intermixed with a sparse peppering of blackish scales; the transverse lines distinct, but faint, whitish; antemedial line bordered outwardly by a thin, broken, blackish shade; subterminal line bordered inwardly by a continuous narrow blackish band; no appreciable streaking on the veins; discal spots obsolete; terminal dots confluent, forming a faint, dark line. Hind wing pale grayish brown; a thin dark line along termen. Alar expanse, 22–29 mm.

Male genitalia show little to distinguish them from those of the preceding three species except for the very short lateral elements of transtilla and a slightly longer cornutus (our drawing of the aedeagus is in reversed position from that of other species; if drawn as were the other aedeagi the apex of cornutus would point to the right).

TYPE LOCALITY: White Mts., Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, White Mts.; *New Mexico*, Fort Wingate (Apr., July).

Apparently a distinct species. Differs from the others by a distinct rufous-ocherous shading on the thorax and, in genitalia, from the species of the *dnopherella–cinereella* group by the short transtilla elements of its genitalia. The rufous ocherous thorax occurs also in two species of females (*kappa* and *phi*).

337. Sarata tephrella Ragonot

FIGURE 405

Sarata tephrella Ragonot, Monograph, pt. 2, p. 616, 1893.—McDunnough, Check list, No. 6268, 1939.

Known to me only from Ragonot's description and figure, and the genitalia of its type. Evidently a much paler species than any other of those with a rough-scaled antennal shaft, and having much the general habitus of a *Lipographis*. Forewing heavily dusted with white; some ocherous brown shading in median and outer areas; transverse lines whitish, distinguishable but poorly defined. Hind wing dark gray. Alar expanse, 28 mm.

Male genitalia similar to those of the *dnopherella–cinereella* group except elements of transtilla larger and cornutus more slender and more evenly tapering.

TYPE LOCALITY: "Washington Territory" (type in Paris Mus.).

FOOD PLANT: Unknown.

Described and so far known only from its male type.

Genus *Sarata* (females), Species 338–346: *S. alpha* to *S. delta*

[The females are of a uniform pattern and similar coloration; the ground color gray, sometimes tinted with pale brown and more or less dusted with white, variations in color more individual than specific; the transverse lines strongly contrasted, white with strongly accented blackish or brownish borders on outer margin of antemedial and inner margin of subterminal lines; the lines oblique and straight or notched, the notching also more individual than specific in character. The only reliable specific characters are in the genitalia, and for certain identification it is necessary to dissect nearly all females.]

338. Sarata alpha, new species

FIGURE 888

A bright species with the white lines and their black borders sharply contrasted. Forewing blackish gray with a strong dusting of white (however, in one specimen from the type locality, the median area distinctly darker than basal or outer areas); antemedial line slightly curved; subterminal line straight or with a very slight bend at lower fold; discal dots distinct, more or less confluent. Hind wing whitish with a faint brown tint; the veins slightly darkened; a broadened blackish brown line along termen; cilia white. Alar expanse, 21–24 mm.

Female genitalia with bursa large and greatly elongated; densely and finely spined over most of interior surface, the denser spining in longitudinal rows, partially divided by lines of the clear membrane; anterior end thickened (cartilaginous), the amount of thickening individually variable; ductus bursae very short.

TYPE LOCALITY: Oxbow, Saskatchewan, Canada (type in USNM, 61358).

FOOD PLANT: Unknown.

Described from female type and two female paratypes from the type locality, May 14, 1907, Frederick Knab; and additional female paratypes as follows: One from Aweme, Manitoba, Apr. 12, 1903. N. Criddle; one from Regina, Saskatchewan, June 5, 1907; and two from Chimney Gulch, Golden, Colo., July, Oslar. A female in the Rutgers Collection (C. H. slide No. 2186) from Colorado identified as *atrella* also goes here. Needless to say there is no trace on any of these females of the hairy vestiture of the male of *atrella*.

339. Sarata beta, new species

FIGURE 889

Similar to *alpha* except less glossy. Forewing duller; less white dusting; transverse lines and their black borders less strongly contrasted; discal dots obscured. Hind wing dark smoky gray; the veins not darkened. Alar expanse, 23–26 mm.

Female genitalia like those of *alpha* in shape and proportions except that spining covers appreciably less of the bursa surface, leaving half or more than half of the latter membranous and unspined.

TYPE LOCALITY: Colorado (type in USNM, 61359).

FOOD PLANT: Unknown.

Described from female type with only a state locality label; one female paratype from Custer County, Colo.; and one female paratype from Chilcotin, British Columbia, May 2, 1920, E. K. Buckell No. 137. The two Colorado examples were in the Barnes and National Museum Collections as females of *atrella* Hulst.

340. Sarata gamma, new species

FIGURE 890

This is the female figured in the Ragonot Monograph (pt. 1, pl. 23, fig. 2b.) as a paratype of his *dnopherella*. Its genitalia, here figured, are similar to those of *alpha* and *beta* except for slight differences in the spining of the bursa, as shown in the figure.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

341. Sarata iota, new species

FIGURE 894

This name is proposed for the female paratype of *pullatella* Ragonot, described and figured by him (Monograph, pt. 1, p. 547, pl. 19, fig. 9b, 1893).

Forewing blackish gray with very little pale dusting; the antemedial line broader and more strongly contrasted than the subterminal. Hind wing dark grayish brown. Alar expanse, 24 mm.

Genitalia (C. H. slide No. 3113) with bursa considerably smaller and more sparsely spined than that of any of the preceding species; ductus bursae about half as long as bursa.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

It is very likely that this is the female of *pullatella;* but at the present time there is no certainty about any of the sex associations in the genus.

342. Sarata perfuscalis (Hulst)

FIGURE 893

Nephopteryx perfuscalis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 161, 1886.

Anerastia excantalis Hulst, Trans, Amer. Ent. Soc., vol. 13, p. 163, 1886 (new synonymy).

Megasis excantalis (Hulst), Ent. Amer., vol. 5, p. 156, 1889; Phycitidae of N. Amer., p. 165, 1890.—McDunnough, Check list, No. 6260, 1939.

Sarata perfuscalis (Hulst), Phycitidae of N. Amer., p. 168, 1890.—McDunnough, Check list, No. 6269, 1939.

Forewing dull, dark gray more or less dusted with white; the terminal and (usually) the median areas the paler, the basal area the darker; transverse lines distinct, sordid white, their dark borders well contrasted, especially on specimens with considerable white dusting. Hind wing smoky grayish brown. Alar expanse, 25–29 mm.

Female genitalia distinguished by the spining of the large bursa. These spines are arranged in an elongate, ribbed band which extends most of the length of the inner dorsolateral surface, curving onto ventral surface at anterior end; the area of bursa under the spines more or less sclerotized.

TYPE LOCALITY: California (*perfuscalis, excantalis,* in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *California* (state locality only); *Washington,* Seattle; *Utah,* Eureka (Mar., Apr.), Stockton (Apr.).

Hulst associated his *perfuscalis* with *dnopherella* Ragonot; and *excantalis* with *pullatella* Ragonot. So much for superficial sex associations. Their genitalia show the two females to be obviously conspecific.

343. Sarata epsilon, new species

FIGURE 892

The smallest of the female species. Similar in coloration to *perfuscalis* except that the dark borders of the transverse whitish lines are somewhat broader and more strongly contrasted. Alar expanse, 19–21 mm.

Female genitalia with bursa moderately large, evenly and finely spined on anterolateral half and extreme anterior end.

TYPE LOCALITY: Yosemite, Calif. (type in USNM, 61360).

FOOD PLANT: Unknown.

Described from female type from the type locality identified by Ragonot as a female of *nigrifasciella* and bearing that name label in his handwriting and female paratypes as follows: One from Colorado, Cockerell, collector, identified by Hulst as *atrella;* two from Golden, Colo., May, Dyar and Caudell Nos. 16252 and 16253, and identified by Dyar as paratypes of *caudellella;* seven from Chimney Gulch, Golden, Colo., June, Oslar; and one from Fort Wingate, N. Mex., March. Here also is referrable one of the two female paratypes of *nigrifasciella* Ragonot in the Paris Museum (C. H. slide No. 2891).

Most of the foregoing examples show at least one of the black discal spots. On each of the seven specimens from Chimney Gulch, Colo., is a minute white spot on discocellular vein between the black dots and on these also there is some very dark brown shading on the otherwise blackish borders of the white transverse lines.

344. Sarata phi, new species

FIGURE 891

Thorax shaded with rufus ocherous.

Forewing more evenly dusted with white; dark borders of the transverse lines distinctly brownish; discal spots obsolete, replaced by a faint, white line or spot on the discocellular vein. Alar expanse, 23–27 mm.

Female genitalia essentially like those of *epsilon.* The figure shows the bursa twisted into a reverse position from that of *epsilon* to show the somewhat greater development of the thickened (*cartilagenous*) lateral margin (a variable and probably only an individual character).

TYPE LOCALITY: White Mts., Ariz. (type in USNM, 61361).

FOOD PLANT: Unknown.

Described from female type from the type locality (the female paratype of *rubithoracella* Barnes and McDunnough); and five female paratypes from Fort Wingate, N. Mex. March, June, July. Also before me, but not included among the paratypes, is a large female (26.5 mm.) from Denver, Colo., Apr. 1, 1904, Oslar. On this specimen the patagia are more putty white than rufus. Its genitalia, however, agree in detail with those of typical *phi* from Arizona and New Mexico. The species is uncomfortably close to *epsilon.* It probably does represent the female of *rubithoracella* but the verification of that relation will have to wait upon rearing evidence.

345. Sarata kappa, new species

FIGURE 887

Forewing dull, as in *beta,* but with considerable white dusting, rather evenly distributed; the transverse lines more irregular and their black borders more strongly contrasted; subterminal line with slight notches at vein 6 and lower fold; lower discal dot faint, but distinguishable. The thorax of the type is strongly shaded with rufus-ocherous. Alar expanse, 23 mm.

Female genitalia with bursa copulatrix very small (the smallest of any of the *Sarata* species); the greater part of its inner dorsal surface covered with a dense mat of very fine spines. Ductus bursae as long as bursa.

TYPE LOCALITY: Arizona (type in USNM, 61362).

FOOD PLANT: Unknown.

Described from a pseudotype of *perfuscalis* Hulst from the Fernald Collection, bearing only a state locality and numbered "7820."

In coloration similar to *phi* except for the blackish borders of the transverse lines of forewing. Distinguished from that and other species of the genus by its genitalia.

346. Sarata delta, new species

FIGURE 886

This name is proposed for the second of the female paratypes of *nigrifasciella* Ragonot (in Paris Mus., C. H. slide No. 3111) whose genitalia are here figured.

80. Philodema, new genus

TYPE OF GENUS: *Sarata rhoiella* Dyar.

Tongue well developed. Antenna pubescent; shaft of male slightly flattened and with a shallow sinus near base, the latter containing some slightly roughened scales and a few, minute serrations. Labial palpus porrect (as in *Sarata* but shorter). Maxillary palpus vestigial. Venation as in *Sarata* except veins 4 and 5 of hind wing stalked for half or less than half their lengths and cell a short one-third the length of wing. Eighth abdominal segment of male with ventrolateral hair tufts.

Male genitalia as in *Sarata* except: More squat, broader in proportion to their length; harpe short in proportion to its width; no erect clasper; anellus strongly sclerotized, its central area developed into a pair of produced, pointed, bladelike arms, the usual

lateral lobes absent; aedeagus slender, its basal end broadened and flattened; penis without cornutus or other armature except for a few weak scobinations at apex; vinculum stout, shorter than its greatest width.

Female genitalia with bursa small, simple, membranous; ductus bursae short with a strongly sclerotized, curved, wide, centrally notched, dorsal plate behind genital opening; ductus seminalis from a small lobe of bursa near junction of bursa and ductus bursae.

The genus falls between *Sarata* and *Hypochalcia* and has several features of each of these genera but can go into neither of them on the sum of its characters. It appears to be a New World analogue of the Old World *Hypochalcia*, agreeing with the latter on most genitalic characters except for its short vinculum and peculiarly developed anellus. The type of *Hypochalcia* (*ahenella* (Zeller), fig. 54) has an elongate vinculum. It also differs from *Philodema* in having much longer, smoother and slenderer labial palpi, rather broad, squamous maxillary palpi and smoother more glossy wing vestiture.

Philodema differs markedly from *Sarata* in that there is no sexual dimorphism, the males and females being alike in color and markings.

347. Philodema rhoiella (Dyar), new combination

FIGURES 406, 895

Sarata rhoiella Dyar, Journ. New York Ent. Soc., vol. 12, p. 105, 1903.—McDunnough, Check list, No. 6267, 1939.

Forewing pale, sordid, brownish gray; extreme basal area dark smoky gray; the transverse lines indicated chiefly by their dark borders, the latter dark smoky gray; the outer border of the antemedial line more or less broken and diffused; subterminal line bordered inwardly by an irregular (zigzag) border, somewhat accented on the veins, and outwardly by a more obscure dark shade; discal dots distinct, separated. Hind wing smoky gray; the veins slightly darkened; a narrow dark shade along termen. Alar expanse, 23–33 mm.

Genitalia as given for the genus; figured from paratypes from the type locality. The male holotype was without an abdomen.

TYPE LOCALITY: Platte Canyon, Colo. (type in USNM).

FOOD PLANT: *Rhus toxicodendron.*

DISTRIBUTION: *Colorado*, Platte Canyon (July); *Utah*, "So. Utah" (July).

The Utah specimens (2 ♂) are larger (32–33 mm.) than any of the Colorado examples; but have identical genitalia and wing maculation; nothing is known of the life history except Dyar's statement that two specimens of the type series were reared from larvae on poison-ivy.

81. Genus Lipographis Ragonot

Lipographis Ragonot, N. Amer. Phycitidae, p. 10, 1887; Monograph, pt. 1, p. 562, 1893.—Hulst, Phycitidae of N. Amer., p. 166, 1890. (Type of genus: *Pempelia fenestrella* Packard.)

Tongue well developed. Antenna weakly pubescent; on male, shaft flattened, serrate, and with sinus and strong scale tuft at base (except in *umbrella* and *subosseella* where the shallow sinus has a weak tuft of roughened scales). Labial palpus porrect, second segment oblique, laterally flattened, broadly scaled; third segment deflected forward, decidedly shorter than second, its proportions obscured by its long scaling and the extended scaling of second segment. Maxillary palpus subsquamous (small but broadly scaled, vestigial in *umbrella*). Forewing smooth; venation as in *Sarata* except for a somewhat shorter stalking of veins 8 and 9 of forewing and a longer cell in hind wing (nearly one-half the length of the wing); 4 and 5 are also shorter stalked, about one-half their lengths.[7] Eighth abdominal segment of male with a pair of ventrolateral hair or scale tufts (absent in *subosseella*).

Male genitalia with apical projection of gnathos a short stout hook (except in *subosseella*). Transtilla absent except in *truncatella* and *subosseella* where it is represented by its short, weak, divided elements. Anellus with short, weak, lateral lobes (except in *subosseella*). Aedeagus broadly expanded towards apex (except in *truncatella*); penis armed with one or more strongly sclerotized, curved, spinelike cornuti (the latter always decidedly less than half as long as the aedeagus). Genitalia otherwise as in *Sarata*.

Female genitalia with bursa membranous and greatly reduced, if sometimes elongate (*truncatella*) narrow; ductus bursae scobinate and partially sclerotized near its junction with bursa copulatrix, greatly broadened in proportion to width of bursa (except in *truncatella*); genital opening simple, unsclerotized; ductus seminalis from bursa near junction of bursa and ductus bursae.

Lipographis agrees with *Philodema* and differs from *Sarata* in that the males and females are alike in color and markings. It is distinguished from both *Sarata* and *Philodema* chiefly by its female genitalia. The latter resemble those of the type of the Old World *Divona* Ragonot (*ilignella* (Zeller)) except that the bursa of *ilignella* is strongly scobinate, partially sclerotized, and proportionally much larger.

In his original description of *Lipographis*, Ragonot designated *fenestrella* as type of the genus. Later (Monograph, 1893) he cites *humilis* as its type. This substituted designation is invalid, regardless of the fact that *humilis* was an originally included species and may have served as the basis for the original generic description. That *humilis* now proves to be a synonym of *fenestrella* is also immaterial and irrelevant.

One species (*subosseella*) originally described in *Lipographis* is here provisionally retained in the genus. It may eventually have to have a new generic placement as its only representation (the male type) is aberrant in several genitalic details.

[7] The venation of *fenestrella* and *leoninella* exhibit considerable individual variation; veins 4 and 5 of forewing are normally approximate for a short distance from cell but sometimes divergent and (rarely) even shortly stalked. In one freak specimen before me vein 4 is also absent from hind wing, another example which advises caution against relying too much upon one structure for the identification of phycitids.

348. Lipographis fenestrella (Packard)

FIGURES 31, 407, 896

Pempelia fenestrella Packard, Ann. New York Lyc. Nat. Hist., vol. 10, p. 259, 1873.

Nephopteryx fenestrella (Packard) Grote, Bull. U. S. Geol. Geogr. Surv. Terr., p. 697, 1878.

Lipographis humilis Ragonot, N. Amer. Phycitidae, p. 11, 1887; Monograph, pt. 1, p. 563, 1893.—Hulst, Phycitidae of N. Amer., p. 167, 1890. (New synonymy.)

Lipographis fenestrella (Packard) Ragonot, N. Amer. Phycitidae, p. 10, 1887; Monograph, pt. 1, p. 564, 1893.—Hulst, Phycitidae of N. Amer. p. 166, 1890.—McDunnough, Check list, No. 6272, 1939.

Forewing ash gray, dusted with white and shaded with brownish ocherous; the transverse lines narrow, white; antemedial line oblique, nearly straight, bordered inwardly by a broad brownish ocherous band marked by black dots or streaklets on vein 1b and upper and lower veins of cell, followed outwardly by two or three similar black dots; white dusting along lower vein of cell, median part of vein 1b and along some of the veins preceding the subterminal line; subterminal line parallel to termen, very slightly indented at veins 6 and 1b, bordered outwardly by a broad brownish ocherous band (the latter interrupted by blackish streaklets on the veins) and from costa by short, faint, narrow, inner and outer, blackish bordering lines; along termen a narrow dusting of white; terminal dots more or less confluent, individually variable, forming sometimes a straight, sometimes a scalloped, black line; discal dots separated, small, blackish; usually a brownish ocherous shade along median area of lower fold. Hind wing dull white with a faint, smoky tint towards apex and termen; a fine blackish line along terminal margin; the veins not appreciably darkened. Alar expanse, 19.5–24 mm.

Male genitalia with aedeagus decidedly bulged from shortly beyond base; penis armed with a comb of 5 stout, curved spines of a graduating length. Female genitalia with bursa greatly reduced and but slightly longer than ductus bursae; the latter appreciably broader than the bursa.

TYPE LOCALITY: California (*fenestrella*, in MCZ; *humilis*, in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, "Middle California," Palo Alto (May), San Diego (Apr., May, June, July, Aug., Oct.), San Francisco.

The type of Ragonot's *humilis* is merely a small, rather dark male of *fenestrella* with identical genitalia. In any considerable series of *fenestrella* the palpal differences cited by Ragonot can be observed. They are indeed more apparent than real and more due to proportionate differences in the sizes of the individual specimens and to differing positions of the palps. In our latest checklists *humilis* is listed as a subspecies or variety of *fenestrella*. It is not even that.

349. Lipographis leoninella (Packard)

Pempelia leoninella Packard, Ann. New York Lyc. Nat. Hist., vol. 10, p. 259, 1873.

Nephopteryx leoninella (Packard) Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 2, p. 697, 1878.

Lipographis leoninella (Packard) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 565, 1893.—McDunnough Check list, No. 6273, 1939.

Lipographis fenestrella leoninella (Packard) Hulst, Phycitidae of N. Amer., p. 167, 1890.

Pyla pallidella Dyar, Journ. New York Ent. Soc., vol. 12, p. 107, 1903.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916 (make synonym of *leoninella*).

Forewing similar in maculation to that of *fenestrella* except: General color more ocherous than gray, the gray shading limited to the median area between the transverse line; basal area of wing pale ocherous; the inner border of the antemedial and outer border of the subterminal lines yellow; lower fold between the transverse lines pale ocherous; no appreciable black streaking on the veins of outer area; discal spot at lower outer angle of cell larger, more conspicuous. Hind wing paler, with a faint ocherous tint towards apex and termen. Alar expanse, 21–24 mm.

Male and female genitalia like those of *fenestrella*.

TYPE LOCALITIES: California (*leoninella*, in MCZ); Salt Lake, Utah (*pallidella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *California*, "Middle Calif.," Olancha (Inyo County, June), Palo Alto (May), Sonoma County (May); *Utah*, Richfield (Aug.), Salt Lake, Stockton (July), Vineyard (June, July). CANADA: *Manitoba*, Cartwright (Aug.).

Hulst treated *leoninella* as a variety of *fenestrella*, and probably correctly. There is nothing to separate the two except coloration. However, as nothing is known about their biology, it seems the better part of wisdom to keep the two names apart. Larval characters and habits and hosts may indicate separate species or at least distinct races.

350. Lipographis truncatella (Wright), new combination

FIGURES 408, 898

Hypochalcia truncatella Wright, Ent. News, vol. 27, p. 25, 1916.—McDunnough, Check list, No. 6276, 1939.

Forewing a dull, pale, brownish ocherous, dusted with white and a fine peppering of black scales, making the general color an ashy gray with a strong suffusion of the ground color, the latter most pronounced in basal area and in lower half of median area; antemedial line faint, without any appreciable inner border, its outer border indicated by black dots on costa, upper and lower veins of cell, and on vein 1b; subterminal line distinct, with a narrow, faint, but distinguishable and continuous inner, black, bordering line. Hind wing pale gray, very faintly tinted with ocherous toward base and shading into a smoky hue towards apex and termen; a strong narrow dark shade along termen. Alar expanse, 22–25 mm.

Male genitalia distinguished chiefly by its much slenderer aedeagus, narrowing at apex, and the single, very short, thornlike, curved cornutus on penis. Differences also in the shape of the sclerotization of the eighth segment tergite of abdomen are shown in the figure. Female genitalia figured from a San Diego specimen in the National Collection (W. S. Wright, June 23, 1911). Bursa narrowly elongate; ductus bur-

sae much shorter than bursa, and narrow (no wider than bursa, except at genital opening).

TYPE LOCALITY: San Diego, Calif. (type probably lost).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Chula Vista (June), San Diego (June).

Despite its striking specific differences in genitalia and more broadly scaled labial palpi this species fits well into *Lipographis*. It is certainly not a *Hypochalcia*. The latter, an Old World genus, as far as I know is not represented in our fauna.

351. Lipographis umbrella (Dyar), new combination

FIGURES 410, 897

Sarata umbrella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 59, 1908.—McDunnough, Check list, No. 6270, 1939.

Male antenna with a weak ridge of roughened scales in shallow sinus at base of shaft.

Forewing orange yellow; transverse lines narrow, white; antemedial line oblique, somewhat curved, set well out on wing and with only the faintest indication of a dark outer border, the latter sometimes containing a few black scales; subterminal line nearly straight, with only a slight median bulge, inwardly more or less bordered with black, the latter color varying from a thin, weak line to large smudges extending well into the median area of the wing; on some specimens a narrow oblique blackish shade just beyond basal attachment of wing; discal dots obscure, often obliterated by streaks of white scaling or extensions of the black border of the antemedial line. Hind wing semilustrous, ocherous with a smoky suffusion, the latter most pronounced on dark specimens; veins not appreciably darkened. Alar expanse, 26.5–31 mm.

Male genitalia similar to those of *fenestrella* and *leoninella;* differing from them chiefly in the armature of the penis; the latter consists of a comb of 6 or 7 curved spines and another straight spine, near but distinctly separated from the comb. Female genitalia differing only in minor details from those of *fenestrella*.

TYPE LOCALITY: San Diego, Calif. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Laguna, Long Beach (Sept.), Los Angeles (Sept.), Petaluma (Sept.), San Diego (Aug., Sept.).

Dyar placed the species in *Sarata* on the basis of its male antenna character; but its genitalia as well as the lack of any sexual dimorphism in wing maculation or color show that it belongs in *Lipographis*.

352. Lipographis (?) subosscella Hulst

FIGURE 409

Lipographis subosscella Hulst, Canadian Ent., vol. 24, p. 62, 1893.—Ragonot, Monograph, pt. 1, p. 565, 1893.

Male antenna with a very weak scale ridge in shallow sinus at base of shaft.

Thorax and forewing sordid white overshaded with dull ocherous; the whitish ground color most noticeable along costa, the ocherous shade strongest along lower fold and in outer area, making the general color of the wing (to the naked eye) a pale brownish yellow; transverse lines nearly obsolete; antemedial line distinguishable only as an oblique whitish streak from lower vein of cell to inner margin, preceded on inner margin by a blackish brown smudge; subterminal line indicated only by its dark borders, a pale brownish, rather broad outer band and a fainter, narrower, broken inner line; discal dots separated, weak, blackish brown; a half-dozen narrow blackish dots along termen. Hind wing white with some fuscous shading at apex, on the outer veins, and, narrowly, along termen; cilia shining white. Alar expanse, 16 mm.

Male genitalia uncus triangulate, its apex narrowly rounded. Apical process of gnathos an elongate, rather narrow, ventrally flattened hook. Harpe elongate, slender, with very small thornlike clasper. Anellus without lateral lobes. Aedeagus broadly expanded at apex; penis armed with a single, stout, curved cornutus and a small supplemental detached sclerotized plate. Eighth abdominal segment simple (without tufts).

TYPE LOCALITY: Bahama Islands (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

An anomalous species, differing in its tropical habitat, wing pattern, and many details of male genitalia from other species of *Lipographis*, in which genus it is tentatively retained. Eventually, when more material is available, especially some female examples, a new generic reference may be needed. At present the species is known only from its unique male type.

Genera 82–86: *Adelphia* to *Acroncosa*

[Venational division B. Forewing smooth; vein 2 from near lower outer angle of cell; 4 and 5 separated at base. Hind wing with 7 and 8 closely approximate for a short distance from cell, rarely (in individual specimens) weakly anastomosed; cell short, less than one-half the length of cell. Female genitalia with signa developed as opposed, strongly spined plates (except in *Tota*, where bursa is smooth); ductus seminalis from bursa.]

82. Adelphia, new genus

TYPE OF GENUS: *Pempelia petrella* Zeller.

Tongue well developed. Antenna pubescent; on male a short, shallow sinus with small scale tuft in base of shaft. Labial palpus oblique on male, upturned on female, reaching to, but not appreciably above vertex; second segment long, on male grooved to hold the maxillary palpus; third segment minute, acuminate. Maxillary palpus of male in the form of an aigrette; of female squamous. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle, but little further at base from 2 than from 4; 4 and 5 separated at cell and divergent very shortly beyond it; 6 from below upper angle of cell, straight; 8 and 9 stalked for slightly less than half their lengths; 10 from the cell, approximate to the stalk of 8–9 for a short distance from cell; male without costal fold. Hind

wing with vein 2 from well before lower outer angle of cell; 3 from the angle connected with 4 by a short spur; 4 and 5 contiguous or anastomosed for about half their lengths; 7 and 8 closely approximate for less than half their lengths; cell less than half the length of wing; discocellular vein curved, produced outwardly at lower angle. Eighth abdominal segment of male with two pairs of ventrolateral hair tufts (the tufts stouter and the hairs broadened and flattened in *ochripunctella*).

Male genitalia with uncus broad, hoodlike. Apical process of gnathos a simple, strongly sclerotized hook. Transtilla absent. Harpe elongate, slender; costa strongly sclerotized on basal half; a strongly sclerotized arm or hook arising from the lower edge of the sclerotized costa at base; cucullus narrow, tapering to a blunt point. Anellus with short, weak lateral lobes. Penis without cornuti or other appreciable armature. Vinculum stout.

Female genitalia with signa strongly developed, consisting of two opposed, densely spined plates (in *petrella* an additional collar of similar spines about the posterior third of bursa); ductus bursae short, funnel-shaped, sclerotized except at junction with bursa where it is more or less finely scobinate; genital opening simple; ductus seminalis from bursa at junction of the bursa and ductus bursae.

This and the two genera following (*Tota* and *Ufa*) are closely related to *Elasmopalpus*, and each contains a species withdrawn from the latter genus. Such withdrawal was necessary if *Elasmopalpus* was to be accurately defined. With its previous inclusions such definition was impossible.

353. Adelphia petrella (Zeller), new combination

FIGURES 411, 904

Pempelia petrella Zeller, Isis von Oken, 1846, p. 771; 1848, p. 886; Verh. zool.-bot. Ges. Wien, vol. 22, p. 545, 1872.
Nephopteryx rubiginella Walker, List, vol. 27, p. 55, 1863.
Nephopteryx rufinalis Walker, List, vol. 27, p. 56, 1863.
Nephopteryx hapsella Hulst, Ent. Amer., vol. 3, p. 132, 1887.
Elasmopalpus petrellus (Zeller) Hulst, Phycitidae of N. Amer., p. 158, 1890.—Ragonot, Monograph, pt. 1, p. 421, 1893.—Forbes, Cornell Mem. 68, p. 628, 1923.—McDunnough, Check list, No. 6229, 1939.

Head and thorax reddish brown or brownish ocherous with some gray shading on the mesothorax.

Forewing brownish gray with a fine white dusting in median area especially toward costa; antemedial line very faint, an irregular, interrupted, fine white line well out on the wing, bordered outwardly by two or three small black dots and preceded by a broad brownish ocherous or reddish brown band; the inner edge of the latter more or less shaded with black heavily dusted with white; extreme base of wing shaded with blackish gray; subterminal line usually distinct, narrow, and finely dentate, white with a very weak dark inner border except at costa but, on all well-marked specimens, followed outwardly by some black streaklets on the veins; discal dots separated, black, the lower one always distinct, the upper weaker and sometimes obscured; a row of small black dots along terminal margin set off by a narrow dusting of white. Hind wing pale grayish brown; the veins slightly darkened; on most specimens a narrow smoky shade along outer margin. Alar expanse, 20–27 mm.

Male genitalia with terminal margin of uncus rounded and with a very slight notch at apex. Apical process of gnathos a very stout hook. Projecting hook from subcostal base of harpe a long, stout, nearly straight arm, nearly as long as costa of harpe. Aedeagus not appreciably widened towards apex.[8] Female genitalia with bursa considerably elongated, slender for over half its length and with a collar of strong spines near its middle.

TYPE LOCALITIES: North America (*petrella*, in Mus. Univ. Berlin); United States (*rubiginella* and *rufinalis*, in BM); Florida (*hapsella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Florida*, Coconut Grove, Glenwood, Lake Alfred (July), Orlando (Feb., Mar., Apr.), St. Petersburg (Feb.), Tampa, Vero Beach (Apr., June, Sept., Oct., Dec.); *Georgia* (Feb., Mar.); *Texas*, Brownsville, San Benito, Victoria (Mar.); *North Carolina*, Raleigh (Apr.), Southern Pines (Aug.), Tryon (May, Aug.); *Virginia*, Virginia Beach (Aug.); *District of Columbia* (May, July); *New Jersey*, Anglesea (May), Woodbury (May); *Iowa*, Iowa City (July).

The Walker species (*rubiginella* and *rufinalis*) are included in the synonymy on the strength of Ragonot's reference which is probably correct, for he presumably examined their types. I have not. Hulst's *hapsella* agrees in genitalia and all other characters with typical *petrella*. Its type is a female, not a male as stated by Hulst. *Honora obsipella* Hulst is also listed as a synonym of *petrella* in our lists, but incorrectly. It is a synonym of *Hulstia undulatella* (see p. 196).

354. Adelphia ochripunctella (Dyar), new combination

FIGURES 412, 901

Salebria ochripunctella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 59, 1908.—McDunnough, Check list, No. 6202, 1939.

Forewing mouse gray; the transverse lines obsolete except for a faint indication of the antemedial line which is oblique, nearly straight, and a dull pale ocherous gray; a similarly faint ocherous discal spot at end of cell. Except for these markings the wing is unicolorous. Hind wing subpellucid, whitish with a faint smoky tint at apex and narrowly along terminal margin; the veins not appreciably darkened. Alar expanse, 17–21 mm.

Male genitalia with uncus slightly constricted towards terminal margin, which is slightly concave; its lateral, apical angles produced into short, ventrally projecting lobes. Apical process of gnathos a small hook. Projecting hook from subcostal base of harpe, curved, about half the length of costa of harpe. Aedeagus enlarged (bulging) towards apex, and with some minute scobina-

[8] The lateral projection from near apex of aedeagus shown in our drawing (fig. 411a) is merely a partially sclerotized fragment of the membrane connecting aedeagus and anellus and not a projecting thorn or spine such as occurs in some species of *Pyla*.

sae much shorter than bursa, and narrow (no wider than bursa, except at genital opening).

TYPE LOCALITY: San Diego, Calif. (type probably lost).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Chula Vista (June), San Diego (June).

Despite its striking specific differences in genitalia and more broadly scaled labial palpi this species fits well into *Lipographis*. It is certainly not a *Hypochalcia*. The latter, an Old World genus, as far as I know is not represented in our fauna.

351. Lipographis umbrella (Dyar), new combination

FIGURES 410, 897

Sarata umbrella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 59, 1908.—McDunnough, Check list, No. 6270, 1939.

Male antenna with a weak ridge of roughened scales in shallow sinus at base of shaft.

Forewing orange yellow; transverse lines narrow, white; antemedial line oblique, somewhat curved, set well out on wing and with only the faintest indication of a dark outer border, the latter sometimes containing a few black scales; subterminal line nearly straight, with only a slight median bulge, inwardly more or less bordered with black, the latter color varying from a thin, weak line to large smudges extending well into the median area of the wing; on some specimens a narrow oblique blackish shade just beyond basal attachment of wing; discal dots obscure, often obliterated by streaks of white scaling or extensions of the black border of the antemedial line. Hind wing semilustrous, ocherous with a smoky suffusion, the latter most pronounced on dark specimens; veins not appreciably darkened. Alar expanse, 26.5–31 mm.

Male genitalia similar to those of *fenestrella* and *leoninella;* differing from them chiefly in the armature of the penis; the latter consists of a comb of 6 or 7 curved spines and another straight spine, near but distinctly separated from the comb. Female genitalia differing only in minor details from those of *fenestrella*.

TYPE LOCALITY: San Diego, Calif. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Laguna, Long Beach (Sept.), Los Angeles (Sept.), Petaluma (Sept.), San Diego (Aug., Sept.).

Dyar placed the species in *Sarata* on the basis of its male antenna character; but its genitalia as well as the lack of any sexual dimorphism in wing maculation or color show that it belongs in *Lipographis*.

352. Lipographis (?) subosseella Hulst

FIGURE 409

Lipographis subosseella Hulst, Canadian Ent., vol. 24, p. 62, 1893.—Ragonot, Monograph, pt. 1, p. 565, 1893.

Male antenna with a very weak scale ridge in shallow sinus at base of shaft.

Thorax and forewing sordid white overshaded with dull ocherous; the whitish ground color most noticeable along costa, the ocherous shade strongest along lower fold and in outer area, making the general color of the wing (to the naked eye) a pale brownish yellow; transverse lines nearly obsolete; antemedial line distinguishable only as an oblique whitish streak from lower vein of cell to inner margin, preceded on inner margin by a blackish brown smudge; subterminal line indicated only by its dark borders, a pale brownish, rather broad outer band and a fainter, narrower, broken inner line; discal dots separated, weak, blackish brown; a half-dozen narrow blackish dots along termen. Hind wing white with some fuscous shading at apex, on the outer veins, and, narrowly, along termen; cilia shining white. Alar expanse, 16 mm.

Male genitalia uncus triangulate, its apex narrowly rounded. Apical process of gnathos an elongate, rather narrow, ventrally flattened hook. Harpe elongate, slender, with very small thornlike clasper. Anellus without lateral lobes. Aedeagus broadly expanded at apex; penis armed with a single, stout, curved cornutus and a small supplemental detached sclerotized plate. Eighth abdominal segment simple (without tufts).

TYPE LOCALITY: Bahama Islands (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

An anomalous species, differing in its tropical habitat, wing pattern, and many details of male genitalia from other species of *Lipographis*, in which genus it is tentatively retained. Eventually, when more material is available, especially some female examples, a new generic reference may be needed. At present the species is known only from its unique male type.

Genera 82–86: *Adelphia* to *Acroncosa*

[Venational division B. Forewing smooth; vein 2 from near lower outer angle of cell; 4 and 5 separated at base. Hind wing with 7 and 8 closely approximate for a short distance from cell, rarely (in individual specimens) weakly anastomosed; cell short, less than one-half the length of cell. Female genitalia with signa developed as opposed, strongly spined plates (except in *Tota*, where bursa is smooth); ductus seminalis from bursa.]

82. Adelphia, new genus

TYPE OF GENUS: *Pempelia petrella* Zeller.

Tongue well developed. Antenna pubescent; on male a short, shallow sinus with small scale tuft in base of shaft. Labial palpus oblique on male, upturned on female, reaching to, but not appreciably above vertex; second segment long, on male grooved to hold the maxillary palpus; third segment minute, acuminate. Maxillary palpus of male in the form of an aigrette; of female squamous. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle, but little further at base from 2 than from 4; 4 and 5 separated at cell and divergent very shortly beyond it; 6 from below upper angle of cell, straight; 8 and 9 stalked for slightly less than half their lengths; 10 from the cell, approximate to the stalk of 8–9 for a short distance from cell; male without costal fold. Hind

wing with vein 2 from well before lower outer angle of cell; 3 from the angle connected with 4 by a short spur; 4 and 5 contiguous or anastomosed for about half their lengths; 7 and 8 closely approximate for less than half their lengths; cell less than half the length of wing; discocellular vein curved, produced outwardly at lower angle. Eighth abdominal segment of male with two pairs of ventrolateral hair tufts (the tufts stouter and the hairs broadened and flattened in *ochripunctella*).

Male genitalia with uncus broad, hoodlike. Apical process of gnathos a simple, strongly sclerotized hook. Transtilla absent. Harpe elongate, slender; costa strongly sclerotized on basal half; a strongly sclerotized arm or hook arising from the lower edge of the sclerotized costa at base; cucullus narrow, tapering to a blunt point. Anellus with short, weak lateral lobes. Penis without cornuti or other appreciable armature. Vinculum stout.

Female genitalia with signa strongly developed, consisting of two opposed, densely spined plates (in *petrella* an additional collar of similar spines about the posterior third of bursa); ductus bursae short, funnel-shaped, sclerotized except at junction with bursa where it is more or less finely scobinate; genital opening simple; ductus seminalis from bursa at junction of the bursa and ductus bursae.

This and the two genera following (*Tota* and *Ufa*) are closely related to *Elasmopalpus*, and each contains a species withdrawn from the latter genus. Such withdrawal was necessary if *Elasmopalpus* was to be accurately defined. With its previous inclusions such definition was impossible.

353. Adelphia petrella (Zeller), new combination

FIGURES 411, 904

Pempelia petrella Zeller, Isis von Oken, 1846, p. 771; 1848, p. 886; Verh. zool.-bot. Ges. Wien, vol. 22, p. 545, 1872.
Nephopteryx rubiginella Walker, List, vol. 27, p. 55, 1863.
Nephopteryx rufinalis Walker, List, vol. 27, p. 56, 1863.
Nephopteryx hapsella Hulst, Ent. Amer., vol. 3, p. 132, 1887.
Elasmopalpus petrellus (Zeller) Hulst, Phycitidae of N. Amer., p. 158, 1890.—Ragonot, Monograph, pt. 1, p. 421, 1893.—Forbes, Cornell Mem. 68, p. 628, 1923.—McDunnough, Check list, No. 6229, 1939.

Head and thorax reddish brown or brownish ocherous with some gray shading on the mesothorax.

Forewing brownish gray with a fine white dusting in median area especially toward costa; antemedial line very faint, an irregular, interrupted, fine white line well out on the wing, bordered outwardly by two or three small black dots and preceded by a broad brownish ocherous or reddish brown band; the inner edge of the latter more or less shaded with black heavily dusted with white; extreme base of wing shaded with blackish gray; subterminal line usually distinct, narrow, and finely dentate, white with a very weak dark inner border except at costa but, on all well-marked specimens, followed outwardly by some black streaklets on the veins; discal dots separated, black, the lower one always distinct, the upper weaker and sometimes obscured; a row of small black dots along terminal margin set off by a narrow dusting of white. Hind wing pale grayish brown; the veins slightly darkened; on most specimens a narrow smoky shade along outer margin. Alar expanse, 20–27 mm.

Male genitalia with terminal margin of uncus rounded and with a very slight notch at apex. Apical process of gnathos a very stout hook. Projecting hook from subcostal base of harpe a long, stout, nearly straight arm, nearly as long as costa of harpe. Aedeagus not appreciably widened towards apex.[8] Female genitalia with bursa considerably elongated, slender for over half its length and with a collar of strong spines near its middle.

TYPE LOCALITIES: North America (*petrella*, in Mus. Univ. Berlin); United States (*rubiginella* and *rufinalis*, in BM); Florida (*hapsella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Florida*, Coconut Grove, Glenwood, Lake Alfred (July), Orlando (Feb., Mar., Apr.), St. Petersburg (Feb.), Tampa, Vero Beach (Apr., June, Sept., Oct., Dec.); *Georgia* (Feb., Mar.); *Texas*, Brownsville, San Benito, Victoria (Mar.); *North Carolina*, Raleigh (Apr.), Southern Pines (Aug.), Tryon (May, Aug.); *Virginia*, Virginia Beach (Aug.); *District of Columbia* (May, July); *New Jersey*, Anglesea (May), Woodbury (May); *Iowa*, Iowa City (July).

The Walker species (*rubiginella* and *rufinalis*) are included in the synonymy on the strength of Ragonot's reference which is probably correct, for he presumably examined their types. I have not. Hulst's *hapsella* agrees in genitalia and all other characters with typical *petrella*. Its type is a female, not a male as stated by Hulst. *Honora obsipella* Hulst is also listed as a synonym of *petrella* in our lists, but incorrectly. It is a synonym of *Hulstia undulatella* (see p. 196).

354. Adelphia ochripunctella (Dyar), new combination

FIGURES 412, 901

Salebria ochripunctella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 59, 1908.—McDunnough, Check list, No. 6202, 1939.

Forewing mouse gray; the transverse lines obsolete except for a faint indication of the antemedial line which is oblique, nearly straight, and a dull pale ocherous gray; a similarly faint ocherous discal spot at end of cell. Except for these markings the wing is unicolorous. Hind wing subpellucid, whitish with a faint smoky tint at apex and narrowly along terminal margin; the veins not appreciably darkened. Alar expanse, 17–21 mm.

Male genitalia with uncus slightly constricted towards terminal margin, which is slightly concave; its lateral, apical angles produced into short, ventrally projecting lobes. Apical process of gnathos a small hook. Projecting hook from subcostal base of harpe, curved, about half the length of costa of harpe. Aedeagus enlarged (bulging) towards apex, and with some minute scobina-

[8] The lateral projection from near apex of aedeagus shown in our drawing (fig. 411a) is merely a partially sclerotized fragment of the membrane connecting aedeagus and anellus and not a projecting thorn or spine such as occurs in some species of *Pyla*.

tions on its outer surface (the latter are visible only under high magnification and are somewhat exaggerated in fig. 412a). Female genitalia with bursa much reduced as compared to that of *petrella;* armed only with two opposed, spined plates.

TYPE LOCALITY: San Diego, Calif. (type in USNM).

FOOD PLANT: *Eremocarpus setigerus.* This record from an El Segundo specimen reared by W. D. Pierce.

DISTRIBUTION: *California,* El Segundo (Oct.), San Diego (Oct., Nov.).

A distinct species easily identified by its peculiar wing markings and male genitalia.

83. Tota, new genus

TYPE OF GENUS: *Elasmopalpus galdinella* Schaus.

Characters of *Adelphia* except: Labial palpus considerably longer, reaching well above vertex, especially on the male. Hind wing with veins 4 and 5 stalked for two-thirds of their lengths. Eighth abdominal segment of male with compound ventral tufts. Male genitalia with complete transtilla (a narrow, angulate, band); aedeagus slender, elongate; penis armed with an elongate, sclerotized plate bearing a row of six minute, thornlike spines. Female genitalia with bursa simple, without signa, spines, or other sclerotization; ductus bursae narrow, tubular, sclerotized throughout its length, not expanded or funnel shaped; genital opening narrow.

The genus is distinguished from the others in this immediate group by its genitalia and the rather long stalking of veins 4 and 5 of hind wing. Like the genus preceding (*Adelphia*) and that following (*Ufa*), it appears to be closely related to *Elasmopalpus,* in which its type and only known species was placed by Schaus.

355. Tota galdinella (Schaus), new combination

FIGURES 413, 899

Elasmopalpus galdinella Schaus, Zoologica, vol. 5, no. 2, p. 46, 1923.

Forewing blackish brown with the transverse lines strongly contrasted, narrow, white; some scattered white dusting in the subbasal and outer areas and, on the male, appreciable white dusting over the medial area; antemedial line oblique, irregularly dentate; subterminal line zigzag, nearly vertical; no appreciable discal spots; a row of faint, separated, black dots along terminal margin. Hind wing pale brownish (more whitish on the male); the veins faintly darkened and a smoky shade along outer margin. Alar expanse, 18–24 mm.

Male genitalia with tegumen longer than greatest width, its terminal margin straight and slightly produced at the lateral angles. Female genitalia with characters as given for the genus.

TYPE LOCALITY: Conway Bay, Indefatigable, Galápagos Islands (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: GALÁPAGOS ISLANDS: "Camp Beta" (Jan.), Conway Bay (Apr.), South Seymore (Apr.).

84. Genus Ufa Walker

Ufa Walker, List, vol. 27, p. 79, 1863. (Type of genus: *Ufa venezuelalis* Walker.)

Tongue well developed. Antenna pubescent; on male with a short, shallow sinus with small scale tuft in base of shaft. Labial palpus oblique in both sexes (except in the female of *rubedinella* where it is somewhat upcurved); third segment nearly half the length of second; extending well above vertex. Maxillary palpi as in *Adelphia.* Venation as in *Adelphia* except: Vein 3 of forewing on the average, closer to 4 than to 2; hind wings with vein 4 and 5 anastomosed for about half their lengths (or in some specimens of *rubedinellus* and *senta* stalked for a trifle over half), cell one-third the length of wing. Eighth abdominal segment of male with compound, ventral hair and scale tufts (except on *lithosella* which has simple hair tufts).

Male genitalia without any sclerotized arm or hook arising from base of costa of harpe; the costa strongly sclerotized (in *lithosella* this sclerotized part of costa terminating well before the apex of the harpe); clasper present as a digitate or weak, rounded or triangulate, erect projection from upper edge of sacculus. Anellus a broad plate with short, lateral lobes. Aedeagus stout. Penis armed with a single, stout, rather short, curved spines.

Female genitalia similar to those of *Adelphia*; ductus bursae short and broad, more or less funnel shaped, with broad genital opening; ductus seminalis from bursa well before junction of bursa and ductus bursae.

This genus, while sharing many of the characters of *Adelphia* is closest to *Elasmopalpus,* from which it is distinguished by its more oblique female labial palpi, the strongly sclerotized costa of harpe, the shape of its anellus, the stouter, much shorter apical projection of gnathos, and the broader female ductus brusae.

356. Ufa lithosella (Ragonot), new combination

FIGURES 414, 903

Selagia lithosella Ragonot, N. Amer. Phycitidae, p. 9, 1887; Monograph, pt. 1, p. 474, 1893.—Hulst, Phycitidae of N. Amer., p. 160, 1890.—McDunnough, Check list, No. 6233, 1939.

Honora luteella Hulst, Journ. New York Ent. Soc., vol. 8, p. 223, 1900.

Ancylostomia lithosella (Ragonot) Dyar, Ins. Insc. Menstr., vol. 7, p. 53, 1919.

Forewing pale ocherous; the ground color interrupted by a narrow, paler, cream-colored shade along costal edge, along lower margin of the cell, sometimes along lower fold and (in a few examples) between the veins in outer area; transverse lines obsolete; on some specimens a dark grayish spot on vein 1b indicates what remains of a dark outer margin to the antemedial line; on occasional examples a dark grayish shade on middle of inner margin; discal dots sometimes absent but the lower one usually distinguishable, minute, blackish; the usual dark dots along outer margin rarely distinguishable and when so only as a slight darkening of the ground color. Hind wing semitransparent white

with a more or less pale smoky tint; the veins and terminal margin not appreciably darkened, except on the darkest specimens. Alar expanse, 26.5–32 mm.

Male genitalia with harpe very short, its costa broadly and strongly sclerotized, the sclerotized costal area terminating in an abrupt projection, well before apex of cucullus. Lateral lobes of anellus knoblike. Cornutus a short, stout, slightly curved, bluntly pointed, hornlike thorn with a few minute serrate projections on one side. Eighth abdominal segment of male with a single pair of ventrolateral hair tufts.

Female genitalia with bursa armed with one large and one small, round, strongly spined plate; the ductus seminalis from bursa near the caudal margin of the smaller plate; ductus bursae smooth except for a slight, irregularly shaped sclerotization near genital opening.

TYPE LOCALITIES: Arizona (*lithosella*, in Paris Mus.); Santa Rita Mts., Ariz. (*luteella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, Baboquivari Mts. (July, Oct.), Chiricahua Mts., Huachuca Mts., Nogales (May), Palmerlee, Paradise (Cochise County, Mar.), Santa Rita Mts. (June), Wilgus (Cochise County); *New Mexico*, Albuquerque. MÉXICO: Cuernavaca (June), Durango (city), México (city, Oct.), Venadio (*Sinaloa*), Zacualpán (June).

A distinct species, easily recognized by its genitalia and obviously not closely related to *Selagia* where it was placed by Ragonot, nor to *Ancylostomia* where it was placed in the National Collection by Dyar.

357. Ufa roseitinctella (Dyar), new combination

Ancylostomia roseitinctella Dyar, Proc. U. S. Nat. Mus., vol. 42, p. 105, 1912.

Forewing pale ocherous, the ground color suffused with pale rose red broadly along inner margin and costa and over most of median and outer areas; the ocherous color on most specimens limited to the basal area and (on a few examples) to a narrow, pale, longitudal shade through the middle of the wing; transverse lines obsolete; discal dots minute, but usually distinguishable (at least the lower one), blackish, separated; terminal dots absent. Hind wing pale smoky fuscous, with a very faint ocherous tint; the veins very slightly darkened and a faint, dark line along termen. Alar expanse, 26–32 mm.

Female genitalia similar to those of *lithosella*.

TYPE LOCALITY: Cuernavaca, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: Arizona, Huachuca Mts. (Sept.), Paradise (Cochise County, July, Oct.), Washington Mts., Wilgus Mts. MÉXICO: Cuernavaca (July).

This species is known only from females. It is very close to and may only be a color form of *lithosella*, but this cannot be determined until a male is recovered. The Arizona specimens were in our collection under (*Selagia*) *Zamagiria australella* (Hulst).

358. Ufa senta, new species

FIGURES 415, 905

Forewing pale canary yellow with a narrow brownish red shade along inner margin; costa pale on outer half, whitish with a fine, sparse peppering of fuscous scales; from apex inward along vein 6 a reddish fuscous streak continued, on most specimens, as a faint, more or less interrupted, dark shade along top of cell to base of wing; lower discal spot minute, but usually distinct, dull red; cilia peppered, ashy gray white. Hind wing translucent white with a smoky shade towards outer margin; veins in outer area of wing faintly darkened; a narrow fuscous shade along termen. Alar expanse, 22–25 mm.

Male genitalia having harpe with costa sclerotized to apex; clasper moderately long, slender, digitate. Anellus with lateral lobes moderately long, strongly sclerotized, tapering to blunt points. Cornutus a sharply curved, strong, rather slender spine with a broad base.

Female genitalia with bursa rather narrowly elongate with a lateral lobe near junction of bursa and ductus bursa; signa consisting of two greatly elongated oval lobes densely armed with long, slender spines; a second cluster of minute spines adjacent to the posterior, lateral lobe; ductus bursa short, triangulate, sclerotized almost to genital opening.

TYPE LOCALITY: Big Bend, Tex. (type in USNM, 61363; paratype, ♂, in BM).

FOOD PLANT: Unknown.

Described from male type from the type locality (Apr. 15, 1926); four male and one female paratypes from Palmerlee, Ariz.; and one female paratype from the Huachuca Mts., Ariz.

A distinct, easily recognized species, apparently near to *rubedinella* Zeller.

359. Ufa rubedinella (Zeller), new combination

FIGURES 416, 902

Pempelia rubedinella Zeller, Isis von Oken, 1848, p. 885; Verh. zool.-bot. Ges. Wien., vol. 24, p. 430, 1874; Horae Soc. Ent. Rossicae, vol. 16, p. 181, 1881.
Acrobasis translucida Walker, List, vol. 27, p. 29, 1863.
Nephopteryx rufescentalis Walker, List, vol. 27, p. 58, 1863.
Nephopteryx minualis Walker, List, vol. 27, p. 60, 1863.
Nephopteryx deprivalis Walker, List, vol. 27, p. 60, 1863.
Ufa venezuelalis Walker, List, vol. 27, p. 60, 1863.
Elasmopalpus pyrrhochrellus Ragonot, Nouv. Gen., p. 23, 1888; Monograph, pt. 1, p. 429, 1893 (new synonymy).
Elasmopalpus rubedinellus (Zeller) Ragonot, Nouv. Gen., p. 23, 1888; Monograph, pt. 1, p. 340, 1893.—Wolcott, Journ. Agr. Univ. Puerto Rico, vol. 25, no. 2, p. 134, 1941.

Forewing a pale, glossy ocherous, more or less shaded and marked with red or reddish brown; the females usually darker and showing more of the reddish shading than the males, some examples entirely suffused with red except for a contrasted, whitish or very pale ocherous shade along costa; three small but conspicuous blackish or dark reddish dots in median area, two well out from base, obliquely placed on lower vein of cell and vein 1b, and one at lower outer angle of cell (on some specimens indications of another dot at costa opposite the one on vein 1b and, very rarely, faint

traces of an upper discal dot at end of cell); from apex a short oblique, reddish shade more or less peppered with fuscous; faint tracings of red on the outer extremities of the veins and, on darker examples, a reddish blush over the entire outer area; subterminal line indicated by a narrow, oblique, twice-indented, red or reddish fuscous line rather close to terminal margin. Hind wings shiny, translucent white with a fine brown line along termen; the veins not appreciably darkened. Alar expanse, 16–22 mm.

Male genitalia with erect clasper of harpe short, rounded, knoblike. Anellus with lateral lobes short, stubby. Cornutus shaped like that of *senta* but appreciably stouter. Terminal margin of vinculum slightly produced at lateral angles. Female genitalia with rather small narrow bursa containing a collar of fine spines at junction of bursa and ductus bursae in addition to the normal pair of spined signa; the broad, short ductus bursae sclerotized throughout, its lower terminal margin at genital opening sharply concave.

TYPE LOCALITIES: Brazil (*rubedinella*, in BM); Santo Domingo (*translucida* and *rufescentalis*, in BM); Honduras (*minualis*, in BM); Venezuela (*deprivalis* and *venezuelalis*, in BM); Corrientes, Argentina (*pyrrhochrellus*, in Paris Mus.).

FOOD PLANTS: Limabeans, black-eyed peas. These records from Florida specimens reared by the Special Survey of the Division of Foreign Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine. Larvae feeding on the leaves.

DISTRIBUTION.—UNITED STATES: *Florida*, Egmont (Apr.), Hobe Sound (May), Hypoluxo, Lake Beach (Feb.), Palm Beach, Palmetto, Vero Beach (Sept., Oct., Dec.), Winter Park (July). CUBA: Havana, Matanzas (June), Santiago Province (Oct.). DOMINICAN REPUBLIC. PUERTO RICO: Cataño (July), Coamo Springs (Apr.), Dovado (May), Isabela Substation (Apr.), Palmas Abajas (Apr.), Puerto Real (Vieques Isl., Apr.), San Germán (Apr.). VIRGIN ISLANDS: Kingshill (St. Croix, Mar., Apr., June). JAMAICA. TRINIDAD: Quare River Valley (Jan.). MÉXICO: Chiapas (May), Guadalajara, Guerrero (Dec.), Oaxaca, Sierra de Guerrero (Nov.), "Mexican Sub-region." GUATEMALA: Cayuga (Feb., Mar., Apr., May, June, Dec.), Chejel (Aug.), Guatemala (city, Mar.), Quiriguá (Mar.). HONDURAS. COSTA RICA: Juan Viñas (Jan., June, Dec.). PANAMÁ: Alhajuela (Mar., Apr.), Corazal (May, June, July), La Chorrera (Apr.), Obispo, Paraíso (Apr., May), Porto Bello (Apr., May, Oct.), Taboga Isl. (Jan., July), Tabernilla. VENEZUELA. FRENCH GUIANA: St. Jean Maroni, St. Laurent Maroni. BOLIVIA: Esperanza, Prov. del Sará (Dept. Santa Cruz, May). BRAZIL: Rio de Janiero (Nov.). PARAGUAY: Villarrica (Jan., Mar., Oct., Nov., Dec.). ARGENTINA: Corrientes, Metán (Prov. del Salta, Feb.). PERÚ: Chanchamayo. Generally distributed throughout the tropical and subtropical regions of the New World.

In many respects (its habitus, upturned female labial palpi, sexual dimorphism, and similarity of larval habit) this species seems to go with *Elasmopalpus lignosellus*, with which it has been associated; but on male and female genitalic characters it belongs definitely with the species here assigned to *Ufa*, and on all larval characters it is radically different from *lignosellus*. In structural and pattern characters its larva resembles that of *Caristanius decoloralis*.

85. Genus Elasmopalpus Blanchard

Elasmopalpus Blanchard, *in* Gay, Historia fisca y politica de Chile. Zoologia, vol. 7, p. 104, 1852.—Hulst, Phycitidae of N. Amer., p. 157, 1890.—Ragonot, Monograph, pt. 1, p. 418, 1893.—Forbes, Cornell Mem. 68, p. 628, 1923.—Janse, Journ. Ent. Soc. South Africa, vol. 7, p. 4, 1944. (Type of genus: *Elasmopalpus angustellus* Blanchard.)

Tongue well developed. Antenna weakly pubescent; on male a sinus and a short scale tuft in base of shaft. Labial palpus of male erect and appressed to face, reaching well above vertex; third segment minute, hidden in scaling of second segment; of female upcurved, reaching slightly above vertex; third segment but slightly shorter than second, acuminate. Maxillary palpus of male in the form of an aigrette; of female, squamous. Forewing smooth; 11 veins; vein 2 from close to lower outer angle of cell; 3 from the angle; 2, 3 and 4 approximately equidistant at base (the position of 2 individually variable, on some specimens very close and occasionally connate with 3); 4 and 5 separated at base, approximate for a short distance from cell; 6 from below upper angle of cell, straight; 8 and 9 stalked for less than half their lengths; 10 from the cell; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle, separated from 4 by a very short spur; 4 and 5 stalked for at least two thirds of their lengths; 7 and 8 closely approximate, contiguous or weakly anastomosed for a very short distance from cell; cell about one-third the length of wing; discocellular vein curved, produced at lower angle. Eighth abdominal segment of male with compound ventral scale and hair tufts.

Male genitalia with uncus rather narrowly triangulate, its apex narrowly rounded. Transtilla absent. Apical process of gnathos a slender, elongate hook. Harpe with costa not appreciably sclerotized; sacculus with upper margin an erect, irregularly serrate ridge, slightly produced at apex. Anellus U-shaped, with lateral arms strongly sclerotized and produced as curved pointed horns. Aedeagus slender; penis armed with a single, slightly curved, slender, strongly sclerotized cornutus, from slightly more than one-third to one-half as long as aedeagus. Vinculum stout, longer than greatest width, tapering to narrowly rounded or bluntly pointed terminal margin.

Female genitalia with signa consisting of two opposed, strongly spined plates; ductus bursae cylindrical, longer than bursa, sclerotized for half its length from junction with bursa (the sclerotized part longitudinally ribbed), membranous on posterior half, expanding to wide genital opening, weakly sclerotized on inner dorsal surface behind genital opening; ductus seminalis from a

lobe of bursa near junction of bursa and ductus bursae.

As here defined the genus is limited to its type species. None of the other species that have hitherto been assigned to *Elasmopalpus* fits comfortably into the genus.

360. Elasmopalpus lignosellus (Zeller)

FIGURES 33, 417, 906

Pempelia lignosella Zeller, Isis von Oken, 1848, p. 885; Verh. zool.-bot. Ges. Wien, vol. 22; p. 544, 1872; vol. 24, p. 430, 1874; Horae Soc. Ent. Rossicae, vol. 16, p. 180, 1881.—Riley, *in* Rep. [U. S.] Comm. Agr. for 1881, pp. 142–145, 1882.

Elasmopalpus angustellus Blanchard, *in* Gay, Historia fisca y politica de Chile. Zoologica, vol. 7, p. 105, 1852.—Berg, Bull. Soc. Imp. Nat., Moscou, p. 228, 1875; Anales Soc. Cient. Argentina, vol. 4, pt. 4, p. 209, 1877 (makes synonym of *Pempelia lignosella*).

Pempelia lignosella tartarella Zeller, Verh. zool.-bot. Ges. Wien, vol. 22, p. 544, 1872; Horae Soc. Ent. Rossicae, vol. 16, p. 180, 1881.

Pempelia lignosella incautella Zeller, Verh. zool.-bot. Ges. Wien, vol. 22, p. 544, 1872; Horae Soc. Ent. Rossicae, vol. 16, p. 180, 1881.

Pempelia lignosella major Zeller, Verh. zool.-bot. Ges. Wien, vol. 24, p. 430, 1874.

Elasmopalpus anthracellus Ragonot, Nouv. Gen., p. 23, 1888; Monograph, pt. 1, p. 428, 1893 (new synonymy).

Dasypyga carbonella Hulst, Ent. Amer., vol. 4, p. 114, 1888.

Elasmopalpus lignosellus (Zeller) Ragonot, Ent. Amer., vol. 5, p. 115, 1889; Monograph, pt. 1, p. 425, 1893.—Hulst, Phycitidae of N. Amer., p. 159, 1890.—Chittenden, U. S. Dep. Agr. Div. Ent. Bull. 23, pp. 17–22, 1900.—Luginbill and Ainslie, U. S. Dep. Agr. Bull. 539, 27 pp., 1917.—Forbes, Cornell Mem. 68, p. 628, 1923.—Metcalf and Flint, Destructive and useful insects, ed 1, pp. 338–339, 1928; ed 2, pp. 367–368, 1939.—McDunnough, Check list, No. 6231, 1939.—Costa-Lima, Insetos do Brazil, p. 2, p. 93, 1950.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 454, 1950.

Elasmopalpus puer Dyar, Ins. Insc. Menstr., vol. 7, p. 53, 1919 (new synonymy).

Ground color of forewing (on male) dull ocherous fawn, transverse lines obsolete; on paler specimens a subbasal black spot on vein 1b, one on lower vein of cell beyond middle and another at lower outer angle of cell; a row of faint, more or less confluent blackish dots along terminal margin; a blackish shade of varying width along costa and inner and outer margins; on females the dark shading more extended, reducing the ocherous ground color to a narrow, longitudinal shade, or completely suffusing the wing; many female examples entirely black, with some occasional sparse reddish scaling at extreme base of wing. Hind wing translucent white, with a faint darkening of the outer veins and a narrow brownish shade along terminal margin. Alar expanse, 16–24 mm.

Male and female genitalia: as given for the genus.

TYPE LOCALITIES: Brazil (*lignosellus*, in BM); Rio Negro, Brazil (*anthracellus*, in Paris Mus.); Concepción, Chile (*angustellus*, in Paris Mus.); Valparaiso, Chile (*major*, in BM); Santiago Province, Cuba (*puer*, in USNM); Texas (*tartarella* and *incautella*, in BM; *carbonella*, in AMNH, ex Rutgers).

FOOD PLANTS: Beans, corn, cowpeas, chufa (*Cyperus exculentus*), crabgrass, sudangrass, Johnsongrass, Japanese cane, milo maze, sugar cane, sorghum, peanuts, turnips, wheat, strawberry plants, flax, cotton, black locust. Larvae boring into the stems of growing plants and, to a lesser extent, feeding on the leaves.

DISTRIBUTION.—UNITED STATES: *Florida*, Everglade (Apr.), Fort Myers (Apr.), Hastings (Sept., Oct.), Lake Alfred (July), Lakeland (Oct.), Miami (Oct.); *Georgia*, Savannah (July); *Alabama*, Auburn (Aug.), Eufaula; *Louisiana*, Baton Rouge (July, Aug.), New Orleans (June); *Texas*, Blanco County (Mar.), Brownsville (Mar., June, Oct.), Burnet County (Mar.), College Station, Dallas (Oct.), Dickinson (Oct.), Gainesville (Aug.), Kerrville (Aug.), San Benito (Apr., June, July), Smith Point (Sept.), Victoria (Apr., July); *Arizona*, Baboquivari Mts. (Oct.), Mesa (Aug.), Phoenix (Aug.), Tempe (Oct.); *California*, San Diego (Aug.); *South Carolina*, Columbia; *Virginia*, Cape Henry (June), Norfolk (Sept.); *District of Columbia*, Washington (Aug., Oct., Nov., Dec.); *New Jersey*, Montclair (Sept.); *Massachusetts*, Cohasset (July, Aug.), Newton Highlands. BERMUDA (Mar., Apr., May). CUBA: Havana, Matanzas, Santiago de las Vegas (Apr.), Santiago Province (Oct.). PUERTO RICO: Anasco, Coamo Springs (Apr.), Puerto Real (Vieques Isl., Apr.), Río Piedras (Aug.), San Germán (Apr.), Villalba (July). VIRGIN ISLANDS: St. Croix (Apr.). TOBAGO (June). JAMAICA. MÉXICO: Barmos (*Sinaloa*, Mar.), Chiapas, Colima (Mar.), Guadalajara, Iguala (June), Mexico City (Nov.), Orizaba, Tehuacán (May, June, Aug.). GUATEMALA: Cayuga (Apr., June, July), Chejel (June, July, Aug.), Guatemala City (Mar.), Perulhá (July), Quiriguá (Mar.), Volcán Santa María (Nov.), PANAMÁ: Alhajuela (Apr.), Corozal (May, July), La Chorrera (Apr., May), Paraíso (May), Porto Bello (Mar., Apr., May, Sept., Oct.), Río Trinidad (Mar.). VENEZUELA: Las Cruces, Colón (Dec.). FRENCH GUIANA: Cayenne, St. Jean Maroni. BRAZIL: Castro (Paraná), Rio Negro, Santa Catarina (Oct.), São Paulo (Sept.). PARAGUAY: Paraguayan Chaco (Makthlawaiya, Nov., Nanahua, Mar.), Villarrica (Feb., Sept., Oct., Nov.). ARGENTINA: Tucumán (Nov.), Villa Cina (Feb., Mar., Nov.). CHILE: Valparaíso (Apr.). PERÚ: Cañete (Oct.). Generally distributed throughout the tropical and temperate regions of the New World.

An insect of some economic importance in our Southern States and known in economic literature as the "lesser cornstalk borer." It is individually variable in color and the sexes are markedly dimorphic. As a result it has received several names. The latter have no taxonomic value for they represent at most only color forms. As far as I know the species is confined to the New World, where it is abundant and widely distributed.

The Luginbill and Ainslie paper (1917) gives all available information on the life history of the species. There has been no contribution of any importance since its publication.

86. Genus Acroncosa Barnes and McDunnough

Acroncosa Barnes and McDunnough, Canadian Ent., vol. 49, p. 404, 1917. (Type of genus: *Acroncosa albiflavella* Barnes and McDunnough.)

Tongue well developed. Antenna simple except for a few minute thornlike projections on base of shaft of the male (no appreciable sinus or scale tuft); very shortly and weakly pubescent in both sexes. Labial palpus short, slender, oblique, third segment shorter than second, blunt, projected slightly forward; not reaching to height of vertex. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle; 4 and 5 separated at base; 6 from below upper angle of cell, straight; 8 and 9 stalked for half or a trifle over half their lengths; 10 from the cell, separated at base from 8–9 and not approximate to its stalk; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle and approximate to 4 for a short distance beyond the angle; 4 and 5 contiguous or anastomosed beyond the angle for about half their lengths (superficially, on undenuded specimens, they appear long stalked); 7 and 8 closely approximate for a short distance from cell; cell less than half the length of wing; discocellular vein curved, considerable produced outwardly at lower angle. Eighth abdominal segment of male with a pair of ventrolateral hair tufts (the hairs somewhat flattened).

Male genitalia with uncus broadly triangulate, its apex bluntly pointed. Transtilla incomplete, its elements moderately sized, irregularly triangulate plates. Harpe simple; costa sclerotized nearly to apex, not produced. Anellus a shallow U-shaped plate with small lateral lobes. Aedeagus long, stout; penis armed with masses of spines varying from long (one-third the length of aedeagus) to minute. (Figs. 418c–e show the shape and character of the longer spines, greatly enlarged.) Vinculum stout, longer than greatest width, tapering to truncate terminal margin.

Female genitalia with signa consisting of two small, opposed, strongly spined, round plates; bursa otherwise membranous except for a thickening of the lobe giving off the ductus seminalis; ductus bursae long, slender, tubular, unsclerotized except for a couple of weak spine clusters near junction with bursa; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

Foretibia with a long inner and short outer claw. I should suspect this character to be merely specific except that it is equally developed in both sexes of both species of the genus.

361. Acroncosa albiflavella Barnes and McDunnough

FIGURES 35, 418, 907

Acroncosa albiflavella Barnes and McDunnough, Canadian Ent., vol. 49, p. 405, 1917.—McDunnough, Check list, No. 6151, 1939.

Forewing white; the transverse white lines lost in the ground color; antemedial line indicated only by a broad oblique inner orange band extending from inner margin to costa; subterminal line indicated by a similar, narrower, sinuate, outer orange band, the latter terminating at costa in a small blackish spot; a well-contrasted black discal dot at lower, outer angle of cell and a smaller black dot on inner margin of the subbasal orange band at vein 1b; on same specimens a few widely scattered black scales on the white ground color of median area. Hind wings whitish with a very faint ocherous or smoky tint; the veins not appreciably darkened. Alar expanse, 18–21 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Loma Linda, San Bernardino County, Calif. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Loma Linda (July, Aug.), Mona Lake (July).

362. Acroncosa albiflavella castrella Barnes and McDunnough

Acroncosa albiflavella castrella Barnes and McDunnough, Canadian Ent., vol. 49, p. 405, 1917.

A local race of *albiflavella* differing only in having a stronger peppering of black scales in the median area of forewing. Alar expanse, 20–22 mm.

Genitalia like those of typical *albiflavella*.

TYPE LOCALITY: Fort Wingate, N. Mex. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *New Mexico*, Fort Wingate (July, Aug.).

Apparently a distinguishable local race, but can be identified only by locality label and a somewhat stronger dusting of black scales on forewing.

363. Acroncosa similella Barnes and McDunnough

Acroncosa similella Barnes and McDunnough, Canadian Ent., vol. 49, p. 405, 1917.—McDunnough, Check list No. 6152, 1939.

Forewing similar to *albiflavella* except: A much heavier peppering of black scales on forewing; orange inner border of antemedial line extending only from inner margin to top of cell; a concentration of black scaling forming a more or less broken line along outer margin of the antemedial line; a similar black line inwardly bordering the subterminal line; basal, median, and outer areas dusted with black scales. Alar expanse, 21–26 mm.

Genitalia like those of *albiflavella*.

TYPE LOCALITY: Pyramid Lake, Nev. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Nevada*, Pyramid Lake; *Utah*, Eureka (June).

Not structurally distinct from and possibly only a local race of *albiflavella*. The incomplete subbasal orange band on forewing, however, suggests a distinct species.

Genus 87: *Passadena*

[Venational division B. Forewing with weak subbasal scale ridge; veins 4 and 5 shortly stalked; 10 from the cell. Hind wing with vein 2 near angle of cell; 3 from the stalk of 4–5; 4 and 5 long stalked. Labial palpus short, porrect. Male genitalia with a strongly developed clasper on harpe. Female genitalia with signa developed as opposed, strongly spined plates; ductus seminalis from bursa.]

87. Genus Passadena Hulst

Passadena Hulst, Canadian Ent., vol. 32, p. 171, 1900. (Type of genus: *Passadena constantella* Hulst).

Tongue well developed. Antenna weakly pubescent; on male with a shallow sinus and scale tuft in base of shaft. Labial palpus short, porrect; second segment oblique, the third deflected forward, minute, more or less hidden in the thick scaling of second segment; the latter grooved on male to hold the maxillary palpus. Maxillary palpus of male in the form of an aigrette; of female, squamous. Forewing with weak subbasal ridge of raised scales; 11 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle; 4 and 5 shortly stalked; 6 from below upper angle of cell, straight; 8 and 9 stalked for about half their lengths; 10 from the cell; male without costal fold. Hind wing with vein 2 from near lower outer angle of cell; 3 from the stalk of 4–5; 4 and 5 long stalked (for over two-thirds their lengths; 7 and 8 approximate or contiguous for a very short distance from cell; cell about half the length of wing; discocellular vein curved, outwardly produced at lower angle. Eighth abdominal segment of male with a weak pair of ventrolateral hair tufts.

Male genitalia with uncus triangulate; apical process of gnathos a strong, narrow, elongate hook. Transtilla absent. Harpe with costa narrowly sclerotized for its entire length; a strong, projecting clasper from upper edge of sacculus near base (the clasper a striking feature; its peculiar shape probably a specific character). Penis armed with several short rows of weak spines with a mat of fine scobinations between them. Vinculum stout, stubby, slightly broader than long, terminal margin broadly truncate.

Female genitalia with signa developed as a pair of opposed, strongly spined plates, one (ventral) rather large, elongately oval, the other (dorsal) very small and bearing only two or three spines; ductus bursae short, broad, sclerotized for most of its length, and bearing on midventral surface a row of minute spines; genital opening simple; ductus seminalis from bursa near junction of bursa and ductus bursae.

A distinct, monotypical, New World genus with one western North American species.

364. Passadena flavidorsella (Ragonot)

Figures 36, 419, 908

Anoristia flavidorsella Ragonot, N. Amer. Phycitidae, p. 9, 1887.—Hulst, Phycitidae of N. Amer., p. 160, 1890.

Meroptera canescentella Hulst, Phycitidae of N. Amer., p. 149, 1890.—Ragonot, Monograph, pt. 1, p. 319, 1893.—McDunnough, Check list, No. 6186, 1939. (New synonymy.)

Getulia flavidorsella (Ragonot), Monograph, pt. 1, p. 528, 1893.

Passadena constantella Hulst, Canadian Ent., vol. 32, p. 171, 1900.

Megasis cinctella Hulst, Canadian Ent., vol. 32, p. 172, 1900 (new synonymy).

Passadena cinctella (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 198, 1916.—McDunnough, Check list, No. 6222, 1939.

Passadena flavidorsella Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5647, 1917.—McDunnough, Check list, No. 6221, 1939.

Forewing whitish gray, more or less finely dusted with black scales; transverse lines narrow, whitish; antemedial line somewhat oblique, twice indented, bordered outwardly by a narrow black line, inwardly by a broader black band of roughened scales, the black borders forming a conspicuous black band divided by a narrow pale line; subterminal line sinuate-angulate, bordered inwardly by a black line (most strongly accented at costa) and outwardly at costa by a short black streak; discal dots faint, only distinct on specimens with a pale (whitish) ground color; a row of inconspicuous black dots along termen. Hind wing white to pale smoky fuscous, frequently with a slightly smoky shade towards apex; veins not appreciably darkened; a fine brownish line along outer margin. Alar expanse, 15–20 mm.

Genitalia as given for the genus. The male can be readily identified by the peculiar shape of the clasper of harpe (fig. 419e).

TYPE LOCALITIES: Arizona (*flavidorsella*, in Paris Mus.); Texas (*canescentella*, in AMNH, ex Rutgers); California (*constantella*, in AMNH, ex Rutgers); Argus Mts., Calif. (*cinctella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Brownsville (May), "Central Texas" (the types of *canescentella*, ♀ and ♂, without date); *New Mexico*, state locality only (July, Cockerell, collector); *Arizona*, Ajo (Pima County, Mar.), Baboquivari Mts. (Apr., May, July, Aug., Sept.), Catalina Springs (Apr.), Oracle (July), Phoenix (Apr.), Redington, Sells Post Office (Pima County, Apr.), "Salt River Mts." (Sept.), "Southern Arizona" (Aug.), Tempe (Feb., May), Tucson (May), Wenden (Yuma County, Aug.), Yuma County ("Colorado Desert," Mar.); *California*, Argus Mts. (Apr., May), Inyo County (June, July), Jacumba (June), La Puerta (July), Los Angeles (May), Mason Valley (San Diego County, Apr.); *Utah*, Richfield (May). Also reported by Ragonot from Sonora, México.

The species is somewhat variable in the ground color and amount of blackish dusting on forewing, some specimens being considerably paler than others; but the pattern markings are constant, the most conspicuous of which is the broad black subbasal band with roughened scales, formed by the borders of the antemedial line.

The female type of *canescentella* Hulst in the Rutgers Collection lacks an abdomen, as does the matching male paratype in the National Museum (originally from the Fernald Collection). Both specimens are rubbed; but the pattern characters are plainly distinguishable and their palps, antennae, and venation are unmistakably those of *Passadena*.

Genus 88: *Ulophora*

[Venational division B. Forewing with subbasal scale ridge; veins 4 and 5 approximate for a short distance from cell. Hind wing with vein 2 from well before angle; 4 and 5 stalked for about half their lengths; cell short (less than one-third the length of wing). Male antenna simple. Labial palpus uncurved, long, slender. Maxillary palpus squamous. Male genitalia with transtilla incomplete or absent; penis armed with a longitudinal row of short, slender spines.]

88. Genus Ulophora Ragonot

Ulophora Ragonot, Ann. Soc. Ent. France, ser. 6, vol. 10, Bull., p. vii, 1890; Monograph, pt. 1, p. 155, 1893.—Forbes, Cornell Mem. 68, p. 619, 1923. (Type of genus: *Ulophora groteii* Ragonot.)

Acromeseres Dyar, Ins. Insc. Menstr., vol. 7, p. 41, 1919. (Type of genus: *Acromeseres dialithus* Dyar. New synonymy.)

Tongue well developed. Antenna simple; shaft somewhat broadly flattened towards base on male but without sinus or scale tuft or thornlike spines, on female threadlike, weakly pubescent on both sexes. Labial palpus upcurved, reaching well above vertex, slender, smoothly scaled; third segment about one-third the length of second, acuminate. Maxillary palpus squamous, more broadly so on male than on female. Forewing with subbasal ridge of raised scales; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle, at base nearer to 4 than to 2; 4 and 5 approximate at base and for a very short distance beyond; 6 from below upper angle of cell, straight; 8 and 9 stalked for slightly more than half their lengths; 10 from the cell, nowhere approximate to the stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 from the angle connate with or very closely approximate to the stalk of 4–5 at base; 4 and 5 stalked for about half their lengths; 7 and 8 closely approximate for a short distance from cell; cell slightly less than one-third the length of wing; discocellular vein curved, not appreciably produced at lower angle. Eighth abdominal segment of male with a weak pair of ventrolateral hair tufts.

Male genitalia with uncus triangulate, its apex narrowly rounded. Apical process of gnathos a stout, curved hook. Transtilla incomplete or absent (its elements, when distinguishable, very small and weakly sclerotized). Harpe simple; costa broadly but weakly sclerotized; clasper vestigial. Aedeagus straight; penis armed with a longitudinal row of short, slender, straight spines (16 to 20, the number individually variable). Vinculum stout, considerably longer than greatest width, but slightly tapered to rounded terminal margin.

Female genitalia without signa; bursa with a mat of fine scobinations at and near junction of bursa and ductus bursae, otherwise smooth and membranous; ductus bursae longer than bursa, slender, tubular, unsclerotized, genital opening simple, narrow; ductus seminalis from middle of bursa.

A distinct genus of uncertain affinities; contains one North American and one very closely related neotropical species.

365. Ulophora groteii Ragonot

FIGURE 420

Ulophora groteii Ragonot, Ann. Soc. Ent. France, ser. 6, vol. 10, Bull., p. vii, 1890; Monograph, pt. 1, p. 156, 1893.—Hulst, Phycitidae of N. Amer., p. 222, 1890.—Forbes, Cornell Mem. 68, p. 619, 1923.—McDunnough, Check list, No. 6117, 1939.

Ulophora tephrosiella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 107, 1904.—Forbes, Cornell Mem. 68, p. 619, 1923.—McDunnough, Check list, No. 6118, 1939. (New synonymy.)

Forewing brown dusted with white on basal and median areas and narrowly along terminal margin, giving the paler areas an ashy gray appearance and accenting the brown shade along costa and bordering the transverse lines; the latter narrow, faint, silvery scaled; antemedial line at middle of wing, oblique, somewhat sinuate-dentate, bordered outwardly by a narrow brown line and inwardly by a broad brown band, the inner edge of which forms a stout raised-scale ridge extending from inner margin to top of cell, the inner margin rather strongly dusted with white; subterminal line sinuate, with rather broad inner and outer brown borders; discal dots obscure, more or less confluent, brown; the terminal dots confluent, forming a fine brown line along outer margin. Hind wing pale to dark smoky brown; the veins somewhat darker; a fine dark brown line along termen. Alar expanse, 11–19 mm.

Male genitalia distinguished from those of the species following (*guarinella*) chiefly by the broader harpes and more narrowly rounded apex of uncus. The number and length of the spines on penis is an individual character. Our figure 420a shows the minimum in number and the maximum in length. Female genitalia like those of *guarinella*.

TYPE LOCALITIES: North Carolina (*groteii*, in Paris Mus.); Washington, D. C. (*tephrosiella*, in USNM).

FOOD PLANT: *Tephrosia* spp. Larvae feeding on pods and seeds.

DISTRIBUTION: *New Jersey*, Woodbine (Sept.); *District of Columbia* (July, Aug.); *Virginia*, Pendleton (Aug.), Skyland (July); *North Carolina*, Southern Pines (June, July, Aug., Sept.), Tryon (July, Aug.); *South Carolina*, Clemson College (July); *Georgia*, Atlanta (June), Spalding County (Nov.); *Florida*, Glenwood, Lake Alfred (May, July), Lakeland (Sept.), Polk County (Aug.), Tampa (June), Winter Haven (July); *Alabama*, Auburn; *Louisiana*, Vernon Parish (Aug.); *Texas*, Herne, Sandflat.

Dyar's *tephrosiella* was described from small specimens. There are no structural or color differences to distinguish these from typical *groteii*. The larva lacks the sclerotized rings around seta IIb of mesothorax and seta III of the eighth abdominal segment, normally characteristic of phycitid larvae.

366. Ulophora guarinella (Zeller)

FIGURES 421, 909

Myelois guarinella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 208, 1881.

Ulophora guarinella (Zeller) Ragonot, Monograph, pt. 1, p. 155, 1893.

Acromeseres dialithus Dyar, Ins. Insc. Menstr., vol. 7, p. 42, 1919. (New synonymy.)

Forewing decidedly paler than that of *groteii* and, except for the band preceding the antemedial line, an almost uniform pale gray; the transverse lines obscure; antemedial line bordered inwardly by an orange-red band with more or less black shading on its lower half and a black scale ridge along its inner edge; subterminal line nearly obsolete, indicated chiefly by a very faint, narrow, dark gray inner border; discal dots more or less obscured, when distinguishable, blackish and either separated or coalesced; terminal dots faint, separated. Hind wing whitish with a faint brownish or smoky tint towards apex and along outer margin; the veins very slightly darkened. Alar expanse, 13–18 mm.

Male genitalia are similar to those of *groteii* except for narrower harpes and a more bluntly pointed uncus. The female genitalia show no distinguishing characters.

TYPE LOCALITIES: Honda, Colombia (*guarinella*, in BM); Santiago, Cuba (*dialithus*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: CUBA: Santiago (Jan., Oct.), Baracoa. COLOMBIA: Honda.

In structure, color, and maculation Dyar's *dialithus* is a perfect match to the male type of *guarinella*. The species is very close to *groteii* but apparently distinct. Nothing is known of its life history.

Genus 89: *Chorrera*

[Venational division B. Forewing smooth; veins 3, 4 and 5 equidistant and approximate towards base. Hind wing with vein 2 well before angle; 4 and 5 stalked for over half their lengths. Male genitalia with transtilla incomplete; aedeagus needlelike; penis unarmed; vinculum with pair of anteriorally produced lateral lobes from terminal margin. Female genitalia developed as two elongate, narrow, opposed plates, armed with short, longitudinally arranged spines; ductus bursae slender, globularly expanded near genital opening.]

89. Genus Chorrera Dyar

Chorrera Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 330, 1914. (Type of genus: *Chorrera idiotes* Dyar.)

Tongue well developed. Antenna weakly pubescent; on male a slight scale tuft on shaft shortly beyond basal segment, no appreciable sinus. Labial palpus obliquely ascending, reaching to slightly above vertex, slender; second segment roughly scaled; third less than one-half the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle; 3, 4 and 5 equidistant and approximate towards base; 6 from below upper angle of cell, straight; 8 and 9 stalked for half or less than half their length; 10 from the cell; male without costal fold. Hind wing with vein 2 from well before outer angle of cell; 3 from the angle; 4 and 5 stalked for over half their lengths (very long stalked in *extrincica*); 7 and 8 closely approximate for a short distance beyond cell; cell less than one-half the length of wing; discocellular vein curved, considerably produced at lower angle. Eighth abdominal segment of male with a pair of very weak ventrolateral hair tufts.

Male genitalia with uncus rather narrowly triangulate, tapering abruptly at apex. Apical process of gnathos a short, stout hook. Transtilla incomplete, the divided elements small. Harpe short, with strongly sclerotized, thornlike, more or less appressed clasper, about half as long as harpe. Anellus a shallow U- or V-shaped plate with somewhat produced lateral lobes. Aedeagus, long, slender (needlelike), slightly curved; penis unarmed. Vinculum stout, about twice as long as greatest width; slightly tapering to a moderately broad terminal margin with a pair of anteriorly produced lateral lobes.

Female genitalia with signa developed as two elongate, narrow, opposed plates armed with short, stout, thornlike spines, longitudinally arranged; bursa otherwise membranous, large, more or less pear shaped; ductus bursae for half its length from bursa, very narrow, ribbonlike, sclerotized and bent at middle, globular and membranous beyond, and thence triangularly expanding into the simple genital opening; ductus seminalis from bursa near its junction with ductus bursae.

The genus is certainly distinct and easily distinguished from other phycetine genera by its peculiar genitalia. It contains what appear to be three tropical American species. These may eventually prove to be no more than races of a single variable species, but at present we are not justified in such a grouping. We know nothing of their life history and our knowledge of their distribution is too fragmentary to permit more than speculation as to their status.

367. Chorrera idiotes Dyar

FIGURES 34, 422, 914

Chorrera idiotes Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 331, 1914.

Forewing gray with a fine dusting of white scales, making the ground color a dark ashy gray; transverse lines narrow, faint, whitish; antemedial line slightly oblique, sinuate-angulate, with a narrow, obscured, outer edging of black scales; subterminal line somewhat more distinct, sinuate, with narrow inner and outer dark borders, pronounced and black at costa; discal dots very faint, when distinguishable, black and separated; a row of faint, confluent, blackish dots along terminal margin. Hind wing translucent white; a dark smoky shade along costa and a narrower smoky shade along terminal margin; the veins not darkened except

(on some females) at their marginal extremities. Alar expanse, 15.5–19 mm.

Male genitalia with a short knoblike projection from base of clasper of harpe. Lateral lobes of anellus short, stubby. Female genitalia as given for the genus.

TYPE LOCALITY: La Chorrera, Panamâ (May; type in USNM).

FOOD PLANT: Unknown.

Known only from the type locality.

368. Chorrera extrincica (Dyar), new combination

FIGURES 423, 913

Rhodophaea extrincica Dyar, Ins. Insc. Menstr. vol. 7, p. 41, 1919.

Similar to *idiotes* except: Forewing with less whitish dusting; the transverse lines and their dark borders more obscure; ground color a nearly uniform brownish gray (fuscous). Hind wing with narrower smoky borders along costa and terminal margin; veins 4 and 5 longer stalked (4 very short and on some specimens vestigial or altogether absent). Alar expanse, 13–15 mm.

Male genitalia with clasper of harpe a simple hook (as in *postica*); lateral lobes of anellus longer and more slender. Female genitalia with appreciably smaller bursa and entire genitalia shorter.

TYPE LOCALITY: Santiago, Cuba (type in USNM).

FOOD PLANT: Unknown.

Known only from the type locality (May, June, Oct.). Represented in the National Collection by 12 males and 2 females.

369. Chorrera postica (Zeller), new combination

FIGURE 424

Myelois postica Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 213, 1881.

Nephopteryx postica (Zeller) Ragonot, Monograph, pt. 1, p. 292, 1893.

Similar to *idiotes* except: Thorax and basal two-thirds of forewing heavily dusted with white, making ground color an ashy white as far on forewing as the dark gray transverse shade extending from costa at beginning of subterminal line to outer third of inner margin. Hind wing without dark shade along costa and with only a faint, narrow, dark shade on inner margin at apex. Alar expanse, 18 mm.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

Known only from the type locality.

Genus 90: *Tacoma*

[Venational division B. Forewing with veins 4 and 5 stalked for nearly half their lengths. Hind wing with vein 2 near lower angle of cell; 4 and 5 long stalked; cell about one-third the length of wing. Antenna of male simple. Labial palpus upturned, slender. Maxillary palpus squamous. Male genitalia with apical process of gnathos a pair of converging bladelike projections; transtilla absent; harpe simple; penis unarmed. Female genitalia with signa developed as two plates armed with long, curved, clawlike spines; ductus bursae from middle of bursa, long, slender, membranous; ductus seminalis from bursa remote from junction of ductus bursae and bursa.]

90. Genus Tacoma Hulst

Tacoma Hulst, Ent. Amer., vol. 4, p. 115, 1888; Phycitidae of N. Amer., p. 139, 1890.—Ragonot, Monograph, pt. 1, p. 205, 1893. (Type of genus: *Tacoma feriella* Hulst.)

Tongue well developed. Antenna simple. Labial palpus upturned, cylindrical, slender, reaching to vertex; third segment one-third the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle; 4 and 5 stalked for slightly less than half their lengths; 6 from below upper angle, straight; 8 and 9 stalked for a half or a trifle more than half their lengths; 10 from the cell; male without costal fold. Hind wing with vein 2 from before but near lower outer angle of cell; 3 from the angle, connate with the stalk of 4–5; 4 and 5 long stalked (for over two-thirds their lengths); 7 and 8 closely approximate for a short distance from cell; cell about one-third the length of wing; discocellular vein curved and outwardly produced at lower angle of cell. Eighth abdominal segment of male simple.

Male genitalia with uncus triangulate, its apex bluntly rounded. Apical process of gnathos a pair of converging, flattened, pointed, bladelike projections. Transtilla absent. Harpe simple, narrowly elongate. Anellus a simple shield. Aedeagus simple, straight; penis unarmed. Vinculum stout, subtriangulate with narrowly rounded terminal margin; about as long as greatest width.

Female genitalia with bursa shaped like an elongate potato, with ductus bursae arising from its middle; signa developed as two strongly spined plates, one of irregular shape armed with numerous, slender, long, curved spines and situated at junction of bursa and ductus bursae, the other a narrow curved band with a row of well spaced, strong, curved, clawlike spines along one edge; also in bursa several (6 or more) small, detached, curved, thornlike spines; ductus bursae much longer than bursa, slender, membranous throughout; genital opening simple, small; ductus seminalis from bursa remote from junction of bursa and ductus bursae.

A monotypical genus of unmistakable distinctness, easily identified by its genitalia. Except for their genitalia the sexes are not distinguishable on any external characters. The spining of the female abdomen mentioned by Hulst (1890) is nonexistent. It is impossible to conceive what he saw or thought he saw, for there is no such structure on either the female or the male.

370. Tacoma feriella Hulst

FIGURES 37, 425, 912

Tacoma feriella Hulst, Ent. Amer., vol. 4, p. 115, 1888; Phycitidae of N. Amer., p. 139, 1890.—Ragonot, Monograph, p. 1, p. 205, 1893.—McDunnough, Check list, No. 6142, 1939.

Tacoma submedianella Dyar, Ins. Insc. Menstr., vol. 1, p. 34, 1913.—McDunnough, Check list, No. 6144, 1939. (New synonymy.)

Forewing gray, with an irregularly intermixed powdering of black and white scales, the black predomi-

nating, making the over-all color dark gray with a faint bluish tint; the transverse lines grayish white, faint but distinguishable; antemedial line oblique, narrow from costa to lower margin of cell, thence (on most specimens) more or less expanded into a conspicuous white blotch of variable but usually quadrate shape; on some examples the white blotch is reduced and on a few completely absent; in the latter the antemedial is a narrow white line throughout, notched below costa and at lower fold and with a complete, narrow, outer, black border; on examples with the antemedial line expanded into a white blotch, the blackish outer border is broken or obliterated below the cell; subterminal line inwardly notched at veins 6 and 1b, shaded inwardly by a narrow, blackish border; discal dots, when distinguishable, confluent, forming, on well marked specimens, a narrow black line along discocellular vein; terminal dots more or less confluent, usually forming a blackish line along outer margin. Hind wing whitish with a more or less smoky brown tint; veins faintly darkened and a narrow brown shade or line along outer margin. Alar expanse, 15–20 mm.

Genitalia as given for the genus.

Types.—In Rutgers University (*feriella*); U. S. National Museum (*submedianella*)

TYPE LOCALITIES: Texas (*feriella*, in AMNH, ex Rutgers); La Puerta, Calif. (*submedianella*, in USNM).

FOOD PLANT: Mistletoe. This record from specimens from Riverside, Calif., reared by Commander Dammers.

Distribution.—Texas, Blanco County (Sept.), Burnet County (Sept.), Kerrville, Plano (Aug., Sept.), Rio Frio (May); *New Mexico;* Mesilla Park (May); *Arizona*, Fish Creek Station (Sept.), Redington, Santa Rita Mts. (June), Wilgus; *California*, La Puerta (July), Mount Lowe (July), Riverside (July, Sept.).

As indicated by the foregoing description the species is individually variable. Dyar's *submedianella* was described from rather small California examples in which the characteristic white patch over the lower half of the antemedial line was partially or wholly obliterated by dark scaling. In the series before me there is every intergrade between the form with a conspicuous white patch and that without it; the extremes are not peculiar to any locality, nor do they exhibit any genitalic differences.

Group II

[Hind wing with vein 3 present, 4 absent.]

KEYS TO THE VENATIONAL DIVISIONS AND GENERA OF GROUP II

Forewing with 11 veins; vein 2 from the cell . . . . . **Venational division A** (key, p. 180)

Forewing with 11, 10, or 9 veins; vein 2 stalked or united with 3.
Venational division B[9] (key, p. 184)

Forewing with 10 veins; veins 8 and 9 united[10]; 4 and 5 stalked; 2 from the cell or [*Azaera*] from the stalk of 4–5 . . . . . **Venational division C** (key, p. 184)

Forewing with 10 veins; 8 and 9 stalked; 4 and 5 united; 2 from the cell.
Venational division D (key, p. 185)

Forewing with 9 veins; 8 and 9 united[11]; 4 and 5 united; 2 and 3 from the cell.
Venational division E (key, p. 185)

Forewing with 9 veins; 8 and 9 united; 4 absent; 3 and 5 stalked; 2 from the cell.
Venational division F (key, p. 186)

Venational division A

1. Cell of hind wing partially open; only a fragment of the discocellular vein distinguishable. **Psorosina** (p. 208)

   Cell closed; discocellular vein complete and curved 2
2. Hind wing with vein 2 from lower outer angle of cell 3

   Hind wing with vein 2 from before the angle 8
3. Forewing with vein 2 from the lower outer angle of cell . . . . . **Honora** (p. 196)

   Forewing with vein 2 from before the angle 4
4. Forewing with vein 2 from well before the angle; eighth abdominal segment of male without hair tufts; transtilla absent (elements not distinguishable); ductus bursae sclerotized for most of its length . . . . . **Illatila** (p. 263)

   Forewing with vein 2 from near lower angle; eighth abdominal segment of male with hair tufts; transtilla present (represented at least by distinguishable elements); ductus bursae membranous 5
5. Labial palpus upturned; maxillary palpus of male squamous; signum of female a depressed, small cluster of blunt, stout, thornlike spines . . . **Drescomopsis** (p. 262)

   Labial palpus oblique; maxillary palpus of male in the form of an aigrette; signum or signa of female otherwise 6
6. Male genitalia with apical process of gnathos on ovate plate bearing a small spine; signa of female consisting of a chain of thornlike spines on bulbous bases and a scattering of similar spines . . . . . **Cabotia** (p. 200)

   Male genitalia with apical process of gnathos a stout, elongate hook; signa of female consisting of large, round, densely spined plates 7

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[9] The genus *Nonia* in this division could easily be confused on forewing venation with the species and genera of division F. However, in *Nonia* it is vein 2 that is absent (united with 3) and 4 and 5 that are stalked; while in group F vein 2 is present, 4 absent, and 3 stalked with 5, two radically different developments to the same end result. The genitalia of *Nonia* show its close relationship to forms with veins 2 and 3 stalked and vein 2 tending to disappear.

[10] In occasional specimens of *Vitula* a vestige of vein 9 may be present on one forewing or the other, but the normal condition is for vein 9 to be absent.

[11] Some specimens of *Bema* show a trace of vein 9 on one side or the other, but this is an abnormal condition.

7. Male antenna with a stout hook from basal segment of shaft; tufts on eighth abdominal segment of male compound; transtilla incomplete . . . . . **Oncolabis** (p. 199)
   Male antenna with shaft simple; eighth abdominal segment of male with paired tufts; transtilla complete . . . . . **Honorinus** (p. 199)
8. Veins 3 and 5 of hind wing approximate at base (or contiguous for a short distance beyond) 9
   Veins 3 and 5 of hind wing connate (rarely very shortly stalked) 15
   Veins 3 and 5 of hind wing appreciably stalked 24
9. Maxillary palpus squamous 10
   Maxillary palpus filiform 12
10. Labial palpus upturned; shaft of male antenna with sinus and scale tuft at base . . 11
    Labial palpus porrect; shaft of male antenna simple . . . . . **Patriciola** (p. 209)
11. Forewing with vein 10 stalked with 8–9; eighth abdominal segment of male with compound ventral tufts . . . . . **Canarsia** (p. 201)
    Forewing with vein 10 from the cell; eighth abdominal segment of male with paired ventrolateral tufts . . . . . **Paconius** (p. 210)
12. Apical process of gnathos bifid or produced as large, partially fused lobes; ductus bursae of female sclerotized only at genital opening 13
    Apical process of gnathos a short, blunt hook; ductus bursae sclerotized for most of its length 14
13. Antennal shaft of male simple; ductus seminalis of female from middle of bursa; signum absent . . . . . **Aptunga** (p. 211)
    Antennal shaft of male with some rough scaling in a shallow sinus towards base; ductus seminalis from anterior end of bursa; signum present . . . . . **Baphala** (p. 235)
14. Labial palpus porrect; eighth abdominal segment of male simple . . **Volatica** (p. 290)
    Labial palpus oblique; eighth abdominal segment of male with paired dorsal tufts. **Vezina** (p. 291)
15. Antennae bipectinate (in both sexes); veins 7 and 8 of hind wing closely approximate. . 16
    Antennae pubescent; veins 7 and 8 of hind wing anastomosed 17
16. Labial palpus of male porrect; bursa of female without signum . . . **Melitara** (p. 240)
    Labial palpus of male obliquely ascending; bursa of female with signum . **Olycella** (p. 241)
17. Veins 7 and 8 of hind wing anastomosing beyond cell for not more than half the length of vein 7. 18
    Veins 7 and 8 anastomosing for most of their lengths beyond cell 21
18. Cell of hind wing not more than half the length of wing 19
    Cell of hind wing definitely more than half the length of wing 20
19. Maxillary palpus filiform; antennal shaft of male with modified, papillalike setae on basal segments; female with signum . . . . . **Zophodia** (p. 238)
    Maxillary palpus squamous; antennal shaft of male simple; female without signum. **Olyca** (p. 243)
20. Maxillary palpus squamous; male with transtilla complete, forewing without costal fold . . . . . **Euzophera** (p. 272)
    Maxillary palpus filiform; male with transtilla incomplete, forewing with costal fold. **Eulogia** (p. 275)
21. Labial palpus upturned 22
    Labial palpus oblique or obliquely ascending 23
22. Forewing with vein 10 shortly stalked with 8–9; male with transtilla incomplete, but elements considerably enlarged . . . . . **Moerbes** (p. 268)
    Forewing with vein 10 from the cell (usually separated, rarely connate, at base, with 8–9); male with transtilla complete . . . . . **Moodnopsis** (p. 269)
23. Cell of hind wing less than half (more than one-third) the length of cell; forewing of male with costal fold; eighth abdominal segment of male with paired ventrolateral hair tufts . . . . . **Entmemacornis** (p. 266)
    Cell of hind wing more than half the length of cell; forewing of male without costal fold; eighth abdominal segment of male simple . . . . . **Exuperius** (p. 274)

24. Hind wing with cell one-third the length of wing . . . . . Edulica (p. 271)
Hind wing with cell approximately half the length of wing 25
25. Penis of male armed with two stout thornlike cornute; signa of female consisting of two large, opposed plates armed with long stout spines, a scattering of similar spines between the plates, and a band of shorter spines at junction of bursa and ductus bursae . . . . . Adelperga (p. 187)
Penis of male smooth or armed only with weak spines or sclerotized wrinklings; signa of female (if present) otherwise 26
26. Forewing with vein 2 from lower outer angle of cell 27
Forewing with vein 2 from before the angle 28
27. Forewing with veins 2 and 3 closely approximate at base; males with strong costal fold on forewing, eighth segment with paired ventrolateral hair tufts, transtilla incomplete. Cassiana (p. 212)
Forewing with veins 2 and 3 connate; male without costal fold, eighth abdominal segment without hair tufts, transtilla complete . . . . . Rioja (p. 267)
28. Hind wing with veins 7 and 8 anastomosed for most of their lengths beyond cell 29
Hind wing with veins 7 and 8 approximate, contiguous or anastomosed beyond cell; but if anastomosed, then for less than two-thirds the length of vein 7 31
29. Forewing with vein 10 stalked with 8–9 . . . . . Cayennia (p. 267)
Forewing with vein 10 from the cell, separated at base and divergent from stem of 8–9 . 30
30. Male forewing with costal fold; eighth abdominal segment of male simple; female genitalia with ductus seminalis from bursa between signum and ductus bursae . Selga (p. 265)
Male forewing without costal fold; eighth abdominal segment of male with paired ventrolateral hair tufts; female genitalia with ductus seminalis from anterior end of bursa . . . . . Anderida (p. 211)
31. Male genitalia with apical process of gnathos greatly reduced and fused into subanal plate; female genitalia with signum a single, long, stout, curved spine. Lascelina (p. 264)
Male genitalia with apical process of gnathos well developed; female genitalia with signum (if present) otherwise 32
32. Male genitalia with apical process of gnathos developed as a stout, elongate hook; female genitalia with ductus seminalis from ductus bursae 33
Male genitalia with apical process of gnathos usually flanged or lobed, frequently bifid, sometimes fused or partially fused, if completely fused (*Cahela*, *Rumatha*) considerably enlarged basally; female genitalia with ductus seminalis from bursa copulatrix. 40
33. Labial palpi porrect 34
Labial palpi oblique or upturned 38
34. Eighth abdominal segment of male with ventrolateral hair tufts and lateral eversible lobes 35
Eighth abdominal segment of male without tufts or lobes, ventrolateral hair tufts only (no eversible lobes) 36
35. Maxillary palpus of male filiform . . . . . Macrorrhinia (p. 190)
Maxillary palpus of male in the form of an aigrette . . . . . Ocala (p. 191)
36. Aedeagus of male of nearly even width throughout; female genitalia with ductus bursae simple, and ductus seminalis from ductus bursae near its middle 37
Aedeagus of male abruptly tapered from base and very slender therefrom; female genitalia very slender for half its length from genital opening, and thence to bursa swollen and spiraled, armed throughout the spiraled portion with a line of fine, sharp spines . . . . . Valdivia (p. 191)
37. Eighth abdominal segment of male with a pair of short ventrolateral hair tufts; harpe with clasper present, developed as a strongly sclerotized, nearly straight hook; female genitalia with ductus bursae as long as, or longer than, bursa . . . Eumysia (p. 187)
Eighth abdominal segment of male without hair tufts; harpe without clasper; ductus bursae considerably shorter than bursa . . . . . Protasia (p. 193)

38. Maxillary palpus of male squamous; female genitalia with an acutely bent, sclerotized elbow in ductus bursae before genital opening . . . . . Hulstia (p. 195)
Maxillary palpus of male filiform or in the form of an aigrette; female genitalia with ductus bursae straight 39
39. Maxillary palpus of male filiform; female genitalia with ductus bursae long (as long or longer than bursa) . . . . . Heterographis (p. 193)
Maxillary palpus of male in the form of an aigrette; female genitalia with ductus bursae short (much shorter than bursa) . . . . . Staudingeria (p. 194)
40. Tongue considerably reduced, exposed or completely hidden by labial palpi 41
Tongue well developed and exposed 43
41. Hind wing with veins 7 and 8 anastomosed for at least half their distances from cell; female genitalia with ductus seminalis from anterior end of bursa copulatrix. Laetilia (p. 230)
Hind wing with veins 7 and 8 very shortly anastomosed (for less than half their distances from cell); female genitalia with ductus seminalis from bursa near its junction with ductus bursae 42
42. Male genitalia with apical process of gnathos partially fused; female genitalia with signum . . . . . Cactoblastis (p. 245)
Male genitalia with apical process of gnathos bifid; female genitalia without signum. Eremberga (p. 253)
43. Maxillary palpus filiform 44
Maxillary palpus squamous, fan shaped or flamboyant 45
44. Labial palpi of both sexes porrect; eighth abdominal segment of male simple. Rhagea (p. 237)
Labial palpi of male upturned, of female oblique; eighth abdominal segment of male with paired ventrolateral hair tufts . . . . . Cactobrosis (p. 260)
45. Maxillary palpus flamboyant (extending above front) . . . . . Sigelgaita (p. 255)
Maxillary palpus fan shaped and held vertical to the face . . . . . Yosemitia (p. 250)
Maxillary palpus squamous 46
46. Shaft of male antenna pubescent and with a series of modified papillalike setae on several basal segments; female with labial palpus obliquely ascending . . Ozamia (p. 257)
Shaft of male antenna pubescent (but without modified setae on basal segments) or pectinate; female with labial palpus porrect or obliquely porrect 47
47. Vinculum of male long (distinctly longer than broad); female genitalia without signum. 48
Vinculum short (little, if any, longer than broad); signum present 50
48. Maxillary palpus extending well above middle of face; eighth abdominal segment of male simple . . . . . Nanaia (p. 245)
Maxillary palpus not extending above middle of face; eighth abdominal segment of male with ventrolateral hair tufts 49
49. Antenna of male pubescent; ductus seminalis of female from near anterior end of bursa; bursa very small . . . . . Salambona (p. 254)
Antenna of male bipectinate; ductus seminalis of female from middle of bursa; bursa large . . . . . Amalafrida (p. 256)
Antenna of male unipectinate; (female unknown) . . . . . Parolyca (p. 255)
50. Antenna of male bipectinate; ductus seminalis of female from middle of bursa. Alberada (p. 244)
Antenna of male pubescent; ductus seminalis from bursa towards (near) junction of bursa with ductus bursae 51
51. Habitat, South America; male genitalia with apical process of gnathos bifid. Tucumania (p. 252)
Habitat, southwestern United States and northern México; male genitalia with apical process of gnathos fused 52

52. Male genitalia with aedeagus moderately long and sclerotized throughout, harpe without subbasal sclerotized pocket, anellus with base of plate narrowly sclerotized; female with dark markings on forewing longitudinal, no discal spot . . . Cahelā (p. 247)
Male genitalia with aedeagus short and partially sclerotized, harpe with subbasal sclerotized pocket, anellus with base of plate broadly sclerotized; female with dark markings of forewing transverse (at least in part), discal spot prominent. Rumatha (p. 248)

Venational division B

1. Forewing with veins 2 and 3 of forewing stalked 2
Forewing with veins 2 and 3 of forewing united. 6
2. Forewing with veins 4 and 5 stalked. 3
Forewing with veins 4 and 5 united 5
3. Forewing with veins 8 and 9 stalked. 4
Forewing with veins 8 and 9 united . . . . . Micromescinia (p. 277)
4. Cell of forewing open (no trace of discocellular vein) . . . . . Gennadius (p. 277)
Cell of forewing closed . . . . . Mescinia (p. 212)
5. Forewing with veins 8 and 9 stalked; hind wing with 3 and 5 stalked. Eurythmasis (p. 203)
Forewing with veins 8 and 9 united; hind wing with 3 and 5 closely approximate at base. Strephomescinia (p. 227)
6. Hind wing with veins 3 and 5 stalked 7
Hind wing with veins 3 and 5 closely approximate or connate at base 9
7. Cell of forewing open (no trace of discocellular vein) . . . . . Farnobia (p. 276)
Cell of forewing closed 8
8. Cell of hind wing open (no trace of discocellular vein) . . . . . Wunderia (p. 204)
Cell of hind wing closed . . . . . Eurythmidia (p. 204)
9. Forewing with veins 8 and 9 stalked. . . . . Phestinia (p. 216)
Forewing with veins 8 and 9 united . . . . . Nonia (p. 215)

Venational division C

1. Hind wing with discocellular vein straight and vertical. 2
Hind wing with discocellular vein curved. 4
2. Forewing with veins 4 and 5 stalked. 3
Forewing with veins 4 and 5 connate . . . . . Patagonia (p. 225)
3. Male genitalia with a comb of strong spines along side of aedeagus; female genitalia with two large signa composed of opposed, cup-shaped, strongly spined, concave plates; ductus seminalis from ductus bursae. . . . . Rotruda (p. 225)
Male genitalia with aedeagus smooth or with only minute scobinations at apex; female genitalia with signum a single, coarsely spined plate, or absent; ductus seminalis from bursa. . . . . Homoeosoma (p. 219)
4. Hind wing with veins 3 and 5 approximate at base 5
Hind wing with veins 3 and 5 connate or stalked 7
5. Cell of hind wing one-third the length of wing 6
Cell of hind wing one-fourth the length of wing. . . . . Verina (p. 288)
6. Eighth abdominal segment of male with compound dorsal tufts; shaft of male antenna simple. . . . . Vitula (p. 285)
Eighth abdominal segment of male simple; shaft of male antenna with shallow sinus towards base . . . . . Moodnella (p. 289)
7. Hind wing with vein 2 from the lower outer angle of cell. . . . . Harnocha (p. 202)
Hind wing with vein 2 from before the angle 8
8. Hind wing with vein 2 near lower outer angle of cell. 9
Hind wing with vein 2 from well before the angle 10

9. Forewing with vein 3 separate from, connate with, or rarely (in individual specimens) very shortly stalked with the stem of 4–5 . . . . . Ephestiodes (p. 278)
   Forewing with vein 3 from the stalk of 4–5 (well stalked with it) . . . Azaera (p. 282)
10. Cell of hind wing approximately one-third the length of wing. 11
    Cell of hind wing slightly more than one-half the length of wing . . Vagobanta (p. 289)
11. Male with transtilla incomplete; shaft of antenna with shallow sinus towards base. Moodna (p. 283)
    Male with transtilla complete; shaft of antenna simple. . . . . Manhatta (p. 287)

Venational division D

1. Hind wing with discocellular vein straight and vertical; cell very short (about one-fifth the length of wing) . . . . . Metephestia (p. 264)
   Hind wing with discocellular vein curved; cell longer (from slightly less than one-third to one-half the length of wing) 2
2. Hind wing with vein 2 from lower outer angle of cell 3
   Hind wing with 2 from before the angle 4
3. Veins 7 and 8 of hind wing contiguous for some distance beyond cell (but not anastomosing); labial palpus upturned; antennal shaft of male simple . Oedothmia (p. 205)
   Veins 7 and 8 anastomosed beyond cell; labial palpus oblique; shaft of male antenna with a hook from its basal segment and deeply curved for several segments beyond. Stylobasis (p. 205)
4. Hind wing with vein 2 from near the angle of cell. 5
   Hind wing with vein 2 from well before the angle 6
5. Labial palpus porrect; male penis without armature. . . . . Divitiaca (p. 189)
   Labial palpus upturned; penis armed with two stout, straight cornuti. Diviana (p. 206)
6. Hind wing with veins 3 and 5 shortly stalked. . . . . Prosoeuzophera (p. 275)
   Hind wing with veins 3 and 5 connate or very closely approximate at base. 7
7. Labial palpus oblique, extending above vertex of head; veins 7 and 8 of hind wing closely approximate for half their distance beyond cell . . . . . Palatka (p. 207)
   Labial palpus upturned, short, not reaching vertex; veins 7 and 8 anastomosed for most of their distance beyond cell . . . . . Cacozophera (p. 208)

Venational division E

1. Hind wing with discocellular vein straight and vertical 2
   Hind wing with discocellular vein straight and oblique . . . . . Bema (p. 217)
   Hind wing with discocellular vein curved 3
2. Cell of hind wing less than one-fourth the wing length; male without costal fold on forewing, with a weak pair of ventrolateral hair tufts on eighth abdominal segment. Comotia (p. 217)
   Cell of hind wing about one-third the wing length; male with costal fold, but with eighth segment simple . . . . . Unadilla (p. 227)
3. Hind wing with vein 2 from near lower outer angle of cell . . . . . Nicetiodes (p. 304)
   Hind wing with vein 2 from well before angle of cell 4
4. Male with apical process of gnathos enlarged (broadened), undivided, knobbed or looped; female with ductus seminalis from bursa near its junction with ductus bursae. Sosipatra (p. 294)
   Male with apical process of gnathos otherwise; female with ductus seminalis from bursa well removed from the junction of bursa and ductus bursae 5
5. Labial palpus upturned; ductus bursae of female membranous for most or all of its length, not flattened 6
   Labial palpus oblique or porrect; ductus bursae of female sclerotized for a considerable part of its length and flattened 7

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6. Male with transtilla complete or its elements greatly enlarged and approximate at their apices; forewing with a strong costal fold; eighth abdominal segment with compound dorsal tufts; female with apophyses of ovipositor and intersegmental area between ovipositor and eighth-segment collar, short . . . . . Ephestia (p. 301)
   Male with transtilla incomplete, its elements well separated at their apices, not enlarged; forewing without costal fold; eighth segment with paired dorsal hair tufts; female with apophyses of ovipositor and intersegmental area between ovipositor and eighth-segment collar, very long . . . . . Anagasta (p. 299)
7. Male genitalia with apical process of gnathos assymetrical; ductus seminalis of female from very near anterior end of bursa . . . . . Ribua (p. 297)
   Male genitalia with apical process of gnathos symmetrical; ductus seminalis of female from middle or near middle of bursa 8
8. Labial palpi of both sexes porrect . . . . . Plodia (p. 298)
   Labial palpi of both sexes oblique 9
9. Tongue reduced; alar expanse 8 mm.. . . . . Microphestia (p. 294)
   Tongue well developed; alar expanse 10 mm. or more 10
10. Bursa of female with signum (antenna of male with a shallow sinus in shaft towards base) . . . . . Caudellia (p. 292)
    Bursa of female without signum (male unknown) . . . . . Bethulia (p. 296)

Venational division F

1. Male genitalia with a projecting spur from base of costa of harpe; apical process of gnathos U-shaped; female with ductus bursae sclerotized and flattened for most of its length . . . . . Varneria (p. 305)
   Male genitalia with projection from costa of harpe near or beyond middle; apical process of gnathos (if present) not U-shaped; female with ductus bursae membranous and tubular throughout 2
2. Male with eighth abdominal segment simple; gnathos terminating in a very short, stout, narrowly forked projection; aedeagus with bluntly pointed apex; penis armed with an elongate, spiraled, sclerotized and spined plate; female genitalia with signa arranged as a series of (3 to 6) detached, broadly based, thornlike spines and narrow-bladed disks situated near anterior end of bursa and a cluster of several smaller spines near junction of bursa and ductus bursae . . . . . Eurythmia (p. 306)
   Male with compound dorsolateral tufts on eighth abdominal segment; gnathos without apical projection, its arms fusing at their distal ends into the sclerotized subanal plate; aedeagus with apex enlarged and flaring; penis unarmed except for a few sclerotized wrinklings; signa of female consisting of a single elongate series of (5 to 14) thornlike spines . . . . . Erelieva (p. 308)

Genera 91 and 92: *Adelperga* and *Eumysia*

[Venational division A. Forewing with 11 veins; 10 from cell, 8 and 9 stalked, 2 and 3 from the cell, 4 and 5 stalked or connate. Hind wing with veins 7 and 8 closely approximate or contiguous; 2 from close to lower, outer angle of cell; discocellular vein curved. Harpe of male genitalia with an elongate, strongly sclerotized clasper; gnathos terminating in a stout, short or moderately long, hooked process; transtilla incomplete; vinculum stout, as broad or broader than long.]

91. Adelperga, new genus

TYPE OF GENUS: *Heterographis cordubensiella* Ragonot.

Tongue well developed. Antenna simple, pubescent. Labial palpus obliquely upturned, reaching vertex, third segment short, projected forward. Maxillary palpus squamous. Forewing with vein 2 from or from very near outer angle of cell; 2 and 3 approximate at base; 4 and 5 stalked; 6 straight from below upper outer angle of cell; 10 from cell, closely approximate to 8–9; male without costal fold. Hind wing with vein 2 from very close to angle of cell; 3 and 5 stalked; 7 and 8 approximate; cell less than half (more than one-third) the length of the wing; discocellular vein curved. Eighth abdominal segment with a pair of short ventrolateral hair tufts.

Male genitalia with apical process of gnathos a rather short hook. Uncus broadly and bluntly rounded at apex. Harpe with a decided incurvation between sacculus and cucullus; clasper present, developed as a long, strongly sclerotized and apically curved and swollen arm, projecting into the incurvation between sacculus and cucullus. Anellus semitubular. Aedeagus long, stout, cleft and strongly sclerotized towards apex; penis armed with a pair of short stout thornlike cornuti and numerous granulations.

Female genitalia with bursa copulatrix thickened and sclerotized at junction with ductus bursae; signa strongly developed, consisting of two large, opposed plates armed with long, stout spines, a scattering of similar spines between the plates, and a band of shorter spines where ductus and bursa join; ductus bursae short, flattened, very broad and sclerotized throughout; genital opening very large; ductus seminalis from bursa near junction with ductus bursae.

This genus is easily identified by its genitalia. It shows striking affinities to *Passadena* of group I in shape of harpe, with incurvation between sacculus and cucullus, and in the development of an enlarged, strongly sclerotized and projecting clasper. *Passadena* also has opposed signa similarly spined.

371. Adelperga cordubensiella (Ragonot), new combination

FIGURES 429, 772

Heterographis cordubensiella Ragonot, Nouv. Gen., p. 30, 1888.
Hulstia cordubensiella (Ragonot), Monograph, pt. 2, p. 128, 1901.

Forewing with color and markings of *Euzophera semifuneralis* (especially the pale color form of its synonym *aglaeella* Ragonot; see p. 273); the antemedial line far out (at or very near middle of wing), nearly vertical, slightly notched at top of cell and at lower fold, white bordered outwardly by a black line; subterminal white line sinuate, incurved at vein 6 and the lower fold, bordered inwardly by black; the two transverse lines rather close (as in typical *Euzophera*) and the space between them dusted with blackish scales; otherwise the ground color of the wing is ash gray strongly shaded with reddish ocherous, especially in the enlarged basal area; a blackish spot on inner margin near base; a smaller blackish spot on costa just beyond the subterminal line and a row of black dots along termen. Hind wing whitish, shading to pale smoky fuscous towards apex and outer margin. Alar expanse, 15–18 mm.

Genitalia with characters as given for the genus.

TYPE LOCALITY: Córdoba, Argentina (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: ARGENTINA: Córdoba, Las Vasquez, Tucumán.

The figure in the Ragonot Monograph (pl. 22, fig. 20) is misleading. It shows the hind wing much too dark and uniformly colored, and shows none of the strong blackish dusting in the area between the antemedial and subterminal lines.

92. Genus Eumysia Dyar

Eumysia Dyar, Ins. Insc. Menstr., vol. 13, p. 220, 1925. (Type of genus: *Yosemitia mysiella* Dyar.)

Tongue well developed. Antenna strongly ciliate in male (cilia about three times the width of shaft), simple in female. Labial palpus porrect, long and beaklike (projecting about three times the length of the head beyond it). Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before angle of cell; 3 from the angle; 4 and 5 very shortly stalked or connate; 6 from below upper angle of cell, straight; 10 from cell, approximate to stalk of 8–9 at base; male without costal fold. Hind wing with vein 2 close to lower outer angle of cell; 3 and 5 stalked; 7 and 8 closely approximate or contiguous for some distance from cell; cell slightly less than one-half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of short, weak hair tufts.

Male genitalia with gnathos terminating in an elongate hook. Uncus narrowly and bluntly rounded at apex. Harpe with lower margin evenly curved, no incurvation between sacculus and cucullus; clasper present, developed as a strongly sclerotized, nearly straight hook. Anellus a simple plate. Aedeagus short, straight, moderately slender; penis unarmed. Vinculum broad, short, truncate.

Female genitalia with bursa and ductus bursae simple; ductus seminalis from middle of ductus bursae.

The genus was originally erected for nine species which Dyar removed from *Zophodia* and *Yosemitia*. As here restricted it includes only three of these (*mysiella*, *maidella*, and *fuscella*), a fourth species (*pallidipennella*), which Dyar had referred from *Yosemitia* to *Zophodia*, and a new species from Washington State.

There are no structural differences in genitalia that can be used to distinguish these supposed species. The form of the clasper of the harpe distinguishes *Eumysia* from any other genus in group II. A similar development of the clasper occurs in *Nephopteryx* of group I. In general habitus *Eumysia* most resembles *Ragonotia* in the Anerastiinae.

372. Eumysia mysiella (Dyar)

FIGURES 430, 920

Yosemitia mysiella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 36, 1905.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916.

Eumysia mysiella (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list No. 6295, 1939.

Forewing white dusted with blackish fuscous, making the general color a light ashen gray; antemedial white line sinuate, nearly vertical, bordered inwardly from inner margin to top of cell by a broad ocherous bar, this bar preceded by a blackish margin, especially towards inner margin; similar blackish scaling outwardly bordering the antemedial white line, sometimes faint, but usually distinct towards costa; subterminal line obscure, more or less shaded inwardly by dark scaling; blackish discal dots (especially the one at lower, outer angle of cell) usually distinct. Hind wing semihyaline, white. Alar expanse, 21–27 mm.

Genitalia with characters as given for the genus.

TYPE LOCALITY: Stockton, Utah (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Utah*, Stockton (Sept.), Eureka (June); *Arizona*, Phoenix (Aug.), Tempe (Aug.), Redington; *New Mexico*, Las Vegas (July), Jemez Springs (July).

373. Eumysia maidella (Dyar)

FIGURE 431

Yosemitia maidella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 36, 1905.

Eumysia maidella (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list No. 6297, 1939.

Similar to *mysiella* but averaging larger, with dark markings more intensified along the veins and bordering antemedial and subterminal lines, ocherous subbasal bar fainter and in some specimens absent. Alar expanse, 27–32 mm.

Genitalia similar to those of *mysiella*.

TYPE LOCALITY: Stockton, Utah (in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Utah*, Stockton (June, July), Eureka (June), Cedar Mts. (Iron County, July); *Colorado*, Fort Collins; *Arizona* (Sept.); *New Mexico*, Fort Wingate (May); *California*, Loma Linda (Aug.). CANADA: *British Columbia*, Kaslo (Aug.).

Probably not specifically distinct from *mysiella*. There are no structural differences between them. The character given by Dyar, costa of male forewing "concave" (*maidella*) or "not concave" (*mysiella*) is purely imaginary. Some females as well as some males of both "species" appear to have the costa slightly concave at middle but this is an optical illusion due to imperfect flattening of the wings in their spreading. The differences in size and intensity of markings are slight. However, since we know nothing of the biology of any *Eumysia* and since such differences may coincide with differences in host plants it seems advisable to keep the names separated for the present.

374. Eumysia pallidipennella (Hulst), new combination

Volusia pallidipennella Hulst, Canadian Ent., vol. 27, p. 56, 1895.

Trivolusia pallidipennata Hulst, U. S. Nat. Mus. Bull. 52, p. 438, 1903 (misspelling).

Yosemitia pallidipennella (Hulst) Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916.

Zophodia pallidipennella (Hulst) McDunnough, Check list, No. 3606, 1939.

Paler and averaging smaller than *mysiella* with dark dusting fainter, giving the wing a more ocherous gray than ashy gray tint; ocherous subbasal bar somewhat more strongly accented. The genitalia of the female type show no appreciable differences from those of *mysiella* or *maidella*. The name may represent nothing more than a race or variety but it should be kept specifically distinct until closer relationship is proven. In a series of some 40-odd specimens before me the color seems fairly constant. Alar expanse, 19–24 mm.

TYPE LOCALITY: Colorado (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado; Utah*, Stockton (June, Aug., Sept.), Vineyard (June, July); *New Mexico*, Mesilla Park (May); *California*, San Francisco (Apr.), Loma Linda (Apr., Aug., Oct.); *Washington*, Pullman (July, Aug.).

375. Eumysia fuscatella (Hulst)

Zophodia fuscatella Hulst, Canadian Ent., vol. 32, p. 173, 1900.

Eumysia fuscatella (Hulst) Dyar, Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list, No. 6298, 1939.

Forewing mouse gray; transverse white lines but faintly indicated. Hind wings pale smoky fuscous. Alar expanse, 21 mm.

TYPE LOCALITY: Los Angeles County, Calif. (type in USNM).

FOOD PLANT: Unknown.

Known only from the male type.

376. Eumysia semicana, new species

Antenna white annulated with black. Head, palpi, thorax, and forewing white densely dusted with blackish fuscous, giving the moth a predominately slate-gray color with ashy white streakings on forewing in the interspaces between the veins, through the middle of the cell and bordering the upper and lower veins of cell; antemedial and subterminal lines obsolete, indicated only by an obscure, transverse, angulate, dark shading at basal third and a couple of dark spots on costa near apex, from the inner of which a dark shade extends toward cell; base of wing (before transverse shade) more or less clouded by dark scaling; discal spots at end of cell, small, blackish; some obscure blackish dots along termen; cilia fuscous, with a median white band.

Hind wing smoky fuscous; cilia slightly paler, with a whitish median band. Alar expanse, 30 mm.

TYPE LOCALITY: Yakima, Wash. (type in USNM, 61364).

FOOD PLANT: Unknown.

Described from female type and one female paratype from the type locality, collected by A. Rolfs, May 20, 1932, and received from J. F. G. Clarke under his Nos. 4008 and 4009.

A large, dark species. It may eventually prove to be only an extremely dark color form or race of *maidella*, but superficially it is so different in color and so unlike any other described species in the genus that a separate specific designation seems warranted.

Genus 93: *Divitiaca*

[Venational division D. Forewing with 10 veins; 10 from cell, 8 and 9 stalked; 4 and 5 united; 2 and 3 from the cell. Hind wing with 7 and 8 approximate; 2 from close to lower outer angle of cell; discocellular vein curved. Labial palpi porrect. Male genitalia with uncus triangulate, tapering evenly to rounded or bluntly pointed extremity, large in proportion to reduced tegumen; transtilla incomplete; harpe with a transverse sclerotized ridge from base of costa to lower angle of cucullus; penis without cornuti or other appreciable sclerotizations; vinculum broad, stout, short. Female genitalia with ductus seminalis from ductus bursae.]

93. Genus Divitiaca Barnes and McDunnough

Divitiaca Barnes and McDunnough, Contributions, vol. 2, p. 183, 1913. (Type of genus: *Divitiaca ochrella* Barnes and McDunnough.)

Tongue well developed. Antenna pubescent; in male a shallow sinus and slight scale tuft at base of shaft; in female simple. Labial palpus porrect; long, extending over twice the length of the head beyond it; broadly scaled; third segment about half the length of second. Maxillary palpus minute, filiform. Forewing smooth; 10 veins; vein 2 from slightly before angle of cell; 3 from angle; 4 and 5 united; 6 from below upper angle of cell, straight; 10 from cell, separated from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from very close to angle of cell; 3 and 5 stalked; 7 and 8 closely approximate for some distance from cell; cell slightly less than one-half the length of the wing; discocellular vein curved. Eighth abdominal segment of male with a pair of short ventrolateral hair tufts and a lateral pair of eversible lobes with long hair tufts

Male genitalia with apical process of gnathos a stout hook. Harpe with broadened cucullus, its outer margin straight and vertical or slightly rounded; a transverse sclerotized ridge extending from base of costa to lower angle of cucullus. Anellus a slightly curved plate with short lateral lobes. Aedeagus short, slender, needlelike; penis without armature. Vinculum short, extremity narrowly rounded.

Female genitalia with bursa and ductus bursae membranous; bursa large, sausage shaped or trilobed (twice constricted near junction with ductus bursae), without signum; ductus bursae long, very slender, with or without a few fine spines at junction with bursa; ductus seminalis from ductus bursae nearer to bursa than to genital opening.

This genus is closely related to *Macrorrhinia* and *Ocala*, agreeing with them in genitalic and most other structural characters except for the absence of vein 4 of forewing, a consistent character for all the species and specimens of the genus.

377. Divitiaca ochrella Barnes and McDunnough

FIGURES 101, 433, 922

Divitiaca ochrella Barnes and McDunnough, Contributions, vol. 2, p. 183, 1913.—McDunnough, Check list, No. 6357, 1939.

Forewing pale ocherous; veins faintly outlined, whitish; antemedial line indicated by an outwardly curved and slanting row of blackish spots; between this and base of wing, above inner margin, a small, more or less diffused, blackish spot; subterminal line faintly indicated by a broken series of blackish streaks or spots on the veins; a dark discal spot at lower outer angle of cell, the discal spot at upper outer angle very faint or absent. Hind wing semihyaline, whitish. Alar expanse, 12–17 mm.

Male genitalia with apical process of gnathos a moderately long, stout, slightly curved and evenly tapering hook. Female genitalia with ductus bursae weakly spined at junction with bursa copulatrix; bursa sausage-shaped, in part minutely scobinate.

TYPE LOCALITY: Everglade, Fla. (Apr., type in USNM).

FOOD PLANT: Unknown.

Known only from the type series and one other male from the type locality, and one male from Marco, Fla., all in the National Collection.

378. Divitiaca simulella Barnes and McDunnough

Divitiaca simulella Barnes and McDunnough, Contributions, vol. 2, p. 183, 1913.—McDunnough, Check list, No. 6356, 1939.

Similar to *ochrella*, differing only in its smaller average size, and somewhat darker fore and hind wings. The hind wing is a pale smoky hyaline hue. Alar expanse, 12–14 mm.

The male genitalia of the type are a trifle smaller than those of the type of *ochrella* and the apex of uncus seems slightly more pointed; but these are scarcely more than individual differences. The female genitalia are essentially like those of *ochrella*.

TYPE LOCALITY: Everglade, Fla. (Apr., type in USNM).

FOOD PLANT: Unknown.

Represented in the National Collection by the type series and one other male from the Everglades. Very doubtfully distinct from *ochrella*. In a reared series the color differences would probably disappear and specimens reared under moist conditions would show more

intense and diffused markings and a considerably darker coloration.

379. Divitiaca parvulella Barnes and McDunnough

FIGURES 432, 921

Divitiaca parvulella Barnes and McDunnough, Contributions, vol. 2, p. 183, 1913.—McDunnough, Check list, No. 6355, 1939.

Averages smaller than *simulella* or *ochrella*. Ground color and dark markings of forewing similar to those of *simulella* but with a rather broad whitish band along costa. Hind wings pale to dark smoky fuscous. Alar expanse, 9–12 mm.

Male genitalia with apical process of gnathos a long, stout arm, swollen and abruptly hooked at the end. Female genitalia with bursa and ductus bursae smooth; bursa trilobed (twice constricted near junction with ductus bursae).

TYPE LOCALITY: Marco, Fla. (type in USNM).

FOOD PLANT: *Achyranthus ramosissima*.

DISTRIBUTION: *Florida*, Marco (Apr.), Vero Beach (Apr.), Key West (Apr.).

Easily distinguished from other species in the genus by the contrastingly white costa of forewing and the peculiar development of gnathos and bursa. The Key West specimens (1 ♂ and 3 ♀) were reared Apr. 7, 1945, in connection with the Special Survey of the Division of Foreign Plant Quarantine, U. S. Department of Agriculture, from larvae feeding in the flowers of *Achyranthus*. They have given us our only food-plant record for the genus. The male is slightly darker and somewhat more strongly marked than either of the two males of the type series. The reared females and a collected female from Vero Beach are even darker, their hind wings being a dark smoky fuscous. The larva lacks the sclerotized rings about seta IIb of mesothorax and seta III of eighth abdominal segment characteristic of most phycitine larvae.

380. Divitiaca parvulella consociata, new race

Similar to typical *parvulella* except somewhat paler and larger. The hind wing of the female is darker than that of the male but not so dark as in the reared females of *parvulella* from Key West, a difference of little or no significance as between collected and reared specimens.

The genitalia, male and female, are also slightly larger than those of Florida *parvulella* but not structurally different. Alar expanse, 11–13.5 mm.

TYPE LOCALITY: Valle de Medellín, Colombia (type in USNM, 61365).

FOOD PLANT: Unknown.

Described from male type and one male and one female paratype from the type locality, received from F. L. Gallego M. under his No. 111, and dated "January 1942."

I name these examples with great reluctance and do so only as a precautionary measure, since we have no examples of *Divitiaca* from any intervening area between Colombia and the United States.

Genera 94–97: *Macrorrhinia* to *Protasia*

[Venational division A. Forewing with 11 veins; 10 from cell, 8 and 9 stalked; 4 and 5 stalked; 2 and 3 from cell. Characters otherwise as for previous group (*Divitiaca*).]

94. Genus Macrorrhinia Ragonot

Macrorrhinia Ragonot, N. Amer. Phycitidae, p. 13, 1887. (Type of genus: *Macrorrhinia aureofasciella* Ragonot.)

Dolichorrhinia Ragonot, Nouv. Gen., p. 28, 1888; Monograph, pt. 2, pp. xi, 190, 1901.—Hulst, Phycitidae of N. Amer., p. 190, 1890.

Tongue well developed. Antenna pubescent (cilia about as long as width of shaft); in male a shallow sinus with a very small tuft at base of shaft; in female simple. Labial palpus porrect, downcurved; long, extending at least three times length of head beyond it. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from slightly before angle of cell; 3 from angle; 4 and 5 short stalked; 6 from below upper angle of cell, straight; 10 from cell, at base approximate to stem of 8–9; male without costal fold. Hind wing with vein 2 from close to angle of cell; 3 and 5 stalked; 7 and 8 approximate or weakly anastomosed beyond cell; cell slightly less than one-half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of short ventrolateral hair tufts and a lateral pair of eversible lobes with long hair tufts (as in *Divitiaca*).

Male genitalia with apical process of gnathos a stout hook. Harpe with broadened cucullus; a transverse sclerotized ridge extending from base of costa to lower angle of cucullus. Anellus a slightly curved plate with short, thick, lateral lobes. Aedeagus short, slender, needlelike; penis without armature. Vinculum short (as broad as long); extremity rounded.

Female genitalia with bursa and ductus bursae membranous throughout, except for a slight sclerotization of the genital opening; bursa large, sausage shaped, without signum; ductus bursae long, very slender for two-thirds of its length, suddenly and considerably expanded before junction with bursa; ductus seminalis from ductus bursae near genital opening.

Ragonot (1888) proposed *Dolichorrhinia* as a new name for *Macrorrhinia* Ragonot (1887) since the latter was, in his opinion, a homonym, "resembling too much the name *Macrorhinus* already employed twice." The name is uncomfortably close to and much nearer a homonym of *Macrorrhina* Berthold (1827); but under our interpretation of the International Code the name *Macrorrhinia* is homonymous with neither and will have to replace *Dolichorrhinia* which lepidopterists since Ragonot have been using for the genus.

381. Macrorrhinia aureofasciella Ragonot

FIGURES 61, 437, 924

Macrorrhinia aureofasciella Ragonot, N. Amer. Phycitidae, p. 13, 1887.

Dolichorrhinia aureofasciella (Ragonot) Hulst, Phycitidae of N. Amer., p. 190, 1890; U. S. Nat. Mus. Bull. 52, p. 433, 1902.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 190, 1901.—McDunnough, Check list, No. 6351, 1939.

Forewing ocherous gray; antemedial line broad, slightly oblique, orange, preceded by a blackish line which extends from middle of cell to inner margin; discal dots at end of cell, blackish, the lower one always distinct; subterminal line very faint, whitish, indistinctly shaded inwardly by dark scaling, indented at vein 6 and lower fold; terminal dots faint. Hind wing translucent, whitish with a pale smoky tint. Alar expanse, 13–22 mm.

Male genitalia with apical hooked process of gnathos but slightly curved; aedeagus with a row of 4 or 5 very small spines near apex. Female genitalia as given for the genus.

TYPE LOCALITY: Arizona (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, Baboquivari Mts. (Apr. to Dec.), Greaterville, Palmerlee (Apr.), Santa Rita Mts. (May, June, July), Wilgus Mts.; *New Mexico*, Albuquerque (July), Las Vegas; *Texas*, Alice (June), Blanco County (July, Oct.), Brownsville, Burnet County, Kerrville (Apr., July), Shovel Mountain. MÉXICO: Sonora.

Superficially *aureofasciella* is easily confused with *Eumysia pallidipennella*, especially the female. Their genitalia, however, readily separate the two species.

382. Macrorrhinia placidella (Zeller)

Myelois placidella Zeller, Isis von Oken, p. 874, 1848.
Dolichorrinia placidella (Zeller) Ragonot, Monograph, pt. 2, p. 190, 1901.

This species is represented only by the female type in Berlin. According to Ragonot the specimen is in poor condition. I have seen nothing from tropical America that matches Zeller's description or Ragonot's figure (Monograph, pl. 31, fig. 20). Very likely the species does not belong in *Macrorrhinia*, but without evidence to the contrary must be left where Ragonot placed it.

TYPE LOCALITY: Alegrete, Brazil (type in Mus. Univ. Berlin).

FOOD PLANT: Unknown.

95. Genus Ocala Hulst

Ocala Hulst, Canadian Ent., vol. 24, p. 61, 1892. (Type of genus: *Ocala dryadella* Hulst.)

Characters of *Macrorrhinia* except: Labial palpus of male grooved to hold maxillary palpus; maxillary palpus of male in the form of an aigrette. There is no structural difference between the two genera in the tufting of the male abdomen. Hulst made no dissections and consequently failed to see the eversible tufts in *Macrorrhinia*.

The palpal differences may be of no more than specific significance here as they are, for example, in *Dioryctria*; but until more material is available, other possible species discovered, and something known about their life histories it seems advisible to keep the generic names separate.

383. Ocala dryadella Hulst

FIGURES 59, 438, 923

Ocala dryadella Hulst, Canadian Ent., vol. 24, p. 61, 1892.—McDunnough, Check list, No. 6359, 1939.
Dolichorrhinia platanella Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, art. 1, p. 131, 1917.—Barnes and McDunnough, Contributions, vol. 3, p. 222, 1917.

Forewing pale fuscous gray; antemedial white line obscure, indicated chiefly by a narrow outer bordering of blackish scales, angled slightly at middle and slanting, bordered inwardly on lower half by a pale orange spot behind which, on inner margin, is a rather conspicuous blackish dot; discal spots at end of cell distinct, blackish; subterminal line faint, with a blackish inner border, inwardly angled at vein 6 and (slightly) at lower fold; a row of blackish dots along termen. Hind wings translucent, pale smoky white, with some dark streaking on the veins, especially on the females. Alar expanse, 14–17 mm.

Male genitalia with outer margin of cucullus straight; aedeagus smooth. Female genitalia with ductus bursae sclerotized for a short distance from genital opening and swollen for more than a third of its length from junction with bursa copulatrix.

TYPE LOCALITIES: Charlotte Harbor, Fla. (*dryadella*, in AMNH, ex Rutgers); Fort Myers (*platanella*, in AMNH).

FOOD PLANT: Unknown.

DISTRIBUTION: *Florida*, Charlotte Harbor, Everglade (Apr.), Fort Myers (Apr.), Marco (Apr.).

96. Genus Valdivia Ragonot

Valdivia Ragonot, Nouv. Gen., p. 27, 1888; Monograph, pt. 2, p. xi, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 191, 1901. (Type of genus: *Valdivia coquimbella* Ragonot.)
Maricopa Hulst, Phycitidae of N. Amer., p. 205, 1890. (Type of genus: *Ciris lativitella* Ragonot.)

Tongue well developed. Antenna ciliate in male (cilia over twice the width of the shaft); simple in female. Labial palpus porrect (downcurved), long (projecting about 3 times the length of the head beyond it). Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before outer angle of cell; 3 from the angle; 4 and 5 stalked; 6 from below upper angle of cell, straight; 10 from cell, closely approximate at base or connate with the stem of 8–9; male without costal fold. Hind wing with vein 2 from very close to outer angle of cell; 3 and 5 stalked; 7 and 8 approximate or weakly anastomosed just beyond cell; cell slightly less than one-half the length of the wing. Eighth abdominal segment of male with a short pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos a rather short, stout hook. Harpe with broadened cucullus, its outer margin rounded; a transverse sclerotized ridge extending from base of costa to lower angle of cucullus. Anellus an elongate, curved plate with lateral lobes. Aedeagus short, slender; penis without armature. Vinculum short, terminal margin rather broadly rounded.

Female genitalia with bursa simple, membranous; ductus bursae very slender for half its length from genital opening, thence to bursa swollen, spiraled and armed throughout the spiraled portion with a line of fine, sharp spines, sclerotized only at genital opening; ductus seminalis from ductus bursae near genital opening.

Valdivia is close to *Macrorrhinia* and *Ocala*, distinguished by a slightly wider spacing of veins 2, 3 and the stem of 4–5 in forewing, the longer cilia of the male antenna, the slightly stouter aedeagus, the absence of eversible tufts on the male abdomen, the smaller, oval bursa and the spiraled and spined ductus bursae. Three species are recognized as belonging to the genus. A fourth now listed in *Valdivia* (*Maricopa albocostella* Hulst) will have to be referred to the Anerastiinae. Its type (♂) in the Rutgers Collection has a greatly reduced tongue, completely enclosed by the labial palpi, vein 4 of forewing absent and a slight excavation in the base of the antennal shaft.

384. Valdivia coquimbella Ragonot

FIGURE 436

Valdivia coquimbella Ragonot, Nouv. Gen., p. 27, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 191, 1901.

Forewing fuscous gray; transverse pale lines obscure, the antemedial oblique line preceded by a diffused dark shade, the subterminal line indicated only by a broken, weakly indented line of blackish scaling running parallel to the outer margin; discal dots obscure, blackish; a row of faint black dots along termen. Hind wing very pale smoky fuscous. Alar expanse, 22 mm.

Male genitalia figured from paratype in the British Museum from the type locality. The type in the Paris Museum is also a male (not a female as stated by Hampson) but is without an abdomen. These are the only two examples of the species known. The anellus is much shorter than that in *lativiltella*. *V. coquimbella* also lacks any trace of the yellowish spot edging the antemedial line, characteristic of the other two species.

TYPE LOCALITY: Coquimba, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

385. Valdivia lativittella (Ragonot)

FIGURES 434, 435, 926, 927

Ciris lativittella Ragonot, N. Amer. Phycitidae, p. 18, 1887.
Ragonotia lativitella (Ragonot), Ent. Amer., p. 117, 1889.
Maricopa lativitella (Ragonot) Hulst, Phycitidae of N. Amer., p. 206, 1890.
Valdivia lativittella (Ragonot) Hampson, *in* Ragonot, Monograph, pt. 2, p. 191, 1901.—McDunnough, Check list, No. 6352, 1939.
Zophodia aureomaculella Dyar, Journ. New York Ent. Soc., vol. 12, p. 107, 1903. (New synonymy.)
Eumysia aureomaculella (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list, No. 6296, 1939.

Paler than *coquimbella*, the forewing very pale ashy gray; on inner margin at base a pale ocherous spot; a similar somewhat larger spot extending halfway across the wing and bordering the antemedial line; on inner margin between the two ocherous patches a blackish fuscous spot (rather pronounced on the male, less so on the female); antemedial line vertical, faint, indicated chiefly by some irregular and broken, outer, blackish fuscous shading; subterminal whitish line more distinct, indented at vein 6 and lower fold and margined inwardly by a narrow dark line; discal and terminal dots blackish fuscous, the latter faint. Hind wing very pale smoky fuscous with a faint ocherous tint; a narrow dark line along termen; veins faintly darkened. Alar expanse, 16–21 mm.

Male genitalia differ from those of *coquimbella* chiefly in their much longer anellus.

TYPE LOCALITIES: Arizona (*lativittella*, in Paris Mus.); Bremond, Tex. (*aureomaculella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, Baboquivari Mts. (July), Greaterville (June), Phoenix (Aug.), Pinal Mts. (Aug.); *Texas*, Bremond (Apr.), Brownsville (Mar.), San Benito (Mar., May). MÉXICO: Durango.

Twenty-five specimens are before me. A male from Durango, Dyar's type of *aureomaculella* from east-central Texas and a series from Arizona exhibit no essential differences. The Texan specimens from Brownsville and San Benito (1 ♂ and 3 ♀) show some trifling differences in male genitalia and considerably weaker spining of the ductus bursae in the female (fig. 926), but nothing, however, that would justify specific or even racial separation. Dyar's supposed species is an obvious synonym. He had not recognized either *Valdivia* or *lativittella* when he described *aureomaculella* or, later, transferred it to *Eumysia*. The key venational character given by Hampson for the separation of *lativittella* from *coquimbella* (vein 8 of hind wing "free" from or anastomosed with 7) does not hold. In our Pinal Mountains series of *lativittella* veins 7 and 8 occur both ways, closely approximate or partially anastomosed.

386. Valdivia walkerella (Ragonot), new combination

FIGURE 439

Saluria walkerella Ragonot, Nouv. Gen., p. 44, 1888.
Hypogryphia walkerella (Ragonot) Hampson, *in* Ragonot, Monograph, pt. 2, p. 194, 1901.

I have seen nothing from Chile that exactly matches Ragonot's description or the figure in his Monograph (pl. 37, fig. 21), but the genitalia of the male type clearly shows it to be a *Valdivia* and not a member of the Old World genus *Hypogryphia* where Hampson placed it. Veins 4 and 5 of forewing are shortly stalked and the ocherous spot on inner margin before the antemedial line is present, as in *lativittella* which it strongly resembles in genitalia and general habitus. Alar expanse, 18 mm.

TYPE LOCALITY: Valparaíso, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

Known only from the type.

97. Protasia, new genus

TYPE OF GENUS: *Valdivia mirabilicornella* Dyar.

Tongue short (but somewhat exposed between the palpi). Antenna unipectinate in male, simple in female. Labial palpus porrect, long (projecting more than 3 times the length of the head beyond it). Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before outer angle of cell; 3 from the angle; 4 and 5 very shortly stalked; 6 from below upper angle of cell, straight; 10 from cell, approximate to 8–9 at base; male without costal fold. Hind wing with vein 2 from very close to outer angle of cell; 3 and 5 stalked; 7 and 8 approximate or weakly anastomosed for a short distance beyond cell; cell less than one-half the length of the wing. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos a stout, bluntly pointed hook. Harpe with lower margin evenly curved; cucullus elongate, tapering slightly to somewhat narrowly rounded apex; a transverse, weakly sclerotized ridge extending from slightly below base of costa to lower angle of cucullus. Anellus a simple, nearly flat plate, without lateral lobes. Aedeagus short, stout; penis without armature. Vinculum short, terminal margin broadly rounded.

Female genitalia with bursa simple, membranous, elongate; ductus bursae short, simple, membranous throughout; ductus seminalis from ductus bursae.

The genus is readily distinguished from the others in this immediate group by its unipectinate male antenna, short tongue, lack of hair tufts on eighth abdominal segment of male, and short and simple ductus bursae.

387. Protasia mirabilicornella (Dyar), new combination

FIGURES 440, 925

Valdivia mirabilicornella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 60, 1908.—McDunnough, Check list, No. 6353, 1939.

Whitish gray with a sprinkling of dark scales and a faint ocherous shading in the median and lower folds of forewing; antemedial line dentate, outwardly bordered by a thin blackish fuscous line, the latter sharply out-angled between costa and middle of cell, very slightly out-angled at lower margin of cell and at inner margin, preceded by a more or less obscure, broad ocherous orange shade, bordered basally on inner margin of wing by a blackish fuscous patch, the latter encroaching upon and more or less obscuring the ocherous shade; subterminal line with a narrow blackish inner border, sharply indented to vein 6, thence bulging outward and again indented at lower fold; discal dots distinct, blackish; terminal dark dots more or less confluent. Hind wing pale brassy whitish (pale smoky fuscous in some specimens), sheeny; a slightly darker line along termen; cilia somewhat paler. Alar expanse, 18–26 mm.

Male genitalia with uncus evenly tapering from broad base to rather narrowly rounded apex; elements of transtilla small, weak, recurved (fig. 440b). Female genitalia with bursa narrow, nearly three times as long as ductus bursae.

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TYPE LOCALITY: San Diego, Calif. (type in USNM).

FOOD PLANT: Unknown.

Represented by 25 specimens in the National Collection, all from the type locality (July, Oct., Nov., Dec., Feb.).

In his description Dyar describes the male antenna as "bipectinate." It is distinctly unipectinate, with the pectinations and the shaft covered with long cilia.

Genera 98–100: *Heterographis* to *Hulstia*

[Venational division A. Forewing with 11 veins; 10 from cell; 2 from near lower outer angle of cell. Hind wing with 7 and 8 approximate or very weakly anastomosed; 2 from close to lower outer angle of cell; discocellular vein curved. Labial palpi upturned. Male genitalia with uncus triangulate (or spoon-shaped), large in proportion to reduced tegumen; tegumen constricted before uncus, its lateral margins concave; transtilla incomplete (except in *Heterographis samaritanella*); aedeagus straight, slender; penis without cornuti or other armature. Female genitalia with signa consisting of many straight disconnected thornlike spines; ductus seminalis from ductus bursae.]

98. Genus Heterographis Ragonot

Heterographis Ragonot, Ent. Monthly Mag., vol. 22, p. 31, 1885; Monograph, pt. 2, p. x, 1901.—Hulst, Phycitidae of N. Amer., p. 186, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 140, 1901.—Bisset, *in* Pierce and Metcalf, Genitalia of the British Pyrales, p. 59, 1938 (fixes type of genus).—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 37, 1945. (Type of genus: *Euzophera samaritanella* Zeller; figs. 441, 928).

Mona Hulst, Ent. Amer., vol. 4, p. 115, 1888. (Type of genus, *Mona olbiella* Hulst.)

Tongue well developed. Antenna simple, pubescent; in the male the shaft slightly curved towards base. Labial palpus upcurved, reaching above vertex. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle; 4 and 5 connate or very shortly stalked, closely approximate to 3; 6 from below upper angle of cell, straight; 10 from cell, separated from the stalk of 8–9; male without costal fold. Hind wing with 2 from close to outer angle of cell; 3 and 5 stalked; 7 and 8 closely approximate (occasionally contiguous or weakly anastomosed for a short distance) beyond cell; cell less than one-half (over one-third) the length of the wing. Eighth abdominal segment of male with a strong pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos a stout hook. Elements of transtilla long, slender, curved, their apices touching and weakly fused (*samaritanella*) or narrowly separated (*morrisonella*); deeply and roundly arched behind aedeagus. Harpe simple, narrowly elongate; apex rounded. Anellus a slightly curved plate with lateral arms. Aedeagus long, slender; penis without armature. Vinculum at least as long as broad; truncate; terminal margin straight or slightly notched.

Female genitalia with bursa copulatrix and ductus bursae membranous except for a slight sclerotization of the tube of ductus near genital opening; bursa elongate with signa consisting of numerous straight, sharp, broadly

based, disconnected spines, a few of these spines in ductus near its junction with bursa; ductus seminalis from ductus bursae near genital opening.

Represented in North America by a single species.

388. Heterographis morrisonella Ragonot

FIGURES 442, 929

Heterographis morrisonella Ragonot, N. Amer. Phycitidae, p. 11, 1887.—Hulst, Phycitidae of N. Amer., p. 186, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 169, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 38, 1905.—McDunnough, Check list, No. 6339, 1939.

Heterographis colorandensis Ragonot, N. Amer. Phycitidae, p. 12, 1887.

Mona olbiella Hulst, Ent. Amer., vol. 4, p. 116, 1888.

Heterographis morrisonella coloradensis (Ragonot) Hulst, Phycitidae of N. Amer., p. 186, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 169, 1901.

Heterographis morrisonella olbiella (Hulst), Phycitidae of N. Amer., p. 186, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 169, 1901.

Heterographis ignistrigella Ragonot, Monograph, pt. 2, p. 166, 1901.—McDunnough, Check list, No. 6338, 1939. (New synonymy.)

Honora palloricostella Walter, Proc. Ent. Soc. Washington, vol. 30, p. 141, 1928.—McDunnough, Check list, No. 6344, 1939. (New synonymy.)

Extremely variable in color and intensity of markings, ranging from a creamy ocherous form with only the faintest dark dusting to forms much suffused with reddish or blackish fuscous. Forewing with costa somewhat paler (from base to outer line) than the remainder of the wing in nearly all specimens, contrastingly whitish in some; transverse pale lines more or less distinct; antemedial line outwardly slanting to lower margin of cell, indented below at fold; subterminal line nearly parallel with outer margin, indented at vein 6 and lower fold; in some specimens an ocherous band, a blackish fuscous patch, or a diffused reddish shade preceding the antemedial line; similar colorations frequently following the subterminal line; the area between the transverse lines frequently grayish from the heavy dusting of dark scales; usually the blackish dusting is more conspicuous along some of the veins. Hind wings from very pale to dark smoky fuscous; cilia whitish; veins more or less outlined by fuscous shading. Alar expanse, 13–23 mm.

Male genitalia with lateral margins of uncus straight, apex bluntly rounded. Harpe with costa and lower margin of harpe nearly parallel; cucullus slightly curved near apex. Female genitalia with bursa long; spines of signa arranged in more or less regular, longitudinal series, the number and arrangement of spines differing in different specimens, hardly any two examples being identical (extremes of variation are shown in the figures); ductus bursae long, slender throughout its length, weakly sclerotized between junction of ductus seminalis and genital opening.

TYPE LOCALITIES: Texas (*morrisonella* and *ignistrigella*, in Paris Mus.); Colorado (*coloradensis*, in Paris Mus.); Salida, Colo. (*olbiella*, in AMNH, ex Rutgers) Tempe, Ariz. (*palloricostella*, in USNM).

FOOD PLANT: *Franseria bipinnatifida*. A single female reared by F. N. Pierce, Sept. 6, 1938, at El Segundo, Calif., our only food-plant record. The species presumably feeds on other composites.

DISTRIBUTION: UNITED STATES: *Texas*, Beeville (Oct.), Brownsville (June), Burnet County (Apr.), Sabinal (Apr., May, June), San Benito (June, July, Sept.), San Diego (May), Zavalla County (Apr.); *New Mexico*, Albuquerque (July), Deming (July), Fort Wingate (June, July), Hot Springs (Aug.), Jemez Springs, Las Vegas (May), Mesilla Park (Apr., May), Santa Fe; *Arizona*, Baboquivari Mts. (July), Phoenix (Mar., Apr., Aug., Oct.), Tempe (Apr., Aug., Sept., Oct.), White Mts. (Aug.), Yuma County (Mar.); *Colorado*, Denver, Glenwood Springs (Aug.); *Utah*, Provo (July), Scover Valley (May), Stockton (June, July, Aug., Oct.), Vineyard (June); *Nevada*, Pyramid Lake; *California*, Balboa (Sept.), Death Valley (Apr.), El Segundo (Sept.), Ibanpa Mts. (Oct.), Jacumba (June), Laguna (Sept.), La Puerta (July), Loma Linda (Mar., Apr., May, Aug., Sept.), Narrows (Mar.), Palm Springs (Mar., Apr., June), San Diego (June); *Washington*, Blue Mts. (Bone Springs, July), Pullman (June, July), Walla Walla (May, June), Yakima (June). MÉXICO: Durango, Sonora.

The color variations are so many, the color forms so widely distributed, and the intergradations so gradual that none of the synonymical names can be used as a racial designation. The species, however, is clearly defined and easily identified by its genitalic characters.

99. Genus Staudingeria Ragonot

Staudingeria Ragonot, Ann. Soc. Ent. France, ser. 6, vol. 7, p. 249, 1887; Monograph, pt. 2, p. x, 1901.—Hulst, Phycitidae of N. Amer., p. 185, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 131, 1901. (Type of genus: *Ancylosis morbosella* Staudinger.)

Characters of *Heterographis* except: Labial palpus obliquely ascending, third segment very short, less than one-third the length of second, in male second segment grooved to hold the maxillary palpus; maxillary palpus of male in the form of an aigrette; female genitalia with bursa very narrowly elongate, ductus bursae much shorter than bursa.

The status of this genus in relation to *Heterographis* is similar to that of *Ocala* in relation to *Macrorrhinia*. If only our North American species were involved I should be inclined to consider the differences in male maxillary palpi and the female bursae to be merely specific; but apparently some of the species under each generic name in the Old World are properly assigned and the two groups of species there are separable on the male palpal character; so, for the present at least, it seems advisable to keep the names separate. I have not seen the type of *Staudingeria*, but there is no reason to doubt that our American species is congeneric. Many specimens of *albipenella* (especially what Dyar described as *olivacella*) are an exact match for Ragonot's figure of *morbosella* (Monograph, pl. 27, fig. 1). The most striking difference between our American representatives of *Staudingeria* and *Heterographis* is in the comparative length of the ductus bursae of the female. In *Hetero-*

graphis it is at least as long as the bursa. In *Staudingeria* it is much shorter than the bursa.

389. Staudingeria albipenella (Hulst)

FIGURES 443, 930

Pempelia albipenella Hulst, Ent. Amer., vol. 3, p. 133, 1887.
Staudingeria albipennella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 116, 1889; Monograph, pt. 2, p. 136, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 38, 1905.—Hulst, Phycitidae of N. Amer., p. 186, 1890.
Staudingeria olivacella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 111, 1904.
Staudingeria perluteella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 111, 1904.
Staudingeria albipenella (Hulst), McDunnough, Check list, No. 6337, 1939.

Variable in color and intensity of markings, ranging from a form with forewing a uniform luteous ocherous without definite markings, though forms more or less dusted and clouded with blackish fuscous, to a form with a clear red ground color and gradations of this with the red more or less overlaid with blackish fuscous scaling; costal edge white or whitish from base to just before apex, the whitish costal margin sometimes very thin and obscure but more often contrasted against the ground color; transverse lines obsolete or obscure, in better marked specimens chiefly indicated by their dark marginal shadings; such shadings on subterminal line deeply indented at vein 6 and slightly indented at lower fold; cilia pale luteous ocherous, ocherous fuscous, or red, concolorous with the ground color. Hind wing from very pale to dark smoky fuscous. Fore and hind wings have a slick, glossy sheen. Alar expanse, 18–27 mm.

Male genitalia with uncus tapering to a blunt point, its lateral margins curved; anellus with very short lateral lobes; aedeagus somewhat stouter than that of *Heterographis;* vinculum very slightly tapered, terminal margin broad and with a shallow indentation. Female genitalia with bursa copulatrix a long tube terminating in a small round bulb; signum consisting of an irregular cluster of separate spines in the bulbous part of bursa, a scattering of similar spines in the anterior half of the tube and a small cluster of much shorter spines in the tube near junction of ductus bursae; ductus not appreciably sclerotized near genital opening.

TYPE LOCALITIES: Southern California (*albipenella*, in AMNH, ex Rutgers); Pullman, Wash. (*olivacella*, in USNM); Fort Collins, Colo. (*perluteella*, in USNM).

FOOD PLANT: "Loco weed."

DISTRIBUTION: *New Mexico*, Fort Wingate (May); *Arizona*, Phoenix (Apr.), Woodruff (June); *California*, San Diego (June); *Colorado*, Denver (July, Sept.), Fort Collins, Glenwood Springs (June, July); *Utah*, Provo, Richfield (June), Stockton (July, Aug., Sept.); *Wyoming*, Yellowstone Park (July); *Idaho*, Blackfoot (June), Sawtooth (June); *Oregon*, Bone Springs (Blue Mts., July), Crater Lake (July); *Washington*, Godman Spring (Blue Mts., July), Pullman (Aug., Sept.), Vantage Ferry (May), Walla Walla (May, June, July), Wenatchee (May, June, July, Aug.), Yakima (May).

Dyar's two names (*olivacella* and *perluteella*) appear as racial designations in our lists but the differentiation is not justified, for there is complete intergradation between them and *albipenella* in any considerable series from a given locality. The most outstanding color form is exemplified in a series from Crater Lake, Oreg. This is a clear, shining red variety, matched only in some specimens from Idaho and Washington. However there are intergrades in these localities and one in the Crater Lake series between the red form and the type of *albipenella*, so I do not feel justified in adding another name. As in *Heterographis* we appear to have only one clear-cut American species of the Old World genus *Staudingeria*, and it seems limited in its distribution to the Western States. It is easily identified by its genitalia.

100. Genus Hulstia Ragonot

Hulstia Ragonot, Monograph, pt. 2, p. x, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 127, 1901.
Hulstea Hulst, U. S. Nat. Mus. Bull. 52, p. 432, 1903. (Spelling. Type of genus: *Nephopteryx undulatella* Clemens.)

Tongue well developed. Antenna simple, finely pubescent. Labial palpus upturned; rather broadly and smoothly scaled; third segment short, pointed. Maxillary palpus small, squamous, appressed to face. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle; 4 and 5 stalked, the stalk closely approximate to 3 at base; 6 from below upper angle of cell, straight; 10 from the cell, at base connate or very closely approximate to 8–9; male without costal fold. Hind wing with vein 2 from close to outer angle of cell; 3 and 5 stalked; 7 and 8 contiguous or partially anastomosed for a short distance beyond cell; cell slightly less than one-half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of short, ventrolateral hair tufts.

Male genitalia with apical process of gnathos a stout, blunt hook. Elements of incomplete transtilla, small and weak. Harpe simple, narrowly elongate; apex rounded. Anellus a narrowly elongate plate with strongly sclerotized margin and short lateral lobes (resembling an elongate and closed U). Aedeagus long, moderately slender. Vinculum as broad as long, squarish, terminal margin nearly straight.

Female genitalia with bursa copulatrix long, tapering and expanding gradually from ductus bursae; demarcation of bursa from ductus obscure; signa consisting of a dense mass of straight, short, rather slender spines with small bases and filling about half the bursa. Ductus bursae short, with a strongly sclerotized, acutely bent elbow before genital opening; genital opening simple. Ductus seminalis from ductus bursae just before sclerotized elbow.

Hulstia is very close to *Heterographis* and *Staudingeria*, agreeing with them in most structural characters and differing chiefly in the more pronounced stalking of veins 4 and 5 of forewing, the closer approximation of vein 10 to the stalk of 8–9 at base, its much reduced transtilla, the shape of the female bursa, the densely

clustered and narrowly based cornuti, and the sclerotized elbow in ductus bursae. It contains but one known species. The other American species that have been assigned to it by Hampson (*texanella* and *cordubensiella*) are dissimilar in both structure and habitus.

390. Hulstia undulatella (Clemens)

FIGURES 64, 444, 931

Nephopteryx undulatella Clemens, Proc. Acad. Nat. Sci. Philadelphia, p. 205, 1860.

Scoparia rubiginalis Walker, List, vol. 34, p. 1498, 1865.

Honora obsipella Hulst, Ent. Amer., vol. 4, p. 118, 1888 (new synonymy).

Heterographis oblitella Ragonot (not Zeller), Ent. Amer., vol. 5, p. 116, 1889.

Honora oblitella undulatella (Clemens) Hulst, Phycitidae of N. Amer., p. 187, 1890.

Honora fumosella Hulst, Canadian Ent., vol. 32, p. 174, 1900.—Forbes, Cornell Mem. 68, p. 633, 1920.—McDunnough, Check list, No. 6350, 1939. (New synonymy.)

Hulstia undulatella (Clemens) Hampson, *in* Ragonot, Monograph, pt. 2, p. 128, 1901.—Essig, Insects of western North America, p. 711, 1926.—McDunnough, Check list, No. 6341, 1939.—Darlington, Trans. Amer. Ent. Soc., vol. 73, p. 91, 1947.

Hulstea undulatella (Clemens) Hulst, U. S. Nat. Mus. Bull. 52, p. 432, 1903.

Forewing whitish ocherous, pale gray or dark grayish fuscous, more or less dusted with white scaling especially in median area of wing, in darkest specimens (color form *fumosella*) pattern mostly obliterated by dark scaling; transverse lines normally distinct, narrow, white; antemedial line oblique, notched at cell and lower fold, broadly bordered inwardly by fuscous or fuscous and ocherous, especially toward inner margin, and outwardly by a narrow dark shade especially from costa to cell; subterminal line sinuate, parallel to and rather near termen, bordered inwardly by a narrow dark line and outwardly by a fuscous or ocherous fuscous shade; discal spots, especially the lower one, usually distinct. Hind wings dark smoky fuscous. Palpi, underside of body, and legs whitish, more or less shaded with fuscous in darker specimens. Alar expanse, 16–22 mm.

Genitalic characters as given for the genus.

TYPE LOCALITIES: Pennsylvania (*undulatella*, lost); North America (*rubiginalis*, in BM); "Texas" [sic] (*obsipella*, in AMNH, ex Rutgers); Newark, N. J. (*fumosella*, in AMNH, ex Rutgers).

FOOD PLANTS: Elm [?], sugar beets.

DISTRIBUTION: UNITED STATES: *Maine; Massachusetts*, Martha's Vineyard (July), Vineyard Haven (Aug.); *Connecticut*, East River (July, Sept.); *New Hampshire*, Hampton (June, Aug., Sept., Oct.); *New Jersey*, Anglesea (June), Newark; *North Carolina*, Southern Pines (Oct.); *Florida*, Glenwood, Hastings (Apr.); *Wisconsin*, Cranmoor; *Montana*, Bozeman (Aug.); *Colorado*, Clear Creek, Denver (Aug., Sept.), Florisant (July), Glenwood Springs (Aug.), Windsor (July); *Utah*, Delta (July), Logan (Aug.), Ogden (July), Provo (July), Salt Lake, "Southern Utah" (July), Stockton (Aug.), Vineyard (June); *Nevada*, Clark County, Reno (July); *New Mexico*, Fort Wingate (June), Hot Springs, Jemez Springs (July), Sapello Canyon (July); *Arizona*, Flagstaff, "Southern Arizona," Williams (July); *California*, Alameda (Aug., Oct.), Chino (Nov.), Folsom (July), Palo Alto, Sacramento (Oct.), San Diego (Sept., Oct., Nov.), Siskiyou (Sept.), Truckee (Aug.), Woodland; *Washington*, Bellingham (July, Aug.), Friday Harbor (July), Pullman (May, July, Aug., Sept.), Snake River (May), Walla Walla (June, July), Wenatchee (July, Aug.). CANADA: *Quebec*, Montreal; *Alberta*, Calgary (July, Aug.); *Manitoba*, Aweme (July, Aug.); *British Columbia*, Arrowhead Lake, Goldstream (July), Kaslo, Victoria (Aug.).

This species was described from eastern specimens, but seems to be much more abundant in our Western States. Very little is known of its life history. Clemens states that he took larvae and pupae of *undulatella* on elm at Niagara Falls, Canada. He did not rear any moths from the larvae and his statement is ambiguous as to the rearing of moths from the pupae (which were found under the bark of the tree), so the association of *undulatella* with elm as a host is by no means established. In the National Museum we have a half-dozen reared specimens from Colorado, Utah, and California reared from larvae feeding on sugar-beet foliage. This is the only authenticated food-plant record with which I am acquainted.

The name *fumosella* represents nothing more than a much suffused, dark color form. There are four examples in the National Collection matching Hulst's type and several specimens from widely scattered localities intergrading between it and typical *undulatella*. None of these (including the type of *fumosella*) exhibits any genitalic differences.

The type of *obsipella* is a freak specimen with vein 4 present in one hind wing. On the strength of this venation it was referred to the synonymy of *Elasmopalpus petrellus* by Hulst in 1890 and so appears in our lists. It is a ragged female with only one hind wing complete enough to show venation and is labeled "Colorado" a more probable locality than Texas as given in the original description. Its genitalia are those of *undulatella*.

Genera 101–104: *Honora* to *Cabotia*

[Venational division A. Forewing with 11 veins; 10 from cell; 2 from or from very near lower outer angle of cell; 3 closely approximate to or connate with stalk of 4–5; 4–5 stalked at least for one-half their lengths. Hind wing with 7–8 anastomosed or contiguous (*Oncolabis*) beyond cell; 2 from or from very near lower outer angle of cell; discocellular vein curved. Labial palpi oblique. Male genitalia with uncus triangulate; tegumen not appreciably reduced in proportion to uncus; harpe with short erect clasper; transtilla incomplete (except in *Honorinus*); aedeagus short, stout; penis armed with sclerotized folds or granulations or short spines. Female genitalia with signa consisting of densely spined round plate, detached thornlike spines or both; ductus seminalis from bursa copulatrix.]

101. Genus Honora Grote

Honora Grote, Bull U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 702, 1878; North Amer. Ent., vol. 1, p. 11, 1879.—Hulst, Phycitidae

of N. Amer., p. 187, 1890.—Ragonot, Monograph, pt. 2, p. x, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 183, 1901. (Type of genus: *Honora mellinella* Grote.)

Tongue well developed. Antenna simple, pubescent. Labial palpus oblique, the third segment porrect (deflected forward). Maxillary palpus small, squamous, appressed to face. Forewing smooth; 11 veins; veins 2 and 3 closely approximate and from the lower outer angle of cell; 4 and 5 stalked, the stalk shortly separated from 3 at base; 6 from below upper angle of cell, straight; 10 from the cell, at base shortly separated from 8–9; male without costal fold. Hind wing with vein 2 from the lower outer angle of cell, connate with 3, 3 and 5 stalked; 7 and 8 anastomosed for nearly half their lengths beyond cell; cell one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos a stout hook. Harpe narrowly elongate; apex rounded or bluntly pointed; an erect, narrow, short clasper arising from sacculus near base of cucullus. Anellus a nearly flat plate with a cupped depression at base and posterior margin more or less notched. Aedeagus short, moderately stout, slightly bent (elbowed) near middle; penis armed with a narrow row of fine, spine-like cornuti. Vinculum stout, as broad or slightly broader than long; terminal margin broad.

Female genitalia with signa strongly developed, consisting of a single large, round, curved, densely spined plate and a scattering of detached spines (except in *dotella*) opposite the plate; ductus bursae as long as or somewhat shorter than length of bursa, finely scobinate for two-thirds of its length from bursa; a narrow sclerotized plate in area above genital opening; ductus seminalis from a lobed projection of bursa near its junction with ductus bursae.

The genus is apparently confined to North America. The species *perdubiella* (Dyar) is referred here from *Zophodia*. Another, *dulciella* (Hulst), described in *Honora*, must find placement elsewhere. The genitalia of the unique female type (fig. 951) show that it is not a *Honora;* but its proper generic placement will have to wait upon discovery of a male. It is treated briefly at the end of the paper (see p. 313).

The species are very close and the genitalic differences separating them, especially among the males, are trifling. The female genitalia show more obvious variation in the amount of spining in the bursa, but this is a character of doubtful value. Such differences as exist are shown in the several drawings.

391. Honora mellinella Grote

FIGURES 57, 445, 937

Honora mellinella Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 702, 1890.—Hulst, Phycitidae of N. Amer., p. 188, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 185, 1901.—McDunnough, Check list, No. 6343, 1939.

Honora ochrimaculella Ragonot, N. Amer. Phycitidae, p. 12, 1887.—Hulst, Phycitidae of N. Amer., pp. 188, 189, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 185, 1901.

Forewing dark grayish fuscous; costal area from upper margin of cell whitish, in some specimens this pale costal shading somewhat obscure, in most specimens rather well contrasted against ground color; antemedial line nearly vertical, white, distinct and slightly concave towards inner margin, bordered inwardly by faint blackish shading and outwardly on inner margin by a yellowish patch; a similar yellowish patch at base of wing; subterminal white line, narrow, sinuate, obscure and frequently obliterated; discal dots at end of cell blackish, the upper in the pale costal area, the lower in the dark area but normally with a faint, narrow, whitish border. Hind wing very pale smoky fuscous, with a silky sheen. Alar expanse, 16–24 mm. Male genitalia with apex of harpe rounded; cucullus not appreciably broadened toward apex. Female with a rather dense cluster of spines in bursa opposite spined plate.

TYPE LOCALITIES: Texas (*mellinella*, in BM); California (*ochrimaculella*, in Paris Mus.).

FOOD PLANT: *Palafoxia.*

DISTRIBUTION: *North Carolina*, Southern Pines (Aug., Sept.); *Louisiana*, Orange, Sabine Parish (June); *Florida*, Lakeland (Jan.), Tampa; *Texas*, Blanco County, Burnet County, Kerrville (Mar., July, Sept., Oct.), New Braunfels (May), San Benito (Mar., Apr.); *New Mexico*, Hot Springs (Sept.); *Arizona*, Palmerlee, Phoenix (Oct.), Redington, Santa Rita Mts. (June, July); *California*, Indian Wells (Jan.); *Washington*, Pullman (June), Walla Walla (May, June, July), Yakima (May).

The food plant record given above is from a female from Indian Wells, Calif., reared by Commander C. M. Dammers.

392. Honora subsciurella Ragonot

FIGURES 447, 941

Honora subsciurella Ragonot, N. Amer. Phycitidae, p. 12, 1887.—Hulst, Phycitidae of N. Amer., p. 189, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 186, 1901.—McDunnough, Check list, No. 6347, 1939.

Doubtfully distinct from *mellinella* except, possibly, as a local race. Distinguished chiefly by the paler ground color of forewing beyond antemedial line, due to a fine powdering of white scales; a broader diffusion of the pale costal area (usually extended to include the lower discal spot); the bluntly pointed apex of harpe (fig. 447); and the sparser spining of the female bursa (compare figs. 941 and 937). Alar expanse, 22–28 mm.

TYPE LOCALITY: Colorado (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado*, Glenwood Springs (Sept.); *Utah*, Eureka (June, July, Aug.), Stockton (July, Aug.), Vineyard (July); *California*, San Bernardino Mts. (Sept.).

The "red" ground color of forewing is exaggerated by Ragonot in his original description and in the figure (pl. 31, fig. 12) in his Monograph. Hampson's description (*in* Ragonot) is more accurate.

393. Honora sciurella Ragonot

FIGURE 446

Honora sciurella Ragonot, N. Amer. Phycitidae, p. 12, 1887.—Hulst, Phycitidae of N. Amer., p. 189, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 185, 1901.—McDunnough, Check list, No. 6346, 1939.

Known to me only from descriptions of Ragonot and Hampson, the Ragonot figures (plate 37, figs. 16, 17) and the genitalia of the male type. The harpes of the latter (fig. 446) are somewhat longer in proportion to the remainder of the genitalia than in the other species of the genus. In the National Collection is a female (24 mm.) from Walla Walla, Wash. (June), that is almost an exact match, even to the dark fuscous hind wing, to Ragonot's figure 17 of the female in Paris. A larger female (32 mm.) in the National Collection from Monachee Meadows, Calif., is a good match for Ragonot's figure 16, of the male type, except that the hind wing is whitish towards the base as described by Hampson. In these two examples the spining of the bursa is similar to that of *montinatatella* (fig. 939). The exact status of *sciurella* cannot be determined until it is reared and more specimens in substantial series are assembled.

Alar expanse, "32 mm."

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

394. Honora dotella Dyar

FIGURES 448, 938

Honora dotella Dyar, Pomona College Journ. Ent., vol. 2, p. 377, 1910.—McDunnough, Check list, No. 6345, 1939.

Distinguished from *mellinella* by the darker, more suffused (blackish fuscous) ground color and the more strongly contrasted whitish costal area of forewing; antemedial line thin, white, not continued to costa; ocherous patch beyond antemedial line obsolete or represented only by a pale trace; basal pale spot clay colored, concolorous with thorax; subterminal line obsolete; upper discal spot obliterated; lower discal spot black, elongate, completely enclosed by the dark ground color and with no trace of a white border. Hind wing semihyaline white with a fuscous shade along termen and some fuscous shading on the veins, especially in female. Alar expanse, 17–24 mm.

Male genitalia distinguished chiefly by the somewhat widened apical portion of cucullus. Bursa of female genitalia without detached spines opposite the large, spined plate (signum).

TYPE LOCALITY: Claremont, Calif. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California*, Claremont, Loma Linda (Mar.), San Diego (Mar., May, June).

Apparently a distinct species, but close to *mellinella*.

395. Honora montinatatella (Hulst)

FIGURE 939

Spermatophthora montinatatella Hulst, Ent. Amer., vol. 3, p. 134, 1887.

Honora canicostella Ragonot, N. Amer. Phycitidae, p. 12, 1887.

Honora montinatatella (Hulst), Ent. Amer., vol. 5, p. 156, 1889; Phycitidae of N. Amer., p. 189, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 186, 1901.—McDunnough, Check list, No. 6348, 1939.

Forewing brownish red with costal area white dusted with reddish scales, the pale costal color spreading into the cell at middle of wing and enclosing the blackish discal spots, broken near middle of costa by a narrow band of the ground color which slants outwardly into cell; antemedial line incomplete, a thin line of whitish scales from inner margin to cell, set further out on wing than in other species; subterminal line obsolete or nearly so, when present well back from terminal margin so that space between antemedial and subterminal lines is considerably reduced (less than one-third the wing area); on some specimens an obscure ocherous patch bordering the antemedial line outwardly near inner margin. Hind wing pale smoky fuscous. Alar expanse, 24–28 mm.

Male genitalia similar to those of *mellinella* except vinculum narrower at terminal margin, shape similar to that of *subsciurella* (fig. 941).

TYPE LOCALITIES: Sierra Nevada, Calif. (*montinatatella*, in AMNH, ex Rutgers); California (*canicostella*, in Paris Mus.).

FOOD PLANT: Unknown.

In addition to the Hulst type I have seen two other specimens (♂ and ♀, in USNM), from a subalpine meadow on Bogachiel Peak of the Olympic Mts., Wash. Apparently *montinatatella* is a high-altitude species.

396. Honora perdubiella (Dyar), new combination

FIGURES 449, 940

Zophodia perdubiella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 37, 1905.

Eumysia perdubiella (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list, No. 6299, 1939.

Pale ashy gray; costal area sparsely dusted with whitish scales; transverse lines obsolete; lower discal spot at end of cell faintly indicated, blackish. Hind wing slightly paler than forewing, unmarked, shiny. Alar expanse, 22–26 mm.

Male genitalia distinguished chiefly by the shape of the apical projection of gnathos. Female genitalia figured from paratype from the type locality; similar to those of *montinatatella*, especially the genitalia of the Mount Olympus female of Hulst's species.

TYPE LOCALITY: Stockton, Utah (June, type in USNM).

FOOD PLANT: Unknown.

Apparently a distinct species. Dyar's types are rubbed so the extremely pale color of forewing may not be true of fresh examples. A female in the National Collection from Baker, Nev. (May), is much darker, shows faint traces of the normal transverse lines and indications of the blackish discal and terminal dots. However, there is scarcely any whitish dusting in the costal area. The forewing is dark grayish fuscous and the hind wing fuscous, with a faintly darker line along termen and some dark shading on the veins.

102. Honorinus, new genus

TYPE OF GENUS: *Honorinus fuliginosus*, new species.

Characters of *Honora* except: Labial palpus of male grooved to hold the maxillary palpus; maxillary palpus of male in the form of an aigrette; forewing with vein 2 from before but near outer angle of cell; hind wing with cell shorter, somewhat less than one-third the length of wing; transtilla complete; abdomen of male with two pairs of ventrolateral hair tufts.

Very close to *Honora*. In the absence of any typical species of *Honora* from tropical America and because of the divergence of the Peruvian species on male characters it seems better to give it a separate generic designation than to expand and loosen our definition of *Honora*.

397. Honorinus fuliginosus, new species

Figures 450, 947

Forewing sooty fuscous; transverse lines obsolete or nearly so; antemedial line faintly indicated in the male near inner margin; beyond it a faint ocherous shade; some pale scaling between the veins beyond cell; a narrow, obscure ocherous shade along costa from base to middle; discal and terminal dots obscure. Hind wing semihyaline, whitish fuscous with a dark line along termen and some dark shading on the veins; veins 3 and 5 stalked for more than half their lengths. Alar expanse, 24–26 mm.

Male genitalia with elements of transtilla solidly fused at their apices to form a high, narrowly rounded arch. Female genitalia with the membrane of posterior lobe of bursa thickened.

TYPE LOCALITY: Angasmarca, Perú (type in USNM).

FOOD PLANT: Unknown.

Described from male type and three male and one female paratypes, all from the type locality. In addition I have before me another female from Mima, Perú, which I take to be the same species; but as it has veins 3 and 5 of hind wing somewhat longer stalked and a slightly smaller genitalia than the female paratype I do not include it among the types. The males are rubbed and do not show the dark ground color as plainly as the female, which is in good condition.

103. Genus Oncolabis Zeller

Oncolabis Zeller, Isis von Oken, p. 877, 1848.—Ragonot, Monograph, pt. 1, pl. 1, fig. 26, 1893; pt. 2, p. xi, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 187, 1901. (Type of genus: *Oncolabis anticella* Zeller.)

Endommasis Hampson, *in* Ragonot, Monograph, pt. 2, pp. ix, 124, 1901. (Type of genus: *Endommasis nigritella* Hampson. New synonymy.)

Tongue well developed. Antenna pubescent; basal segment elongate; on male, shaft with a stout hook from its basal segment and strongly curved for a few segments beyond (fig. 454d); on female simple. Labial palpus obliquely ascending; long, extending half its length above vertex; smooth scaled; segment 2 in male grooved to hold maxillary palpus; segment 3 very short, acuminate, not deflected forward. Maxillary palpus of male in the form of an aigrette; of female filiform. Forewing smooth; narrowly elongate; 11 veins; vein 2 from near lower outer angle of cell; 3 from the angle; 4–5 stalked for half their lengths, their stalk very closely approximate or connate with 3 at base; 6 from below upper angle of cell, straight; 10 from cell, closely approximate to the stalk of 8–9 for a short distance; male without costal fold. Hind wing with vein 2 from very close to lower outer angle of cell; 3 and 5 stalked for half their lengths; 7 and 8 contiguous or closely approximate for a short distance beyond cell; cell one-third the wing length; discocellular vein curved. Eighth abdominal segment of male with compound ventral tufts.

Male genitalia with apical process of gnathos a stout, elongate, pointed hook. Uncus triangulate; apex pointed. Harpe elongate, slender; apex rounded; clasper vertical, pointed. Anellus a small triangulate cupped plate without lateral lobes. Aedeagus stout, straight, moderately long; penis armed with a few short sclerotized folds and numerous granulations. Vinculum stout, a trifle longer than broad, not appreciably tapering to broad terminal margin.

Female genitalia with signa strongly developed, consisting of a large, round, curved, densely spined plate and a varying number of detached spines opposite the plate; ductus bursae about the same length as bursa, with a ring of sclerotized spinose ridges at its junction with bursa, minutely granulose for a short distance beyond; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

Hampson distinguished his *Endommasis* from *Oncolabis* chiefly on the shape of the labial palpus, upturned ("redressé") in *Endommasis* and obliquely erect with third segment projected forward in *Oncolabis*. On the strength of this supposed difference the genera were widely separated in the generic key in Ragonot's Monograph (pp. ix and xi). This difference was solely due to the position of the palpi at time of death of the particular specimens. The normal position of the labial palpus is appressed to face with third segment erect.

Similar male antennae and female genitalia occur in *Stylobasis* Hampson. The latter, however, is distinguished by its forewing venation, vein 4 being absent.

398. Oncolabis anticella Zeller

FIGURES 56, 454, 942

Oncolabis anticella Zeller, Isis von Oken, p. 877, 1848.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 187, 1901.

Endommasis nigritella Hampson, *in* Ragonot, Monograph, pt. 2, p. 124, 1901 (new synonymy).

Forewing dark brownish fuscous with basal area darker, blackish; costal border (except in suffused specimens) whitish finely dusted (under magnification) with scattered reddish scales; antemedial line obsolete, indicated only by a white spot extending from lower fold to inner margin and having a small, central, black dot; in fresh specimens the white spot narrowly bordered inwardly and outwardly by a faint ocherous shading. Suffused specimens show little or no trace of

the white spot or the white border of costa. Hind wing hyaline white with a narrow fuscous shade along termen and a similar shading on some of the veins, especially on the females. Alar expanse, 13–21 mm.

Male genitalia with lateral margins of vinculum slightly concave; terminal margin very slightly angled; clasper sharply pointed. Female genitalia exhibiting considerable variety in size of bursa, size of the large spined plate of signa, and the number of scattered spines opposite the spined plate. Extremes of variation are shown in figure 942.

TYPE LOCALITIES: South Brazil (*anticella*, in BM); Santos, Brazil (*nigritella*, in BM).

FOOD PLANT: *Elephantopus* sp.

DISTRIBUTION: CUBA: Santiago de las Vegas (Sept.). GUATEMALA: Cayuga (Aug.), Chejel (Aug.), Volcán Santa María (July). COSTA RICA: La Florida, Juan Vinas (May, Nov.). PANAMÁ: Corozal (Apr.), La-Chorrera (May), Paraíso (May), Porto Bello (Apr., May, Oct., Dec.), Río Trinidad (Mar.). FRENCH GUIANA: St. Jean Maroni. COLOMBIA: Minca. BOLIVIA: *Santa Cruz*, Prov. del Sara (Jan., Nov.); BRAZIL: *São Paulo*, Amparo, Santos, Ypianga (Sept.); *Santa Catarina*, Santa Catarina Isl. ECUADOR: Quevedo (Nov. Dec.). PARAGUAY: Villarrica (July, Aug., Sept.). ARGENTINA: "Villa Ana, F. C. S. F." (Jan.).

Over 60 specimens before me from the National Museum, British Museum, Cornell, and Janse Collections exhibiting wide variation in size and color, from suffused examples corresponding to the figure of *nigritella* in the Ragonot Monograph (pl. 49, fig. 20) to that of typical *anticella* (pl. 48, fig. 25). The male genitalia are remarkably uniform. Female genitalia vary in individual specimens as indicated above. Such variations bear no relation to locality or pattern. The food plant record is from two reared specimens (♂ and ♀) in the National Museum from Santiago de las Vegas (E. E. A. de Cuba, No. 9627). This is our only known host record.

104. Genus Cabotia Ragonot

Cabotia Ragonot, Nouv. Gen., p. 30, 1888; Monograph, pt. 2, pp. xi, 187, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 188, 1901. (Type of genus: *Cabotia semidiscella* Ragonot.)

Encystia Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 256, 1901. (Type of genus: *Encystia bonhoti* Hampson. New synonymy.)

Tongue well developed. Antenna pubescent; basal segment elongate; on male shaft compressed and strongly curved at base (fig. 452d); on female shaft simple. Labial palpus oblique; segment 2 reaching almost to vertex, in male grooved to hold the maxillary palpus; segment 3 short, deflected forward or slightly downward. Maxillary palpus of male in the form of an aigrette; of female filiform, somewhat broadly scaled. Forewing smooth; 11 veins; 2 from very close to lower outer angle of cell; 3 from the angle; 4–5 stalked for at least half their lengths, stalk connate with 3; 6 from below upper angle of cell, straight; 10 from the cell, at base shortly separated from 8–9; male without costal fold. Hind wing with vein 2 from lower outer angle of cell, connate with 3; 3 and 5 long stalked (for over half their lengths); 7 and 8 anastomosed for slightly more than half their lengths beyond cell; cell about one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos an ovate plate bearing a small thornlike spine near its posterior end. Uncus triangulate; apex pointed. Harpe elongate; apex evenly rounded; clasper vertical, knobbed. Anellus a triangulate, cupped plate. Aedeagus short, stout, sharply angled at apex; penis with a few scattered granulations, otherwise unarmed. Vinculum stout, as long as or a trifle longer than broad, truncate, and of nearly equal width throughout.

Female genitalia with signa well developed, consisting of a chain of short thornlike spines on bulbous bases and a varying number of similar, scattered, discontinuous spines; bursa otherwise smooth; ductus bursae membranous; genital opening simple, unsclerotized; ductus seminalis from bursa near its junction with ductus bursae.

The genus is compact and sharply defined, easily distinguished from nearly related genera by its male antenna, signa, and the shape of the terminal projection of gnathos. Hampson's description of *Encystia* would indicate something entirely different, but the description is erroneous in a number of details: vein 9 of forewing is not absent, but well developed; vein 2 of forewing is close to, but not from the angle, and the discocellular vein of hind wing is curved and not oblique. I have before me two females of his series of *bonhoti* from Nassau and photographs of his holotype and its male genitalia which clearly show that it is a typical *Cabotia*.

Specific limits within the genus are difficult to determine from the limited and scattered material available. I suspect that most of the names will eventually fall into synonymy. The genitalic differences exhibited by the supposed species are trifling, consisting chiefly of the terminal plate of gnathos and the number of spines composing the signa, all very doubtful characters subject to individual variation. The coloration and pattern—likewise somewhat individually variable in specimens from a given locality—are much the same for all the species except Dyar's *rhythmatica*: Forewing luteous more or less shaded with fuscous; antemedial line very faintly indicated, well out towards middle of wing, bordered outwardly at or near costa by a fuscous blotch and inwardly near inner margin by a similar shade; subterminal line obscure, parallel and close to termen; costal area whitish; a sparse scattering of reddish scales over most of the wing; discal dots faint; terminal dots distinguishable except at tornus and near apex. Hind wing pale smoky fuscous, proportionally darker in dark females.

399. Cabotia semidiscella Ragonot

FIGURE 55, 451, 935

Cabotia semidiscella Ragonot, Nouv. Gen., p. 30, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 188, 1901.

The alar expanse given by Ragonot is 16 mm. In the National Museum are three smaller specimens (11 mm.) identified by Hampson—a male and female from St. Jean Maroni, French Guiana (the genitalia of which are figured), and a male from St. Laurent du Maroni, French Guiana. This last is an abnormal specimen, having veins 2 and 3 of forewing long stalked. Also in the National Collection are six females from Los Vasquez, Argentina (15–16 mm.), agreeing with the foregoing, and two somewhat darker (fresher) females that I take to be the same species from Villarrica, Paraguay (Feb., Oct.). In the British Museum there is a male and nine females from southeastern Brazil (E. D. Jones, "1920–303") and three females from Villa Ana, Argentina (Oct.).

TYPE LOCALITY: Goya, Argentina (type in Paris Mus.).

FOOD PLANT: Unknown.

400. Cabotia schini (Berg)

Spermatophthora schini Berg, Anales Soc. Cient. Argentina, vol. 19, p. 275, 1885.

Cabotia schini (Berg) Ragonot, Nouv. Gen., p. 30, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 188, 1901.

I have seen nothing identified as this species. However, it should be readily identifiable if Argentinian examples of *Cabotia* are ever reared from the peppertree. Alar expanse, 20 mm.

TYPE LOCALITY: Buenos Aires, Argentina (type lost).

FOOD PLANT: *Schinus molle* Linnaeus.

Apparently known only from the type specimens reared from galls on the peppertree. This is our only food-plant record for the genus.

401. Cabotia rhythmatica Dyar

FIGURES 453, 933

Cabotia rhythmatica Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914.

Forewings less distinctly marked with fuscous and with a more rosy suffusion than those of other species in the genus. Uncus shorter and male genitalia stockier than in our examples identified as *semidiscella* or than in males of *bonhoti*. Alar expanse, 13–14 mm.

TYPE LOCALITY: Porto Bello, Panamá (Mar., Apr.; type in USNM).

FOOD PLANT: Unknown.

Known only from the type specimens.

402. Cabotia cundajensis (Zeller)

FIGURE 932

Euzophera cundajensis Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 227, 1881.

Euzophera impeditella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 229, 1881.

Cabotia cundajensis (Zeller) Ragonot, Monograph, pt. 2, p. 189, 1901.

I have seen no *Cabotia* from Colombia; but in the National Museum are three females (15–20 mm.) from Castro, Paraná, Brazil, identified by both Hampson and Schaus as *cundajensis*. The genitalia are figured from one of these. They exhibit nothing that can be definitely identified as a specific character. Alar expanse, 16–22 mm.

TYPES: In British Museum (*cundajensis*, *impeditella*).

TYPE LOCALITIES: Cundai, Colombia (*cundajensis*, in BM); Vianí, Colombia (*impeditella*, in BM).

FOOD PLANT: Unknown.

I suspect that this as well as *semidiscella* will eventually prove to be the same as *schini* (Berg).

403. Cabotia bonhoti (Hampson), new combination

FIGURES 452, 934

Encystia bonhoti Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 256, 1901.

Not appreciably different from what we have identified as *semidiscella* Ragonot from French Guiana, except for trifling differences in genitalia which are probably not of more than individual significance. Male genitalia figured from specimen from Trelawney Parish, Jamaica; female genitalia from Zeller specimen in British Museum, from Nassau. Alar expanse, 13–16 mm.

TYPE LOCALITY: Nassau, Bahamas (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: BAHAMAS: Nassau (July). JAMAICA: Newport (Feb.), St. Andrews Parish, Trelawney Parish. The Jamaican material consists of 36 specimens in the National Collection.

Genus 105: *Canarsia*

[Venational division A. Forewing with 11 veins; 10 from the stalk of 8–9; 2 from well before lower outer angle of cell; stalk of 4–5 separate from 3 at base. Hind wing with 7 and 8 anastomosed for a short distance beyond cell; vein 2 from before lower outer angle of cell; discocellular vein curved. Labial palpus upcurved. Male genitalia with uncus triangulate; harpe with short erect clasper; transtilla absent; aedeagus short, stout; penis armed with several short spines. Female with a girdle of slender spines in bursa; bursa partially sclerotized; ductus seminalis from bursa couplatrix.]

105. Genus Canarsia Hulst

Canarsia Hulst, Phycitidae of N. Amer., p. 179, 1890.—Ragonot, Monograph, pt. 2, p. ix, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 119, 1901. (Type of genus: *Nephopteryx ulmiarrosorella* Clemens.)

Tongue well developed. Antenna pubescent; on male shaft with a deep sinus and strong scale tuft at base; on female simple. Labial palpus upcurved, rough scaled, reaching to vertex; third segment short (less than half the length of second), pointed. Maxillary palpus squamous, appressed to face. Forewing smooth; 11 veins, vein 2 from well before lower outer angle of cell; 3 from angle; 4 and 5 stalked, the stalk well separated from 3; 6 from below upper angle of cell, straight; 10 stalked with 8–9; male without costal fold. Hind

the white spot or the white border of costa. Hind wing hyaline white with a narrow fuscous shade along termen and a similar shading on some of the veins, especially on the females. Alar expanse, 13–21 mm.

Male genitalia with lateral margins of vinculum slightly concave; terminal margin very slightly angled; clasper sharply pointed. Female genitalia exhibiting considerable variety in size of bursa, size of the large spined plate of signa, and the number of scattered spines opposite the spined plate. Extremes of variation are shown in figure 942.

TYPE LOCALITIES: South Brazil (*anticella*, in BM); Santos, Brazil (*nigritella*, in BM).

FOOD PLANT: *Elephantopus* sp.

DISTRIBUTION: CUBA: Santiago de las Vegas (Sept.). GUATEMALA: Cayuga (Aug.), Chejel (Aug.), Volcán Santa María (July). COSTA RICA: La Florida, Juan Vinas (May, Nov.). PANAMÁ: Corozal (Apr.), La-Chorrera (May), Paraíso (May), Porto Bello (Apr., May, Oct., Dec.), Río Trinidad (Mar.). FRENCH GUIANA: St. Jean Maroni. COLOMBIA: Minca. BOLIVIA: *Santa Cruz*, Prov. del Sara (Jan., Nov.); BRAZIL: *São Paulo*, Amparo, Santos, Ypianga (Sept.); *Santa Catarina*, Santa Catarina Isl. ECUADOR: Quevedo (Nov. Dec.). PARAGUAY: Villarrica (July, Aug., Sept.). ARGENTINA: "Villa Ana, F. C. S. F." (Jan.).

Over 60 specimens before me from the National Museum, British Museum, Cornell, and Janse Collections exhibiting wide variation in size and color, from suffused examples corresponding to the figure of *nigritella* in the Ragonot Monograph (pl. 49, fig. 20) to that of typical *anticella* (pl. 48, fig. 25). The male genitalia are remarkably uniform. Female genitalia vary in individual specimens as indicated above. Such variations bear no relation to locality or pattern. The food plant record is from two reared specimens (♂ and ♀) in the National Museum from Santiago de las Vegas (E. E. A. de Cuba, No. 9627). This is our only known host record.

104. Genus Cabotia Ragonot

Cabotia Ragonot, Nouv. Gen., p. 30, 1888; Monograph, pt. 2, pp. xi, 187, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 188, 1901. (Type of genus: *Cabotia semidiscella* Ragonot.)

Encystia Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 256, 1901. (Type of genus: *Encystia bonhoti* Hampson. New synonymy.)

Tongue well developed. Antenna pubescent; basal segment elongate; on male shaft compressed and strongly curved at base (fig. 452d); on female shaft simple. Labial palpus oblique; segment 2 reaching almost to vertex, in male grooved to hold the maxillary palpus; segment 3 short, deflected forward or slightly downward. Maxillary palpus of male in the form of an aigrette; of female filiform, somewhat broadly scaled. Forewing smooth; 11 veins; 2 from very close to lower outer angle of cell; 3 from the angle; 4–5 stalked for at least half their lengths, stalk connate with 3; 6 from below upper angle of cell, straight; 10 from the cell, at base shortly separated from 8–9; male without costal fold. Hind wing with vein 2 from lower outer angle of cell, connate with 3; 3 and 5 long stalked (for over half their lengths); 7 and 8 anastomosed for slightly more than half their lengths beyond cell; cell about one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos an ovate plate bearing a small thornlike spine near its posterior end. Uncus triangulate; apex pointed. Harpe elongate; apex evenly rounded; clasper vertical, knobbed. Anellus a triangulate, cupped plate. Aedeagus short, stout, sharply angled at apex; penis with a few scattered granulations, otherwise unarmed. Vinculum stout, as long as or a trifle longer than broad, truncate, and of nearly equal width throughout.

Female genitalia with signa well developed, consisting of a chain of short thornlike spines on bulbous bases and a varying number of similar, scattered, discontinuous spines; bursa otherwise smooth; ductus bursae membranous; genital opening simple, unsclerotized; ductus seminalis from bursa near its junction with ductus bursae.

The genus is compact and sharply defined, easily distinguished from nearly related genera by its male antenna, signa, and the shape of the terminal projection of gnathos. Hampson's description of *Encystia* would indicate something entirely different, but the description is erroneous in a number of details: vein 9 of forewing is not absent, but well developed; vein 2 of forewing is close to, but not from the angle, and the discocellular vein of hind wing is curved and not oblique. I have before me two females of his series of *bonhoti* from Nassau and photographs of his holotype and its male genitalia which clearly show that it is a typical *Cabotia*.

Specific limits within the genus are difficult to determine from the limited and scattered material available. I suspect that most of the names will eventually fall into synonymy. The genitalic differences exhibited by the supposed species are trifling, consisting chiefly of the terminal plate of gnathos and the number of spines composing the signa, all very doubtful characters subject to individual variation. The coloration and pattern—likewise somewhat individually variable in specimens from a given locality—are much the same for all the species except Dyar's *rhythmatica*: Forewing luteous more or less shaded with fuscous; antemedial line very faintly indicated, well out towards middle of wing, bordered outwardly at or near costa by a fuscous blotch and inwardly near inner margin by a similar shade; subterminal line obscure, parallel and close to termen; costal area whitish; a sparse scattering of reddish scales over most of the wing; discal dots faint; terminal dots distinguishable except at tornus and near apex. Hind wing pale smoky fuscous, proportionally darker in dark females.

399. Cabotia semidiscella Ragonot

FIGURE 55, 451, 935

Cabotia semidiscella Ragonot, Nouv. Gen., p. 30, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 188, 1901.

The alar expanse given by Ragonot is 16 mm. In the National Museum are three smaller specimens (11 mm.) identified by Hampson—a male and female from St. Jean Maroni, French Guiana (the genitalia of which are figured), and a male from St. Laurent du Maroni, French Guiana. This last is an abnormal specimen, having veins 2 and 3 of forewing long stalked. Also in the National Collection are six females from Los Vasquez, Argentina (15–16 mm.), agreeing with the foregoing, and two somewhat darker (fresher) females that I take to be the same species from Villarrica, Paraguay (Feb., Oct.). In the British Museum there is a male and nine females from southeastern Brazil (E. D. Jones, "1920–303") and three females from Villa Ana, Argentina (Oct.).

TYPE LOCALITY: Goya, Argentina (type in Paris Mus.).

FOOD PLANT: Unknown.

400. Cabotia schini (Berg)

Spermatophthora schini Berg, Anales Soc. Cient. Argentina, vol. 19, p. 275, 1885.

Cabotia schini (Berg) Ragonot, Nouv. Gen., p. 30, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 188, 1901.

I have seen nothing identified as this species. However, it should be readily identifiable if Argentinian examples of *Cabotia* are ever reared from the peppertree. Alar expanse, 20 mm.

TYPE LOCALITY: Buenos Aires, Argentina (type lost).

FOOD PLANT: *Schinus molle* Linnaeus.

Apparently known only from the type specimens reared from galls on the peppertree. This is our only food-plant record for the genus.

401. Cabotia rhythmatica Dyar

FIGURES 453, 933

Cabotia rhythmatica Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914.

Forewings less distinctly marked with fuscous and with a more rosy suffusion than those of other species in the genus. Uncus shorter and male genitalia stockier than in our examples identified as *semidiscella* or than in males of *bonhoti*. Alar expanse, 13–14 mm.

TYPE LOCALITY: Porto Bello, Panamá (Mar., Apr.; type in USNM).

FOOD PLANT: Unknown.

Known only from the type specimens.

402. Cabotia cundajensis (Zeller)

FIGURE 932

Euzophera cundajensis Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 227, 1881.

Euzophera impeditella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 229, 1881.

Cabotia cundajensis (Zeller) Ragonot, Monograph, pt. 2, p. 189, 1901.

I have seen no *Cabotia* from Colombia; but in the National Museum are three females (15–20 mm.) from Castro, Paraná, Brazil, identified by both Hampson and Schaus as *cundajensis*. The genitalia are figured from one of these. They exhibit nothing that can be definitely identified as a specific character. Alar expanse, 16–22 mm.

TYPES: In British Museum (*cundajensis*, *impeditella*).

TYPE LOCALITIES: Cundai, Colombia (*cundajensis*, in BM); Viani, Colombia (*impeditella*, in BM).

FOOD PLANT: Unknown.

I suspect that this as well as *semidiscella* will eventually prove to be the same as *schini* (Berg).

403. Cabotia bonhoti (Hampson), new combination

FIGURES 452, 934

Encystia bonhoti Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 256, 1901.

Not appreciably different from what we have identified as *semidiscella* Ragonot from French Guiana, except for trifling differences in genitalia which are probably not of more than individual significance. Male genitalia figured from specimen from Trelawney Parish, Jamaica; female genitalia from Zeller specimen in British Museum, from Nassau. Alar expanse, 13–16 mm.

TYPE LOCALITY: Nassau, Bahamas (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: BAHAMAS: Nassau (July). JAMAICA: Newport (Feb.), St. Andrews Parish, Trelawney Parish. The Jamaican material consists of 36 specimens in the National Collection.

Genus 105: *Canarsia*

[Venational division A. Forewing with 11 veins; 10 from the stalk of 8–9; 2 from well before lower outer angle of cell; stalk of 4–5 separate from 3 at base. Hind wing with 7 and 8 anastomosed for a short distance beyond cell; vein 2 from before lower outer angle of cell; discocellular vein curved. Labial palpus upcurved. Male genitalia with uncus triangulate; harpe with short erect clasper; transtilla absent; aedeagus short, stout; penis armed with several short spines. Female with a girdle of slender spines in bursa; bursa partially sclerotized; ductus seminalis from bursa couplatrix.]

105. Genus Canarsia Hulst

Canarsia Hulst, Phycitidae of N. Amer., p. 179, 1890.—Ragonot, Monograph, pt. 2, p. ix, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 119, 1901. (Type of genus: *Nephopteryx ulmiarrosorella* Clemens.)

Tongue well developed. Antenna pubescent; on male shaft with a deep sinus and strong scale tuft at base; on female simple. Labial palpus upcurved, rough scaled, reaching to vertex; third segment short (less than half the length of second), pointed. Maxillary palpus squamous, appressed to face. Forewing smooth; 11 veins, vein 2 from well before lower outer angle of cell; 3 from angle; 4 and 5 stalked, the stalk well separated from 3; 6 from below upper angle of cell, straight; 10 stalked with 8–9; male without costal fold. Hind

wing with vein 2 before lower outer angle of cell; 3 from angle, closely approximate for some distance with 5; 7 and 8 anastomosed for a short distance beyond cell; cell about one-half the wing length; discocellular vein curved. Eighth abdominal segment of male with compound ventral hair tufts.

Male genitalia and apical process of gnathos a stout hook. Elements of transtilla not distinguishable (unsclerotized); uncus triangulate; apex narrowly rounded. Harpe narrowly elongate, of nearly even width throughout; apex rounded; a small erect blunt clasper arising from sacculus near middle of harpe. Anellus a rather large flattened plate with prominent lateral lobes. Aedeagus short, stout, strongly elbowed near middle and with a scattering of fine spines toward apex; penis armed with a short row of spinelike cornuti. Vinculum stout, about as broad as long; tapering slightly to broadly rounded terminal margin.

Female genitalia with signa consisting of a girdle of long, slender spines with enlarged bases; bursa copulatrix partially sclerotized at junction with ductus bursae and emergence of ductus seminalis; ductus bursae short (shorter than bursa), sclerotized just before genital opening, otherwise simple; genital opening simple; ductus seminalis from bursa near its junction with ductus brusae.

An easily recognized genus containing one North American species.

404. Canarsia ulmiarrosorella (Clemens)

FIGURES 80, 455, 936

Nephopteryx (?) *ulmiarrosorella* Clemens, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 205.

Stenoptycha pneumatella Hulst, Ent. Amer., vol. 3, p. 137, 1887.

Psorosa ulmella Ragonot, N. Amer. Phycitidae, p. 13, 1887.

Honora fuscatella Hulst, Ent. Amer., vol. 4, p. 118, 1888.

Canarsia ulmiarrosorella (Clemens) Hulst, Phycitidae of N. Amer., p. 180, 1890; U. S. Nat. Mus. Bull. 52, p. 431, 1902.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 120, 1901.—Forbes, Cornell Mem. 68, p. 632, 1923.—McDunnough, Check list No. 6332, 1939.—Darlington, Trans. Amer. Ent. Soc., vol. 73, p. 91, 1947.—Craighead, U. S. Dep. Agr. Misc. Publ. 657, p. 454, 1950.

Canarsia gracilella Hulst, Canadian Ent., vol. 32, p. 174, 1900.—Forbes, Cornell Mem. 68, p. 632, 1923.—McDunnough, Check list, No. 6333, 1939. (New synonymy.)

Canarsia feliculella Dyar, Journ. New York Ent. Soc., vol. 15, p. 110, 1907.—McDunnough, Check list No. 6334, 1939. (New synonymy.)

Forewing pale to dark gray; antemedial line well out towards middle of wing, nearly vertical, slightly indented at vein 1b and above the lower fold, white bordered outwardly by a blackish line; subterminal line parallel with termen, indented at vein 6 and lower fold and outwardly angled between them, white, inwardly bordered by a blackish line; discal spots confluent, forming a blackish line along discocellular vein; terminal dots confluent forming a more or less continuous black line along termen. Hind wings pale smoky fuscous, somewhat darker on dark specimens. Alar expanse, 15–20 mm.

Genitalic characters as given for the genus, the thin spines of the signa slightly bent.

TYPE LOCALITIES: None indicated (*ulmiarrosorella*, type lost; *pneumatella*, in AMNH, ex Rutgers); Wisconsin (*ulmella*, in Paris Mus.); Blanco County, Tex. (*fuscatella*, in AMNH, ex Rutgers); Montclair, N. J. (*gracilella*, in AMNH, ex Rutgers); Brownsville, Tex. (*feliculella*, in USNM).

FOOD PLANT: Elm (larva a leaf-tier). Also recorded from hickory (Forbes). In the National Museum there is a series reared from larvae taken under bark of hackberry; but as larvae wander about after feeding, records other than elm should be discounted.

DISTRIBUTION: UNITED STATES: *Maine; New Hampshire*, Hampton (July); *Massachusetts*, Amherst (June, July), Framingham (May); *Connecticut*, East River, New Haven (Aug.); *New York*, Otto (July); *New Jersey*, Essex County (June), Montclair (Aug.), New Brunswick; *Pennsylvania*, New Brighton (May), Pittsburgh (May); *Maryland*, Hyattsville, Plummers Isl. (May); *District of Columbia*, Washington (Mar., Apr., May); *Ohio*, Dayton (Aug.); *Illinois*, Chicago, Decatur (Apr., June), Lacon (Aug.), Oconee (Aug.); *Wisconsin; Iowa*, Ames (May), Sioux City (May, July); *Kansas*, Lawrence (Aug.), Manhattan (May), Onaga; *Tennessee*, Knoxville (May); *Missouri*, St. Louis (June, Aug.); *Texas*, Blanco County (May, June), Brownsville (May), Burnet County, Kerrville (Apr.), Plano (July), San Benito (Aug., Sept.), Victoria (May). CANADA: *Ontario*, Trenton (June, July); *Quebec*, St. Hilaire (June, July); *Nova Scotia*, Cape Breton Isl. (July).

Presumably generally distributed east of the Rocky Mountains wherever the elm occurs.

The names *gracilella* and *feliculella* represent nothing more than pale color forms and have no racial significance. The holotype of *gracilella* is a male without abdomen, but is obviously conspecific with *ulmiarrosorella*. The female paratype (also in the Rutgers Collection) is an *Ephestia*. Dyar's type is a male agreeing in all details of genitalia with typical *ulmiarrosorella*.

Genus 106: *Harnocha*

[Venational division C. Forewing with 10 veins; 9 absent; male without costal fold. Hind wing with vein 2 from angle of cell; 3 and 5 stalked; discocellular vein curved. Labial palpi porrect. Transtilla incomplete.]

106. Genus Harnocha Dyar

Harnocha Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914. (Type of genus: *Harnocha velessa* Dyar.)

Tongue well developed. Antenna pubescent, shaft very slightly bent at base. Labial palpus porrect, downcurved; extending slightly over twice the length of the head beyond it. Maxillary palpus minute, filiform. Forewing smooth; 10 veins; vein 2 from very close to lower outer angle of cell, approximate to 3; 3 from the angle; 4 and 5 stalked for half their lengths, the stalk connate with 3; 6 from below upper angle of cell, straight; 8 and 9 united (9 absent); 10 from the cell, shortly separated from 8 at base; male without costal fold. Hind wing with vein 2 from lower outer angle

of cell, connate with 3; 3 and 5 stalked for at least half their lengths; 7 and 8 anastomosed for at least half their lengths beyond cell; cell less than one-half (nearer one-third) the length of the wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos an ovate plate terminating in a spinelike point. Uncus triangulate; apex bluntly pointed. Harpe narrowly elongate; apex rounded; clasper absent. Anellus a triangulate, flattened plate. Aedeagus moderately stout, sinuate (slightly bent at one-third and again at two-thirds); penis with a few weak scobinations, otherwise unarmed. Vinculum stout, as broad as long, not tapering; terminal margin evenly rounded.

This genus is distinct from but apparently very close to *Cabotia*, with which it agrees on a great many structural details of venation and male genitalia. It differs in having the antennal shaft less strongly bent, the labial palpus porrect rather than oblique, vein 9 of forewing absent, eighth abdominal segment of male without paired hair tufts, and harpe without clasper. It contains but one known tropical American species.

405. Harnocha velessa Dyar

FIGURES 111, 456

Harnocha velessa Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 338, 1914.

Forewing luteous with a very faint rosy tint; costa from base to apex rather broadly margined with white very sparsely dusted with dark fuscous scales; an oblique blackish band near base and extending from inner margin to white costal stripe; a rather conspicuous patch of blackish scales near middle, between cell and lower fold; a similar smaller blackish spot at lower outer angle of cell. Hind wing semihyaline, whitish, shaded with pale fuscous along costa and at apex. Alar expanse, 11–13 mm.

TYPE LOCALITY: La Chorrera, Panamá (May, type in USNM).

FOOD PLANT: Unknown.

Represented in the National Collection by the type, eight other males from the type locality, and one male from Río Trinidad, Panamá (June). The female is unknown.

Genera 107–109: *Eurythmasis* to *Wunderia*

[Venational division B. Forewing with 10 veins; 9 present; 2 and 3 stalked or united, from lower outer angle of cell. Hind wing with 2 from lower outer angle of cell; 3 and 5 stalked for at least half their lengths; 7 and 8 strongly anastomosed. Uncus triangulate. Transtilla incomplete.]

107. Genus Eurythmasis Dyar

Eurythmasis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 338, 1914. (Type of genus: *Eurythmasis ignifatua* Dyar.)

Tongue well developed. Antenna pubescent; basal segment elongate; on male shaft with a hook from its basal segment and curved for a few segments beyond; on female simple. Labial palpus oblique, long, extending more than half its length above vertex; smooth; segment 2 on male grooved to hold the maxillary palpus; segment 3 very short, acuminate. Maxillary palpus of male in the form of an aigrette; of female filiform. Forewing smooth; 10 veins; veins 2 and 3 long stalked, from lower outer angle of cell; 4 absent; 5 separated from 2–3 at base; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from cell, not approximate to 8–9; male without costal fold. Hind wing with vein 2 from lower outer angle of cell, connate with the stalk of 3–5; 3 and 5 stalked for half their lengths; 7 and 8 anastomosed for half their lengths; cell one-third the wing length; discocellular vein curved. Eighth abdominal segment of male with compound ventral tufts.

Male genitalia with apical process of gnathos an elongate, rather narrow hook. Uncus triangulate; apex pointed. Harpe elongate, slender; apex rounded; clasper vertical, pointed, slightly curved. Anellus a small, weakly sclerotized, cupped plate. Aedeagus moderately stout, nearly straight; penis with a few minute spines and granulations, otherwise unarmed. Vinculum stout, a trifle longer than broad, not appreciably tapering to broad terminal margin.

Female genitalia with signa strongly developed, consisting of a large, curved, oval (or round), densely spined plate and a few detached spines near or opposite the plate; ductus bursae approximately the same length as bursa, minutely scobinate for a short distance from junction with bursa; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

In habitus and all structural characters except venation this genus resembles *Oncolabis*, to which it is apparently closely related. It contains one tropical American species.

406. Eurythmasis ignifatua Dyar

FIGURES 95, 457, 945

Eurythmasis ignifatua Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 338, 1914.

Forewing gray brown; a white border along costa sparsely dusted with reddish scales; on middle of inner margin a narrowly elongate, dull ocherous patch with a knoblike projection at each end extending to the cell; a few reddish scales on dark ground color at base of wing and bordering inner margin; transverse lines obsolete. Hind wing semihyaline; in female with some fuscous shading on the veins. Alar expanse, 13–14 mm.

Genitalia as given for the genus; male with terminal margin of vinculum slightly angled.

TYPE LOCALITY: La Chorrera, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: La Chorrera (May). PUERTO RICO: Adjuntas (June), Bayamón (Mar., Aug.), Lavis (Oct.), San Germán (Apr., Aug.), Utuado. CUBA: *Oriente*, Loma del Gato (Sept.).

108. Genus Eurythmidia Ragonot

Eurythmidia Ragonot, Monograph pt. 2, p. xii, 1901. Hampson, *in* Ragonot, Monograph, pt. 2, p. 208, 1901. Janse (in part), Journ. Ent. Soc. South Africa, vol. 7, p. 4, 1944. (Type of genus: *Eurythmia ignidorsella* Ragonot.)

Tongue well developed. Antenna pubescent; on male, a row of 4 or 5 rough scales on shaft beyond basal segment; of female simple. Labial palpus, upturned, extending well above vertex; third segment about half the length of second, pointed. Maxillary palpus squamous, appressed to face. Forewing smooth; 10 veins; veins 2 and 3 united, from lower outer angle of cell, connate with the stalk of 4–5; 4 and 5 stalked for at least half their lengths; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from cell approximate to 8–9 at base, thence divergent; male without costal fold. Hind wing with vein 2 from the lower outer angle of cell, connate with the stalk of 3–5; 3 and 5 long stalked (for more than half their lengths); 7 and 8 anastomosed for nearly two-thirds of their lengths; cell short, less than one-third the wing length; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos an elongate, narrow hook. Uncus triangulate; apex narrowly rounded. Harpe elongate, slender; apex rounded; clasper vertical, short, pointed, weakly sclerotized. Anellus a flattened plate. Aedeagus moderately slender, straight; penis unarmed. Vinculum stout, as broad as long, not tapering, truncate.

Female genitalia with bursa copulatrix elongate; signa strongly developed, consisting of a curved, round, densely spined plate and a few detached spines near the plate; ductus bursae somewhat shorter than bursa, minutely scobinate near junction with bursa, the scobinations extending into bursa for a short distance; a narrow sclerotized plate behind (and above) genital opening; genital opening otherwise simple; ductus seminalis from bursa near its junction with ductus bursae.

The genus is obviously closely related to *Eurythmasis*, with similar habitus and genitalia, differing chiefly in venation, the simple eighth segment of male, and the simple shaft of the male antenna. It contains one species common to the southwestern United States and Central America. I interpret the venation of forewing differently from Hampson and Ragonot. They consider that 4 is absent and 3 and 5 stalked. From the affinities of the genus I believe that 4 is present and stalked with 5 and 2 and 3 united. By either interpretation the end result would be the same; but *Eurythmidia* seems to belong with the genera where the tendency is for 2 and 3 to fuse.

The description and figures published by Janse apply to *Eurythmidia* only so far as the female characters are concerned. The two specimens from Amula, México, which he had before him were from the Druce Collection and bore Hampson's identification labels. The female is *Eurythmidia ignidorsella* but the male is not. It is a somewhat rubbed example of *Elasmopalpus lignosellus* Zeller. Evidently Hampson did not check the venation, for it is normal for *Elasmopalpus*, vein 4 being present in both hind wings. Dr. Janse kindly sent me the specimens and his slides for examination and has asked me to make the correction to his description.

407. Eurythmidia ignidorsella (Ragonot)

FIGURES 91, 459, 943

Eurythmia ignidorsella Ragonot, N. Amer. Phycitidae, p. 16, 1887.—Hulst, Phycitidae of N. Amer., p. 196, 1890.
Eurythmidia ignidorsella Hampson, *in* Ragonot, Monograph, pt. 2, p. 208, 1901.—Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 338, 1914.—McDunnough, Check list, No. 6361, 1939.

Forewing blackish gray; a white border along costa, sparsely dusted with reddish scales; on middle of inner margin a whitish orange patch, the orange shade extending more or less along inner margin toward base of wing; antemedial line obsolete; subterminal line very faint (frequently absent), when distinguishable, whitish. Hind wing semihyaline, more or less shaded with fuscous along costa and outer margin. Alar expanse, 12–16 mm.

Genitalia as given for the genus; terminal margin of vinculum straight; spined plate of signa rather small.

TYPE LOCALITY: Arizona (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, Paradise (Sept.), Prescott (Sept.), MÉXICO: Orizaba, *Guerrero*, Amula (May), Cayuga (Apr., May, Aug.), PANAMÁ: Alhajuelo (Mar., Apr.), Caño Saddle (Gatún Lake, May), Corazal (Mar.), Paraíso (Apr.), Porto Bello (Feb., Mar., May). Reported from additional localities in México by Ragonot and Hampson.

Strikingly similar in color and markings to *Eurythmasis ignifatua* but easily separable on genitalia and venation.

109. Genus Wunderia Grossbeck

Wunderia Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, art. 1, p. 133, 1917. (Type of genus: *Wunderia neaeriatella* Grossbeck.)

Tongue well developed. Antenna of female simple, weakly pubescent. Labial palpus slender, upturned, reaching above vertex, third segment acuminate, slightly more than half as long as second. Forewing smooth; 10 veins; veins 2 and 3 united, from lower outer angle of cell, connate with the stalk of 4–5; 4 and 5 stalked for half their lengths; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from the cell, separate from 8–9 at base. Hind wing with vein 2 from the stalk of 3–5; 3 and 5 long stalked; 7 and 8 anastomosed for nearly two-thirds of their lengths; cell open (discocellular vein absent).

Female genitalia with bursa copulatrix without signum and simple except for some minute scobinations at its posterior end, the scobinations extending into the ductus bursae for over half its length; ductus bursae with a narrow sclerotized plate behind (and above) genital opening; genital opening otherwise simple; ductus seminalis from bursa near its junction with ductus bursae.

The genus and its type species were described from a single female. The male is unknown, so the above diagnosis is incomplete. The habitus of *neaeriatella* is that of a pale *ignidorsella* so the placement of *Wunderia* near *Eurythmidia* seems safe enough.

The genus is readily identified by the open cell of hind wing, the otherwise *Eurythmidia* venation, and the absence of a signum. Grossbeck's description is faulty in one respect. The front is not "projected forward in the form of a cone." The scaling projects in a conical tuft, but the front itself is evenly rounded.

408. Wunderia neaeriatella Grossbeck

FIGURES 90, 948, 949

Wunderia neaeriatella Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, art. 1, p. 133, 1917.—McDunnough, Check list, No. 6361–1, 1939.

Markings and color of forewing similar to those of *Eurythmidia ignidorsella* except slightly paler. The female type is somewhat rubbed, which accounts for the traces of a dark transverse antemedial line and the dark discal markings mentioned by Grossbeck. Before me are three females from the Cornell Collection, collected at San Germán, Puerto Rico, Apr. 16 and 17, 1930. In these the entire area below the whitish costal stripe is pale grayish fuscous without transverse lines or appreciable discal spots, and there is a very faint orange blotch on middle of dorsal margin (as in *ignidorsella*) distinguishable on one of the specimens. The whitish costal stripe is sparsely dusted with reddish scales and there is a scattering of similar scales on the dark area. The Puerto Rican examples are certainly congeneric and I believe conspecific with the Florida type.

There are some differences in the female genitalia (shown in figs. 948, 949); but these are merely in the size and shape of the bursa, differences which are probably of no more than individual significance. The Puerto Rican specimens are rather small (12–12.5 mm.) compared with the type (14.5 mm.).

TYPE LOCALITY: Everglades, Fla. (Apr., type in AMNH).

FOOD PLANT: Unknown.

The male is unknown.

Genera 110–114: *Oedothmia* to *Cacozophera*

[Venational division D. Forewing with 10 veins; 9 present; 4 absent; vein 2 from before but near lower outer angle of cell. Hind wing with discocellular vein curved. Labial palpi upturned or oblique. Transtilla incomplete or altogether absent.]

110. Genus Oedothmia Hampson

Oedothmia Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 60, 1930. (Type of genus: *Oedothmia endopyrella* Hampson.)

Synothmia Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 61, 1930. (Type of genus: *Synothmia bahamasella* Hampson. New synonymy.)

Clarke and Tams have compared the types of Hampson's two supposed genera and inform me that they appear to be no more than sexes of one species. Hampson's chief character for separating *Oedothmia* and *Synothmia* was the shape of the frons, conical on *Oedothmia* and round on *Synothmia;* but Clarke states that his description of the former is at variance with the type in several details—the male antenna is simple, the shaft not excised at base, and the frons is round, not pointed. The venation of the types of the two genera is similar.

Tongue well developed. Antenna pubescent; shaft simple. Labial palpus upturned; the second segment reaching above vertex; third segment "thickly scaled." Maxillary palpus filiform. Forewing smooth; 10 veins; vein 2 from very near to lower outer angle of cell; 3 from the angle, approximate to 2 for some distance from cell; 4 and 5 united, shortly separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 stalked for about half their lengths; 10 from the cell, separated from 8–9 at base; male without costal fold. Hind wing with vein 2 from lower outer angle of cell; 3 from the angle, contiguous (but not fused) to 5 for half their lengths; 7 and 8 contiguous beyond cell for some distance, but not anastomosed; cell short, less than one-third the length of wing; discocellular vein curved.

Male genitalia unknown; the type of *O. endopyrella*, and only known male, is without abdomen.

Female genitalia resembling those of *Eurythmidia* and *Oncolabis;* with the signa strongly developed, the large spined plate situated in bursa like that of *Oncolabis* but the collar of strong spines at junction of bursa and ductus is lacking; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

The genus is easily distinguishable from its nearest relatives in venational division D (except *Stylobasis*) by the approximate condition of veins 2 and 3 of forewing. From *Stylobasis* it is distinguished by the contiguous rather than anastomosed condition of veins 7 and 8 of hind wing, its upturned labial palpi and simple male antennae.

409. Oedothmia endopyrella Hampson

FIGURES 102, 944

Oedothmia endopyrella Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 61, 1930.

Synothmia bahamasella Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 61, 1930 (new synonymy).

Markings and color similar to those of *Oncolabis anticella* Zeller, from which it can be distinguished most readily by its venation. Alar expanse, 16–18 mm.

TYPE LOCALITIES: Vera Cruz, México (*endopyrella*, in BM); Nassau, Bahamas (*bahamasella*, in BM).

Known only from the two types.

111. Genus Stylobasis Hampson

Stylobasis Hampson, *in* Ragonot, Monograph, pt. 2, pp. xii, 198, 1901. (Type of genus: *Stylobasis rubripurpurea* Hampson.)

Tongue well developed. Antenna pubescent; basal segment enlarged; on male shaft with a hook from its basal segment and deeply curved for several segments

beyond (as in *Oncolabis*), otherwise flattened, on female simple. Labial palpus oblique; long, second segment extending above vertex, on male grooved to hold the maxillary palpus; third segment porrect (deflected forward). Maxillary palpus filiform. Forewing smooth; 10 veins; vein 2 from near lower outer angle of cell; 3 from the angle, approximate to 2 in the male, (closely approximate or connate with 5 in the female); 4 absent; 6 from slightly below upper angle of cell, slightly curved in male (straight in the female); 8 and 9 stalked; 10 from the cell, approximate to 8–9 at base; male without costal fold. Hind wing with vein 2 from lower outer angle of cell connate with the stalk of 3–5; 3 and 5 stalked for half or (in female) slightly more than half their lengths; 7 and 8 anastomosed for about half their lengths (more shortly anastomosed in female) beyond cell; cell slightly under one-third the wing length; discocellular vein curved. The venation except for the absence of vein 4 of forewing is strikingly similar to that of *Oncolabis*, especially in the female. Eighth abdominal segment of male with compound ventral tuft.

Male genitalia similar to those of *Oncolabis* and *Eurythmasis* except for slightly longer vinculum (a difference of, at most, specific significance).

Female genitalia similar to those of *Oncolabis;* signa strongly developed, consisting of a large, round, curved, densely spined plate and a few similar detached spines near the plate; a fused collar of similar spines surrounding the ductus bursae at its junction with bursa copulatrix; ductus bursae as long as bursa, minutely scobinate for about half its length beyond the collar; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

410. Stylobasis rubripurpurea Hampson

FIGURES 106, 458, 946

Stylobasis rubripurpurea Hampson, *in* Ragonot, Monograph, pt. 2, p. 198, 1901.

The moth has the general habitus of *Oncolabis anticella;* forewing purplish gray (or dark grayish fuscous) with whitish costal streak sparsely dusted with reddish scales; transverse lines obsolete, the antemedial indicated below cell only by an outwardly bordering pale yellowish patch. Hampson's description mentions faint blackish streaks from the base of costa and on the median vein and one distinct discal spot. The figure in Ragonot (pl. 49, fig. 19) is misleading. It shows a form with the veins darkly outlined, a distinct whitish subterminal line, and no trace of the yellowish patch on inner margin, or of the pale costal streak. Our female in the National Collection is rubbed so that the dark ground color shows plainly only along the veins, thus corresponding with Ragonot's figure. Alar expanse, 16–19 mm.

Genitalia as given for the genus.

TYPE LOCALITY: "Irazu, Mexique" (type in Transvaal Mus.).

FOOD PLANT: Unknown.

In addition to the male type Hampson mentions a male from Santos, Brazil. These, in addition to the female from Juan Vinas, Costa Rica (Apr., in USNM), are the only specimens of the species known to me.

Through the courtesy of Dr. Janse I was able to see and figure the genitalia of the male type. He also submitted a drawing of the wing venation which is reproduced here. The female in the National Museum tentatively identified by Schaus as *rubripurpurea* differs in slight details of venation from the male type, as indicated in the foregoing generic description, and may or may not be conspecific. However, from its labial palpi and the sum of its characters I believe it is properly placed.

112. Genus Diviana Ragonot

Diviana Ragonot, Nouv. Gen., p. 27, 1888; Monograph, pt. 2, pp. xii, 201, 1901.—Hulst, Phycitidae of N. Amer., p. 190, 1890. (Type of genus: *Diviana eudoreella* Ragonot.)

Dannemora Hulst, Phycitidae of N. Amer., p. 212, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, pp. xiii, 209, 1901. (Type of genus: *Dannemora edentella* Hulst. New synonymy.)

Tongue short and weak, but exposed. Antenna pubescent; on male, shaft curved toward base, some rough scaling in the curve (but no teeth or other spinelike projections). Labial palpus upturned, short, barely reaching to vertex; the second segment tufted in front; the third short, acuminate. Maxillary palpus squamous (not filiform as stated by Ragonot and Hampson). Forewing smooth; subtriangular, rather broad towards termen; 10 veins; vein 2 from before the angle of the cell; 3 and 5 closely approximate or connate from the angle; 4 absent; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 normally from the cell and approximate to the stalk of 8–9, rarely connate or very shortly stalked with 8–9; male without costal fold. Hind wing with vein 2 from before but near lower outer angle of cell; 3 and 5 shortly stalked, from the angle; 7 and 8 anastomosed for a short distance beyond cell (for half or less than half their lengths); cell less than half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos a small knob terminating in a short spine. Uncus as broad as long, lateral margins parallel, terminal margin bluntly angled. Transtilla absent (elements not distinguishable). Harpe short, slender, very slightly tapering to narrowly rounded apex; costa broadly sclerotized throughout and terminating in a short, slender spine. Anellus a broad, deeply and widely cleft plate. Aedeagus long, moderately stout, strongly sclerotized, with a few scobinations toward apex; penis armed with two stout, straight cornuti (slightly less than one-third as long as aedeagus). Vinculum very stout, longer than combined tegumen and uncus and considerably longer than broad; very slightly tapering; terminal margin broad, straight.

Both *Diviana* and *Dannemora* were described from males. As far as I know there are no known females of either type species. In the Ragonot Monograph the two supposed genera are widely separated in the generic

key on the alternative of vein 10 of forewing from the cell or from the stalk of 8–9, an unreliable character at best and in this instance thoroughly misleading. In two males before me (perfect matches for the figure of *eudoreella* in the Monograph, pl. 23, fig. 12) vein 10 is both ways, from the cell on three forewings and distinctly stalked on one (compare figs. 103 and 103a). On the Hulst type of *edentella* it is stalked.

Hampson's characterization of *Dannemora* in the Monograph is false in a number of details. He included in the genus (in addition to its type species) *Euzophera quadripuncta* Zeller, of which he had only females, and selected "characters" from both species and added a "character" possessed by neither, namely, a circular hyaline depression in the cell on the underside of hind wing. There is no such structure in *edentella* or *quadripuncta*. The male of the latter has a depression in the cell of hind wing, but it is not hyaline, is on the upper surface of the wing, and is filled with dense, modified sex-scaling. Hampson did not know the male, and the hind wing of the female is simple, so it is difficult to see where he got this "character." Zeller's species is not even closely related to *edentella*. I am treating it elsewhere (p. 276). Ragonot's characterization of *Diviana* is misleading in one particular. He states that there are some teeth ("dents") in the sinus of the shaft of the male antenna. Such a character is present in *Palatka nymphaeella* (Hulst); but I do not think he could have had an example of this species before him unless his description of *eudoreella* is incorrect and his figure of it completely false.

411. Diviana eudoreella Ragonot

FIGURES 103, 463

Diviana eudoreella Ragonot, Nouv. Gen., p. 27, 1888; Monograph, pt. 2, p. 201, 1901.—Hulst, Phycitidae of N. Amer., p. 190, 1900.—McDunnough, Check list, No. 6358, 1939.

Dannemora edentella Hulst, Phycitidae of N. Amer., p. 212, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 209, 1901.—McDunnough, Check list, No. 6362, 1939. (New synonymy.)

Diviana eudoriella Hulst, U. S. Nat. Mus. Bull. 52, p. 433, 1902 (misspelling).

Forewing blackish brown, the median area heavily dusted with white, giving it an ashy gray appearance; antemedial white line nearly straight, slanting outwardly from costa to inner margin, slightly notched at lower fold, bordered outwardly by a blackish line which expands to a triangular blotch at costa, a similar, somewhat smaller blotch bordering the line at inner margin; subterminal white line parallel to termen, notched at vein 6 and at lower fold, towards costa bordered inwardly by a fuscous streak; discal dots at end of cell distinct, blackish; entire outer area between subterminal line and termen blackish brown. Hind wing pale smoky fuscous, with a darker line along termen and some very faint dark shading on the veins. Alar expanse, 16–19 mm.

Male genitalia as given for the genus.

TYPE LOCALITIES: "America Septentrionalis" (*eudoreella*, in Paris Mus.); Florida (Apr.; *edentella*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

Known only from males. The Hulst type is badly rubbed and shows little trace of original markings; but its genitalia agree in every detail with those of two well-marked specimens (in USNM) from Orlando, Fla. (Feb.), and Plummers Isl., Md. (July). These two specimens are in perfect agreement with Ragonot's figure of *eudoreella*.

113. Genus Palatka Hulst

Palatka Hulst, Canadian Ent., vol. 24, p. 62, 1892; U. S. Nat. Mus. Bull. 52, p. 433, 1902. (Type of genus: *Divinia nymphaeella* Hulst.)

Tongue reduced (better developed in female than male). Antenna pubescent; shaft of male with a shallow sinus at base containing a weak scale tuft and a couple of short teeth concealed within the tuft (these teeth are strongly sclerotized, pointed, dorsal projections from two of the segments); shaft of female simple. Labial palpus oblique, extending well above vertex; broadly scaled; segment 2 long; segment 3 about one-third the length of 2, acuminate. Maxillary palpus filiform. Forewing smooth; 10 veins; vein 2 from before the angle of the cell; 3 from the angle; 4 absent; 5 from slightly above the lower angle and separate from 3; 6 from below upper angle, straight; 8 and 9 stalked; 10 from the cell separate at base from stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, very closely approximate towards base; 7 and 8 closely approximate for half their distance beyond cell; cell about one-half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos an elongate, narrow hook. Uncus longer than broad, with terminal margin broadly rounded. Transtilla incomplete, elements minute. Harpe elongate, narrow, gradually tapering to bluntly pointed apex; sacculus produced at extremity into blunt, free arm directed towards costa. Anellus a broad flattened plate. Aedeagus long, moderately stout, smooth; penis armed with two stout cornuti, about half as long as aedeagus. Vinculum stout, slightly longer than broad, tapering to broadly rounded terminal margin.

Female genitalia with bursa copulatrix scobinate but without signa, thickened (but not sclerotized) at terminal end; ductus bursae shorter than bursa, strongly sclerotized from junction with bursa for a little more than half its length, on ventral surface at genital opening a broad, strongly sclerotized, triangulate plate; ductus seminalis from bursa near its junction with ductus bursae.

The genus is quite distinct from others of venational group D and easily identified by its male and female genitalia. It is closest to *Diviana*, from which it is readily separable by its hind wing venation, veins 3 and

5 approximate rather than stalked. It contains only one North American species.

412. Palatka nymphaecella (Hulst)

FIGURES 104, 462, 954

Diviana nymphaecella Hulst, Canadian Ent., vol. 24, p. 62, 1892.
Palatka nymphaecella (Hulst), Canadian Ent., vol. 24, p. 62, 1892; U. S. Nat. Mus. Bull. 52, p. 433, 1902.—Barnes and McDunnough, Contributions, vol. 3, p. 222, 1917.—McDunnough, Check list, No. 6360, 1939.
Diviana verecuntella Grossbeck, Bull. Amer. Mus. Nat. Hist., vol. 37, art. 1, p. 132, 1917.

Forewing grayish ocherous with whitish transverse line and more or less marked with brownish fuscous; in paler specimens the ocherous tint predominates, in darker one, the gray; antemedial line outwardly transverse from costa, indented at median and lower folds, in well-marked (pale) specimens bordered inwardly on lower half by a large dark patch; subterminal line rather near and parallel to termen, very slightly indented at vein 6 and lower fold and with some dark streaks bordering it near costa; discal spots distinct, blackish; a row of blackish dots along termen. Hind wings pale smoky fuscous. Alar expanse, 16–18 mm.

Genitalia as given for the genus.

TYPE LOCALITIES: Charlotte Harbor, Fla. (*nymphaeella*, in AMNH, ex Rutgers); Fort Myers, Fla. (*verecuntella*, in AMNH).

FOOD PLANT: Unknown.

DISTRIBUTION: *Florida*, Charlotte Harbor (Apr.), Everglades (Apr.), Fort Myers (Apr.); *Texas*, San Benito (Apr.); *Connecticut*, East River (July).

The Hulst type in the Rutgers Collection is only a fragment. One pair of wings, the antennae, and the abdomen are missing; but there is no doubt of what it represents. The alar expanse given by Hulst (21 mm.) is too great. It is nearer 18 mm. The Connecticut specimens (one male and six females in the National Collection) are darker than those from Florida and Texas, more grayish, and with little or no dark shading or blotches bordering the transverse lines. They show no genitalic differences.

114. Genus Cacozophera Dyar

Cacozophera Dyar, Ins. Insc. Menstr., vol. 7, p. 58, 1919. (Type of genus: *Cacozophera venosa* Dyar.)

Tongue reduced but exposed. Antenna of female pubescent, simple. Labial palpus upturned, short, not reaching vertex; third segment acuminate, shorter than second. Maxillary palpus filiform. Forewing smooth; narrowly elongate; 10 veins; vein 2 from well before outer angle of cell; 3 and 5 connate from the angle; 4 absent; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from the cell, approximate to the stalk of 8–9 for some distance. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 connate from the angle; 7 and 8 anastomosed for most of their lengths (8 very short); cell less than one-half the length of the wing; discocellular vein curved.

Female genitalia with bursa copulatrix large, finely scobinate throughout, the scobinations extending part way into the ductus bursae; signa present, consisting of a cluster of small, slender disks (three in the only specimen available); ductus bursae slightly shorter than bursa, unsclerotized; genital opening simple; ductus siminalis from bursa in the neighborhood of the signa.

The genus and its type species were erected on a single female. Dyar characterized *Cacozophera* merely as having the venation of his genus *Anthropteryx*, differing only in having the "wings long and narrow, trigonate, the apex pointed, not short and square." *Anthropteryx* itself was also erected on a single female and unfortunately is a freak with vein 4 absent from one forewing. Dyar did not notice the other forewing in which vein 4 was present and stalked with 5, the normal condition for the specimen. For further discussion of *Anthropteryx* see page 313. The placement of *Cacozophera* is tentative. Its relationship to the other genera cannot be determined until a male is discovered.

413. Cacozophera venosa Dyar

FIGURES 105, 950

Cacozophera venosa Dyar, Ins. Insc. Menstr., vol. 7, p. 58, 1919.

Forewing brownish fuscous, the area between costa and cell and vein 6 uniformly dark; below vein 6 and from end of cell the veins darkly outlined and the interspaces between them contrastingly paler; subterminal line distinct from vein 6 to inner margin, whitish, evenly curved and parallel with termen; no distinguishable antemedial line or discal spots; a faint yellowish white shade along inner margin and (under magnification) a scattered dusting of dull rosy scales on the dark areas; terminal dots blackish, large, intervenular. Hind wing smoky fuscous, the veins and terminal margin darker. Alar expanse, 19 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Cayuga, Guatemala (May, type in USNM).

FOOD PLANT: Unknown.

Known only from the female type. Obviously a good species but of uncertain affinities.

Genera 115–117: *Psorosina* to *Paconius*

[Venational division A. Forewing with 11 veins; 10 from the cell or connate or shortly stalked with stalk of 8–9; 4 and 5 approximate, connate or very shortly stalked. Hind wing with vein 2 from before lower outer angle of cell; discocellular vein curved or incomplete. Male genitalia with costa of harpe produced; cornuti developed; transtilla incomplete or absent.]

115. Genus Psorosina Dyar

Psorosina Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 113, 1904.—Forbes, Cornell Mem. 68, p. 632, 1923. (Type of genus: *Psorosina angulella* Dyar.)

Tongue well developed. Antenna pubescent; shaft of male with sinus and large scale tuft at base; shaft of female simple. Labial palpus upcurved, slender, rough

scaled, reaching to vertex in male, to slightly above in female; third segment about half the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle; 4 and 5 connate (or very shortly stalked), separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from cell, separated from stalk of 8–9; male without costal fold. Hind wing with vein 2 from before (but near) lower outer angle of cell; 3 and 5 stalked; 7 and 8 anastomosed for half their lengths beyond cell; cell about half the length of wing, partially open; discocellular vein incomplete. Eighth abdominal segment of male with two pairs of ventrolateral hair tufts.

Male genitalia with apical process of gnathos a stout hook. Uncus triangulate. Transtilla incomplete, elements minute. Harpe elongate, narrow, not appreciably tapering; apex rounded; strongly sclerotized costa projecting at apex into a short, sharp spine; clasper erect, short, weakly sclerotized. Anellus a curved U-shaped plate with broad base. Aedeagus short, stout, nearly straight; penis armed with a single, long, moderately slender cornutus (nearly as long as aedeagus). Vinculum stout, about as broad as long, slightly tapering to truncate terminal margin.

Female genitalia with bursa copulatrix scobinate over most of its inner surface; signum developed as an irregularly shaped spined plate near junction of ductus bursae; ductus bursae shorter than bursa, with a pair of narrow, sclerotized, strongly spined plates along the lateral margins, some minute scobinations in the intervening area, a fingerlike, ventral, sclerotized plate from genital opening, and a few granulations on the inner wall above genital opening; ductus seminalis from bursa near its junction with ductus bursae.

A distinct genus with one North American species; easily distinguished by venation and genitalia.

414. Psorosina hammondi (Riley)

FIGURES 62, 461, 952

Pempelia hammondi Riley, Fourth annual report on the noxious, beneficial and other insects, of the State of Missouri, p. 44, 1872.

Psorosa hammondi (Riley) Ragonot, Ent. Amer., vol. 5, p. 116, 1889.

Canarsia hammondi (Riley) Hulst, Phycitidae of N. Amer., p. 180, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 120, 1901.

Psorosina hammondi (Riley) Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 113, 1904.—Forbes, Cornell Mem. 68, p. 632, 1923.—McDunnough, Check list, No. 6335, 1939.

Psorosina angulella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 113, 1904.—Forbes, Cornell Mem. 68, p. 632, 1923.—McDunnough, Check list, No. 6336, 1939. (New synonymy.)

Forewing glossy brownish fuscous (purplish brown in some lights); antemedial line grayish white, straight, slightly curved or weakly angled at cell, slanting a trifle from costa to inner margin, of varying width depending on the amount of white scaling and sometimes (but rarely) partially divided by a fine median dark line; subterminal line obscure or indistinguishable, fine, whitish, nearly vertical from costa to tornus, very faintly bordered by blackish lines; on costa adjacent to inner border of the subterminal line a more or less extended and triangulate grayish white patch; blackish discal and terminal dots obscure, the discal dots more or less confluent. Hind wings smoky fuscous, glossy. Alar expanse, 13–14 mm.

Genitalia as given for the genus; terminal margin of vinculum broadly and shallowly notched.

TYPE LOCALITIES: Illinois (*hammondi*, in USNM); Iowa (*angulella*, in USNM).

FOOD PLANTS: Apple, pear, *Prunus maritima*. (Specimens in USNM also labeled "from sycamore" and "from acorns," but these are very dubious records.) The larva is a leaf skeletonizer.

DISTRIBUTION: *Connecticut*, East River (Aug.); *Rhode Island*, Weekapaug (Aug., Sept.); *Ohio*, Cincinnati (Aug.); *Indiana*, Bedford (July); *Illinois*, Oconee (July, Aug.); *Iowa; Kansas*, Wathena (July), Wichita (June); *Missouri*, several specimens with no further locality, St. Louis (Aug.). Rather generally distributed throughout the eastern and central United States and Canada.

Worn females of this species are superficially similar to small specimens of *Moodna ostrinella* (Clemens) and the two species have been occasionally confused. They are quite distinct, however, on both venation and genitalia. The character on which Dyar separated his *angulella* (its "strongly angled" antemedial line) is rather imaginary than real. The pale markings on the forewing of *hammondi* are formed by rather thinly spread, whitish scales and vary from specimen to specimen in size, shape, and intensity. Dyar's type is rubbed, a condition which accounts in part for the angulate condition of the antemedial line, a very slight angulation at that. Its genitalia agree in every detail with those of typical *hammondi*.

116. Patriciola, new genus

TYPE OF GENUS: *Patriciola semicana*, new species.

Tongue well developed. Antennae simple in both sexes, shortly pubescent. Labial palpus porrect (beaklike), long, projecting about four times the length of head beyond it; alike in both sexes. Maxillary palpus squamous, large; alike in both sexes. Forewing smooth; 11 veins; vein 2 from well before the lower outer angle of the cell; vein 3 remote from 2 but before the angle of the cell; 4 from the angle approximate to 5 for some distance from cell; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 connate or very shortly stalked with 8–9; male without costal fold. Hind wing with vein 2 from well before the lower outer angle of the cell; 3 from near but before the angle; 5 from the angle; 7 and 8 contiguous (touching but not completely fused) for nearly half their lengths beyond cell; cell about half the length of the wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos a rather broadly based, blunt hook produced anteriorly into a long, flat, sclerotized apron (the whole process resem-

bling, in outline, a bulbus-necked bottle). Uncus broader than long; sides nearly parallel; terminal margin broadly rounded. Transtilla incomplete; elements minute, folded. Harpe short; appressed clasper well out towards outer margin of harpe; from base of costa a long, stout, curved, strongly sclerotized and pointed clasperlike horn projects across face of harpe. Anellus a flattened plate. Aedeagus short, stout, slightly sinuate, and with apex sharply constricted; armed with a few short spines near apex; penis with a small patch of fine scobinations, otherwise unarmed. Vinculum stout, as broad as long, tapering to truncate terminal margin.

Female genitalia with bursa copulatrix finely scobinate throughout, otherwise simple, without signum; ductus bursae sclerotized, broad and very short, broadening abruptly into the sclerotized and thickened lower lip to an exceptionally wide genital opening; ductus seminalis from bursa near its junction with ductus bursae.

A striking genus easily identified by venation and genitalia. Contains one North American species.

415. Patriciola semicana, new species

FIGURES 84, 460, 953

Forewing ashy grayish white on costal half; shaded with faun brown rather heavily dusted with blackish fuscous on lower half, especially from base to antemedial line and slightly beyond; veins partially outlined by dark scaling; antemedial line distinct only from cell to inner margin, far out towards middle of wing, white, narrow, evenly incurved; subterminal line very faint, nearly obsolete, parallel to and rather far in from termen; lower discal dot at end of cell, large, distinct and blackish, a similar smaller black spot in cell over the antemedial line. Hind wing semihyaline, smoky white; veins not darkened and terminal margin only faintly so; cilia concolorous with wing. Alar expanse, 25–26 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Provo, Utah (type in USNM, 61367).

FOOD PLANT: Unknown.

Described from male type and two female paratypes from the type locality, collected by Tom Spalding July 16, 1909 (♂), and Aug. 4, 1908 (♀♀). In habitus *semicana* resembles most some specimens of *Honora* but is easily separable from anything in that genus.

117. Paconius, new genus

TYPE OF GENUS: *Paconius corniculatus*, new species.

Tongue well developed. Antenna pubescent; shaft of male with sinus and small scale tuft at base. Labial palpus upcurved, rough scaled, reaching to vertex; third segment about half the length of second, acuminate. Maxillary palpus squamous. Forewing smooth; 11 veins; vein 2 from before the lower outer angle of cell; 3 from very close to angle; 4 and 5 approximate for some distance from cell; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from the cell, shortly separated from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; veins 3 and 5 contiguous for a short distance from angle (touching but not fused at any point); 7 and 8 contiguous for less than half their lengths beyond cell; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with a weak pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos narrowly triangulate and acutely pointed. Uncus irregularly triangulate, tapering to narrowly rounded apex. Transtilla absent; elements not distinguishable. Harpe divided to base with entire costa developed as a strongly sclerotized, long, hornlike projection; remainder of harpe much reduced, triangulate and tapering to a point; clasper absent. Anellus a narrow, slightly curved plate with very long, slender, lateral arms. Aedeagus long, slender, abruptly bent toward apex; armed at apex with two thornlike spurs; penis armed with a cluster of short, rather stout spines. Vinculum stout, slightly longer than broad, very slightly tapering to broad, evenly rounded, terminal margin.

Female unknown.

Paconius has much the same venation, palpi, and antennae as the European genus *Psorosa;* but differs markedly in genitalia. In *Psorosa* the harpe is simple and the gnathos, vinculum, and anellus entirely different. *Paconius* has several features in common with *Patriciola*, with which it appears to be most closely related, differing most from that genus in its upcurved rather than porrect palpi. I dislike very much describing a new genus without having females for completion of the diagnosis on genitalic characters; but it is so obviously new and the male genitalia so different from anything else in our fauna that it seems advisable to give it some designation.

416. Paconius corniculatus, new species

FIGURE 464

Forewing pale ashy gray; transverse lines nearly obsolete; antemedial line faintly outlined, nearly straight, slanting outwardly from costa to inner margin, indicated chiefly by a small blackish spot on its inner border at inner margin and a couple of short blackish streaks on its outer border near costa; costal edge at base of wing blackish; subterminal line not defined except by a few blackish, inwardly bordering streaks near costa. Hind wing semihyaline white with a narrow fuscous shade along costa and outer margin. Alar expanse, 19 mm.

Male genitalia as given for the genus.

TYPE LOCALITY: San Germán, Puerto Rico (type in Cornell Univ.; paratype in USNM, 61368).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality collected Apr. 16 and 17, 1930, under Cornell lot 795, sub. 34 and 36.

Genera 118–120: *Aptunga* to *Cassiana*

[Venational division A. Forewing with 11 veins; 10 from cell, 8 and 9 stalked, 6 straight, 4 and 5 stalked, 2 and 3 separate or approximate. Hind wing with 7 veins; 7 and 8 strongly anastomosed, 3 and 5 approximate at base or stalked, discocellular vein curved. Male genitalia with uncus subtriangular, tapering abruptly, apical half narrow, bluntly pointed; gnathos terminating in a small, bifid, hooked process; transtilla incomplete, represented by a pair of separate, elongate plates; harpe simple, elongate, apex obliquely rounded; vinculum stout, decidedly longer than broad; aedeagus moderately stout, straight; penis without cornutus. Female genitalia with ductus seminalis from bursa.]

118. Aptunga, new genus

TYPE OF GENUS: *Vitula macropasa* Dyar.

Tongue well developed. Antenna pubescent, shaft simple in both sexes. Labial palpus obliquely upturned. Maxillary palpus filiform. Forewing narrowly elongate, smooth; veins 2 and 3 closely approximate from lower outer angle of cell; stem of 4–5 approximate to 3; vein 10 from the cell, rather well separated from stalk of 8–9; male without costal frold or other sexual modifications. Hind wing with vein 2 from well before angle of cell; 3 and 5 closely approximate at lower, outer angle of cell; 7–8 anastomosed for most of their lengths beyond cell (free end of vein 8 very short and weak); cell less than half the length of wing. Abdomen of male with a strong pair of ventrolateral hair tufts from eighth segment.

Male genitalia with apical process of gnathos small, bifid; aedeagus simple (without longitudinal ventral sclerotized ridge).

Female genitalia without signum; bursa copulatrix more or less finely scobinate in the area about attachment of ductus seminalis, otherwise smooth; ductus bursae smooth except for a weak sclerotization near genital opening and some fine scobinations at junction with bursa; ductus seminalis from middle or near middle of bursa.

This genus and the two genera following are closely related to each other and *Mescinia*, agreeing in nearly all male genitalic characters but differing in venation. *Aptunga* is similar in hind wing venation to *Mescinia*, differing from the latter in having veins 2 and 3 of forewing closely approximate at base rather than stalked, and lacking the signum in bursa of the female.

417. Aptunga macropasa (Dyar), new combination

FIGURES 85, 465, 958

Vitula macropasa Dyar, Ins. Insc. Menstr., vol. 7, p. 61, 1919.

Forewing grayish fuscous; antemedial line obscure, whitish, bordered outwardly by a diffused dark shade; subterminal line narrow, whitish, decidedly slanting and slightly angled near middle, shaded inwardly and outwardly by dark streaks on the veins; a row of small blackish dots along termen; discal dots at end of cell separate, somewhat elongate; under magnification costa shows a peppering of reddish scales. Hind wing whitish, semihyaline, the veins outlined with fuscous and a fuscous shade bordering costa and along terminal margin. Alar expanse, 19–23 mm.

Male genitalia with weak sclerotized granulations and wrinklings on penis. Female genitalia with a narrow band of sclerotized granulations on inner dorsal surface of ductus bursae at genital opening.

TYPE LOCALITY: Purulhá, Guatemala (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: GUATEMALA: Chejel (Aug.), Purulhá (July), Volcán Santa María (Nov.). MÉXICO: Orizaba.

418. Aptunga imperfecta (Dyar), new combination

FIGURE 957

Mescinia inperfecta Dyar, Ins. Insc. Menstr., vol. 7, p. 60, 1919.

Considerably shorter and somewhat paler than *macropasa*, the general color (in the rubbed type) more brownish than grayish fuscous; no trace of reddish scaling in costal area of forewing; discal dots fused into a single round dark spot. Hind wing darker, less hyaline than that of *macropasa*. Alar expanse, 14 mm.

Female genitalia with the ductus bursae appreciably but not strongly sclerotized and granulate for a short distance from genital opening.

TYPE LOCALITY: Cayuga, Guatemala (Apr., type in USNM).

FOOD PLANT: Unknown.

Known only from the female type; described by Dyar in *Mescinia* but ruled out of that genus by its forewing venation and lack of signum.

119. Anderida, new genus

TYPE OF GENUS: *Euzophera sonorella* Ragonot.

Tongue well developed. Antenna pubescent, shaft simple in both sexes. Labial palpus obliquely upturned. Maxillary palpus filiform. Forewing narrowly elongate, smooth; vein 2 from near angle of cell but well separated from 3; 10 from cell, separate from stalk of 8–9; male without costal fold or other sexual modifications. Hind wing with 3 and 5 stalked; 7–8 anastomosed for at least two-thirds the length of vein 7; cell approximately half the length of wing. Abdomen of male with strong pair of ventrolateral hair tufts from eighth segment.

Male genitalia as in *Aptunga* except apical process of gnathos partially fused.

Female genitalia with signum; ductus seminalis from anterior end of bursa; ductus bursae with a thin sclerotized shield on venter at genital opening and more or less finely scobinate towards bursa, otherwise smooth.

419. Anderida sonorella (Ragonot), new combination

FIGURES 467, 959

Euzophera senorella Ragonot, N. Amer. Phycitidae, p. 14, 1887; Monograph, pt. 2, p. 59, 1901.

Euzophera sonorella Ragonot, Nouv. Gen., p. 4, 1888 (correction of spelling).

Eyzophera placidella Dyar, Proc. Ent. Soc. Washington, vol. 10,

p. 115, 1908.—McDunnough, Check list, No. 6314, 1939. (New synonymy.)

Forewing ashy gray on costal half shading to white on costa; lower half of wing shaded with ocherous gray; rather narrow antemedian and subterminal bands strongly contrasted, blackish fuscous, antemedian band slightly curved, nearly vertical, ending just before costa; discal dots small, blackish, the upper one obscure and frequently absent. Hind wing whitish with a faint gray or ocherous tint. Alar expanse, 16–22 mm.

Female genitalia with signum very weak, consisting of a cluster of 3 to 5 small disks; bursa copulatrix finely scobinate.

TYPE LOCALITIES: "Senora" [sic], México (*sonorella*, in Paris Mus.); Yuma County, Ariz. (*placidella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, Huachuca Mts., Santa Catalina Mts., Redington, Yuma County (Colorado Desert). MÉXICO: Sonora.

In some of the female specimens before me from Redington, Ariz., the transverse dark markings are rather faint, almost obsolete in a few examples and there is considerable variation in size, but the general habitus and genitalia easily distinguish the species.

120. Cassiana, new genus

TYPE OF GENUS: *Vitula malacella* Dyar

Tongue well developed. Antenna pubescent; in male with a row of 6 or 7 short slender spines along outer side of shaft towards base, shaft somewhat swollen. Labial palpus upturned; in female slightly oblique. Maxillary palpus filiform. Forewing smooth; venation as in *Aptunga*, veins 2–3 closely approximate from angle of cell; male with a strong costal fold terminating at basal third in an outwardly projecting brush of scales. Hind wing with veins 3–5 stalked; 7–8 anastomosed for most of their lengths (free end of vein 8 a short, weak spine); cell about half the length of wing. Abdomen of male with a strong pair of ventrolateral hair tufts from eighth segment.

Male genitalia with apical process of gnathos small, bifid; aedeagus with a sclerotized, longitudinal, ventral ridge for over half its length from base.

Female genitalia with signum; ductus seminalis from anterior end of bursa.

420. Cassiana malacella (Dyar), new combination

FIGURES 466, 955, 956

Vitula malacella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 408, 1914.

Forewing pale grayish fuscous, the area between cell and costa white with a faint, scattered dusting of reddish scales; costal edge from base to one-third (the extent of the costal fold) blackish; transverse antemedial line obsolete; subterminal line but faintly indicated. Hind wing whitish, the veins outlined by dark scales, and a narrow smoky border along termen and costa. Alar expanse, 15–17 mm.

Male genitalia with lateral margins of vinculum concave, terminal margin straight. Female genitalia with signum variable, consisting of from one small platelike projecting disk to a line of similar disks (examples of the extreme types in two Puerto Rican specimens are shown in figs. 955, 956); bursa and considerable part of ductus bursae finely scobinate.

TYPE LOCALITY: Tehuacán, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Tehuacán (May). PUERTO RICO: Bayamón (Sept.), Puerto Real (Apr.), Río Piedras (Sept.). VIRGIN ISLANDS: Kingshill (St. Croix, Mar., Dec.).

Genus 121: *Mescinia*

[Venational division B. Forewing with 11 veins: 10 from cell, 8 and 9 stalked, 4 and 5 stalked, 2 and 3 stalked. Male genitalia with transtilla incomplete.]

121. Genus Mescinia Ragonot

Mescinia Ragonot, Monograph, pt. 2, p. viii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 83, 1901. (Type of genus: *Ephestia commatella* Zeller.)

Tongue well developed. Antenna pubescent; shaft slightly thickened towards base in male, simple in female. Labial palpus obliquely upturned, reaching to vertex. Maxillary palpus filiform. Forewing smooth, narrowly elongate; termen slanting; 11 veins; veins 2 and 3 from angle of cell, stalked; 4 and 5 stalked; 6 straight; 8 and 9 stalked; 10 from the cell, separate from the stalk of 8–9; male with a short costal fold at base of wing. Hind wing with vein 2 from well before lower angle of cell; 3 and 5 from angle and closely approximate at base; 6 from upper angle of cell; 7 and 8 strongly anastomosed beyond cell (in small species completely fused or showing the free part of vein 8 as a short spur to costa); discocellular vein curved; cell one-third to two-fifths of wing length.

Male genitalia with uncus subtriangular, tapering abruptly from broad base, terminal half narrow and apex bluntly pointed (except in *indecora*), outer surface covered with bristlelike scales. Gnathos terminating in a small, or moderately small, bifid apical process (except in *indecora*). Harpe simple, with costa sclerotized for most of its length. Anellus U-shaped with long lateral arms. Aedeagus straight, moderately stout, a strong, longitudinal, sclerotized ridge on ventral side. Penis more or less scobinate and frequently with sclerotized patch and wrinklings. Vinculum stout, considerably longer than broad (except in *indecora*) and with terminal margin truncate.

Female genitalia with bursa copulatrix membranous, finely scobinate over part of inner surface (especially about signum and near ductus bursae); signum normally an oval or round sclerotized plate covered with short, blunt or bluntly pointed thorns, or a single stout platelike thorn (*indecora*), or absent (*discella*). Ductus bursae membranous except for a slight sclerotization near genital opening, finely scobinate toward bursa.

Ductus seminalis from anterior end of bursa or from bursa near its juncture with ductus bursae.

The genus *Mescinia* is closely related to the foregoing three genera (*Aptunga, Anderida, Cassiana*) and to *Nonia*, all of which have similar genitalia, especially in the male, but which are readily separable on venation. *Mescinia* is an American genus without, as far as I know, any properly included exotic species. Hampson (*in* Ragonot, Monograph, pt. 2, pp. 84, 86) includes one Indian species, *micans* Hampson, but this obviously is wrongly referred for it lacks vein 10 of forewing and has 4 and 5 from the cell and not stalked as they should be for *Mescinia*.

Our species divide into three groups on size as follows:

Alar expanse less than 15 mm.
Alar expanse more than 15 but less than 20 mm.
Alar expanse more than 20 mm.

The first two groups are typical *Mescinia* on all structural characters, but the two large species in the third group are somewhat abnormal, especially *indecora*, which is aberrant on both male and female genitalia. The other species (*discella*) has normal male genitalia, but the female lacks a signum, and in both the anastomosis of veins 7 and 8 of hind wing is considerably shorter than in normal *Mescinia*.

Among the species of the first group the color and pattern differences are trifling, and the distinctions stressed by Dyar between his species are as much due to the condition of the specimens as to differences in color or intensity of dark scaling. Genitalic differences are also slight, but apparently more reliable. The best characters are found in the signa, the apical process of gnathos, and the armature of the penis. With the few specimens from widely scattered localities and the scanty biological information available, it is almost impossible to define specific limits in this group with any certainty.

Genus *Mescinia*, Species 421–428: *M. triloses* to *M. berosa*

[Alar expanse less than 15 mm.]

421. Mescinia triloses Dyar

FIGURES 468, 965

Mescinia triloses Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 341, 1914.

Mescinia mosces Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 341, 1914 (new synonymy).

Forewing sordid white, the costal area paler and contrasted; dark markings pale brownish fuscous; discal dots more or less confluent; antemedian line obscure; subterminal dark line rather well marked in unrubbed specimens; in fresh examples a dark streak along outer half of fold (replacing the absent vein 1c). Hind wing whitish, the veins faintly outlined by dark scaling; discocellular vein slightly curved. Veins 2 and 3 of forewing are stalked for about one-third and veins 4–5 for approximately one-half their lengths. Alar expanse, 10–14 mm.

TYPE LOCALITY: Taboga Isl., Panamá (*Triloses* and *Mosces*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Alhajuelo (Apr.), Corazal (Feb.), Taboga Isl. (Feb.).

The specimens of Dyar's *mosces* are a trifle darker and more strongly marked than those of *triloses*, but they represent only the least rubbed of a series collected on the same date at the same locality and exhibit no structural differences of any significance in genitalia. I am unable to distinguish any trace of the "faintly pinkish" color which Dyar mentions in his descriptions.

422. Mescinia pandessa Dyar

FIGURE 469

Mescinia pandessa Dyar, Ins. Insc. Menstr., vol. 7, p. 60, 1919.

In color and markings similar to the females of *mosces*. Possibly nothing more than a variety or race of *triloses*, but exhibiting a few slight structural differences: Narrower harpes, a somewhat stronger scobination on penis, and a wider spacing of the bifid apical process of gnathos. Such differences are hardly significant, but in the absence of females it is safer to retain the names in specific rank for the present. Veins 2 and 3 of forewing stalked for two-thirds and 4 and 5 for one-half or slightly more than one-half of their lengths. Discocellular vein of hind wing as in *triloses*. Alar expanse, 12–13 mm.

TYPE LOCALITY: Cayuga, Guatemala (Apr., type in USNM).

FOOD PLANT: Unknown.

Known only from the types series from Cayuga. The specimens in the National Collection are all males.

423. Mescinia bacerella Dyar

FIGURES 94, 470, 962

Mescinia bacerella Dyar, Ins. Insc. Menstr., vol. 7, p. 59, 1919.

General color somewhat darker than *triloses* or *pandessa;* costal area of forewing more contrasted, whitish with a scattering of reddish brown scales. Genitalia showing only minute differences from those of preceding species. Veins 2 and 3 of forewing stalked for two-thirds and 4 and 5 stalked for one-half their lengths. Discocellular vein of hind wing very slightly curved. Alar expanse, 12 mm.

TYPE LOCALITY: Havana, Cuba (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: CUBA: Havana, Sierra Maestra (Jan.).

424. Mescinia estrella Barnes and McDunnough

FIGURES 473, 963

Mescinia estrella Barnes and McDunnough, Contributions, vol. 2, p. 182, 1913.—McDunnough, Check list, No. 6322, 1939.

Wing pattern similar to that of other species in this group, but (in reared examples especially) dark markings more intense and whitish costal area of forewing more conspicuously dusted with reddish scales. Male genitalia similar to those of *pandessa* except bifid apical

process of gnathos (fig. 473) somewhat more widely divided (as in *parvula*). The spining of the female signum is almost identical to that of *triloses* (compare figs. 468 and 963). Veins 2 and 3 and 4 and 5 of forewing stalked from slightly less than one-half to about one-half their lengths, discocellular of hind wing decidedly curved. The length of the stalking of the forewing veins should not be given too much importance in identifying species, for it is a variable character in any considerable series of any given species. Alar expanse, 12–14 mm.

TYPE LOCALITY: Everglade, Fla. (type in USNM).

FOOD PLANTS: *Melanthara radiata* (rearings of the Special Survey of the Div. Foreign Plant Quar., U. S. Bureau of Entomology and Plant Quarantine, Nos. 24851, 24867); *Bidens* (larva in the flower heads).

DISTRIBUTION: *Florida*, Everglade (Apr.), Key West (Apr.), Sugar Loaf Key (Mar.), Sarasota (Jan., Feb., Mar.).

425. Mescinia moorei, new species

FIGURE 472

In color and superficial appearance most resembling *bacarella* but differing in details of genitalia, a somewhat broader extension of the whitish costal margin of forewing and less contrasted dark border of the subterminal line. The outstanding character seems to be the narrow, evenly spaced, parallel, and somewhat elongate prongs of the bifid apical process of gnathos (fig. 472c). Veins 2 and 3 of forewing are stalked for about one-third and veins 4–5 for approximately half their lengths. Alar expanse, 11 mm.

TYPE LOCALITY: Mon Repos, British Guiana (type in USNM, 61369).

FOOD PLANT: Seeds of *Wulffia*.

Described from male type and female paratype from the type locality reared by H. W. B. Moore, for whom the species is named. There are no dates on the specimens and they are in poor condition, somewhat broken though not badly rubbed. I should not have described them had they not been reared and been previously identified as *parvula* Zeller and that name probably been given to Mr. Moore. The species should be easily recognized if other specimens from the host plant are discovered in British Guiana.

426. Mescinia parvula (Zeller)

FIGURES 471, 960

Ephestia parvula Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 249, 1881.

Mescinia parvula (Zeller) Hampson, *in* Ragonot, Monograph, pt. 2, p. 85, 1901.

Similar to the other species of the group in color and markings, except for the much darker, more contrasted lining of the veins of hind wing. Differs strikingly from all other described species of the genus in the angulate projection from the costa of harpe. Alar expanse, 12 mm.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: COLOMBIA: Honda.

There are no examples of *parvula* in the U. S. National Museum and the series in the British Museum is probably mixed, as Hampson mentions a specimen from Colombia with veins 2 and 3 from the cell.

427. Mescinia commatella (Zeller)

FIGURE 961

Ephestia commatella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 247, 1881.

Mescinia comatella (Zeller) Ragonot, Monograph, pt. 2, p. 84, 1901.

Known to me only from description and figure of the female type. Apparently distinguished by the incomplete but strong white antemedian fascia, slanting obliquely from inner margin to top of cell and parallel with outer margin. Alar expanse, 13 mm.

The female genitalia of the type shows a single small disklike signum.

TYPE LOCALITY: Ceiba, Colombia (type in BM).

FOOD PLANT: Unknown.

428. Mescinia berosa Dyar

FIGURE 966

Mescinia berosa Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 341, 1914.

The female type from which the original description was drawn is faded and somewhat rubbed. A fresher female example from Puerto Rico shows the dark areas of forewing a dark vinous fuscous and the whitish costal area somewhat speckled with rufous scales; discal and terminal dots blackish. Hind wing smoky, the veins, apical area, and terminal margin darker. Female genitalia with bursa copulatrix narrowly elongate; signum a large elongate patch of many stout, bluntly pointed, thornlike spines; ductus seminalis from bursa near juncture of bursa and ductus bursae. Veins 2 and 3 of forewing stalked for about two-thirds and 4 and 5 for slightly more than half their lengths. Discocellular vein of hind wing decidedly curved. Alar expanse, 12 mm.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Río Trinidad (Mar.). PUERTO RICO: El Semil, near Villalba, elevation 1,700 feet (May).

Known to me only from two female examples in the National Collection.

Genus *Mescinia*, Species 429: *M. peruella*

[Alar expanse more than 15, less than 20 mm.]

429. Mescinia peruella Schaus

FIGURES 474, 964

Mescinia peruella Schaus, Proc. Ent. Soc. Washington, vol. 29, p. 186, 1927.—Wille, Rev. de Ent., Brazil, vol. 4, p. 455, 1934.

Forewing gray with costa whitish nearly to apex; under magnification showing a sparse, scattered dusting of rufous scales; transverse markings and discal spots

hardly distinguishable. Hind wing white, translucent, extreme apex and terminal margin faintly smoky. Male genitalia with apical process of gnathos moderately large (proportionally about twice the size of that organ in the foregoing species group). Female genitalia with spines of signum bluntly and broadly rounded. Veins 2 and 3 and 4 and 5 of forewing stalked for about one-third their lengths (in some specimens 2–3 stalked for nearly one-half). Discocellular vein of hind wing very slightly curved. Alar expanse, 15–18 mm.

TYPE LOCALITY: Cañete Valley, Perú (type in USNM).

FOOD PLANT: Cotton (larvae feeding in bolls).

DISTRIBUTION: PERÚ: Cañete Valley (Mar.), Lima (Sept.).

Genus *Mescinia*, Species 430 and 431: *M. discella* and *M. indecora*

[Alar expanse over 20 mm.]

430. Mescinia discella Hampson

FIGURES 475, 967

Mescinia discella Hampson, *in* Ragonot, Monograph, pt. 2, p. 84, 1901.

Forewing a pale purplish fuscous on lower half, yellowish (bronzy) above, shading to white on outer half of subcostal area; costal edge yellowish brown with some blackish scales towards base; a bright orange-yellow patch towards end of cell; along median fold a fine line of blackish scales; a similar blackish line along the fold replacing vein 1c; from end of cell to subterminal line blackish dashes on veins 2 and 3, 4 and 5 and 6, more or less fusing to form a large, conspicuous, dark blotch; discal spots fused into a blackish line along discocellular vein; a row of faint black dots along termen; antemedial line very faint, narrow, white, outwardly angled at lower margin of cell and inwardly angled at vein 1b; subterminal line sharply angled inward at vein 6, thence curved outward around the blackish blotch, disappearing near costa and inner margin. Hind wing whitish, semihyaline; the veins and terminal margins faintly and finely outlined with purplish ocherous; veins 7 and 8 anastomosed for little more than half the length of vein 7; discocellular vein decidedly curved. Alar expanse, 20–21 mm.

Male genitalia with bifid apical process of gnathos elongate, rather large; anellus with enlarged base and curved lateral arms; penis with a strong cluster of sclerotized folds. Female genitalia with signum replaced by a concentration of scobinations; ductus bursae weakly sclerotized towards genital opening; ductus seminalis from bursa near its junction with ductus bursae.

TYPE LOCALITY: Jalapa, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Jalapa, Orizaba. GUATEMALA: Volcán Santa María (Nov.).

The species is easily recognized by its bronzy color and the conspicuous blackish markings beyond the cell.

431. Mescinia indecora Dyar

FIGURES 476, 968

Mescinia indecora Dyar, Ins. Insc. Menstr., vol. 8, p. 35, 1920.

Forewing grayish fuscous with a faint purplish tint; the median area between faint, dark, antemedian and subterminal lines weakly shaded with blackish fuscous; costal area narrowly sordid whitish; discal dots blackish. Hind wings semihyaline, the veins faintly outlined in ocherous fuscous, a similar narrow shade along termen; veins 7 and 8 anastomosed for little more than half the length of vein 7; discocellular vein curved. Alar expanse, 22–23 mm.

Male genitalia with uncus broadly triangulate, slightly tapering and with apex broadly rounded; apical process of gnathos completely fused, large, roughly triangular and with angles more or less rounded; anellus with lateral arms broad and narrowly divided; vinculum stout and about as long as broad. Female genitalia of type damaged, so that little remains of bursa except the signum, which is a rather large, flattened, platelike thorn.

TYPE LOCALITY: Zacualpán, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Zacualpán (July), Techuacán (July).

The species fits badly in *Mescinia* on genitalic characters. Uncus, anellus, gnathos, the short vinculum, and the female signum are unlike any of these structures in the other species of the genus and suggest a separate generic placement, which may be necessary when more material can be studied and something is known of the earlier stages and biology. At present *indecora* is represented by only two specimens in the National Museum.

Genus 122: *Nonia*

[Venational division B. Forewing with 9 veins: 10 from the cell, 8 and 9 united, 4 and 5 stalked, 2 and 3 united. Male genitalia with transtilla incomplete.]

122. Genus Nonia Ragonot

Nonia Ragonot, Monograph, pt. 2, p. xiii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 260, 1901. (Type of genus: *Homoeosoma exiguella* Ragonot.)

Hypermescinia Dyar, Proc. Ent. Soc. Washington, vol. 47, p. 341, 1914. (Type of genus: *Hypermescinia lambella* Dyar. New synonymy.)

Tongue well developed. Antenna pubescent; shaft simple in both sexes. Labial palpus obliquely upturned. Maxillary palpus filiform. Forewing smooth; 9 veins; veins 2 and 3 united from very near angle of cell; 4 and 5 stalked; 8 and 9 united; 10 from the cell, separate from 8–9; male with fringe of hair or scales from underside of costa towards base, but without costal fold. Hind wing with vein 2 from well before lower angle of cell; 3 and 5 from angle and closely approximate at base; 6 from upper angle of cell; 7 and 8 completely fused beyond cell; discocellular vein curved; cell one-third of wing length. Abdomen of male with

a strong pair of ventrolateral tufts from eighth segment.

Male genitalia of the *Mescinia* type but with all the parts more slender. Female genitalia with signa a cluster of several very small disks; ductus seminalis from bursa near its juncture with ductus bursae.

The male genitalia show the close affinity of *Nonia* to *Mescinia* and show that Dyar's interpretation of the forewing venation rather than that of Ragonot and Hampson is the correct one; that is, 2 and 3 united and 4 and 5 stalked rather than 4 and 5 united and 3 stalked with 5. Ragonot and Hampson are also in error in regard to the discocellular vein of hind wing. I have examined the type of *exiguella*, and it has the discocellular vein decidedly curved, as have all the Central and South American and Puerto Rican specimens in the National Museum and Cornell University Collections. The genus contains only one described species.

432. Nonia exiguella (Ragonot)

FIGURES 89, 477, 969

Homoeosoma exiguella Ragonot, Nouv. Gen., p. 35, 1888.
Nonia exiguella (Ragonot), Monograph, pt. 2, p. 260, 1901.
Hypermescinia lambella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 341, 1914 (new synonymy).

Forewing whitish gray overshaded (especially in fresh specimens) with vinaceous fawn, whitish along costa; antemedial line from costa beyond one-third, broken, represented (except in the darkest, most strongly marked specimens) by two or three blackish spots; a dark fuscous shade on inner margin at base; subterminal line, narrow, blackish, slanting from costa to outer fourth of inner margin; discal spots conspicuous and confluent, blackish. Hind wings whitish in male, somewhat fuscous in female, veins and termen slightly darker. Alar expanse, 10–12 mm.

Male genitalia figured from types of *exiguella* and *lambella*, which are identical in all details.

TYPE LOCALITIES: Colombia (*exiguella*, in Mus. Univ. Berlin); Tabernilla, Panamá (*lambella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PUERTO RICO: Dorado (Dorado, May), La Sardinera (June); San Germán (Mayagüez, Apr.); Isabela and Puerto Real (Vieques Isl., Apr.). VIRGIN ISLANDS: Kingshill (St. Croix, Nov., Dec.). JAMAICA. GUATEMALA: Cayuga (Feb., May). PANAMÁ: La Chorrera (May), Porto Bello (Feb.), Tabernilla, Río Trinidad (June). COLOMBIA. BRAZIL: Viçosa (Minas Gerais, Oct.). PARAGUAY: Villarrica (July).

Genus 123: *Phestinia*

[Venational division B. Forewing with 10 veins; 10 from the cell, 8 and 9 long stalked, 2 and 3 united.]

123. Genus Phestinia Hampson

Phestinia Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 57, 1930. (Type of genus: *Phestinia costella* Hampson.)

Tongue well developed. Antenna of female simple, a few projecting scales at each of the joints. Labial palpus upturned, slender, somewhat rough scaled; second segment reaching to vertex; third segment nearly as long as second, bluntly pointed. Maxillary palpus small but rather broadly and flatly scaled (squamous) and appressed to face. Forewing smooth; 10 veins; veins 2 and 3 united, from just before lower outer angle of cell; 4 and 5 from the angle, stalked for nearly half their lengths, the stalk separated at base from 2–3; 6 from below upper angle of cell, straight; 8 and 9 long stalked; 10 from the cell, separate at base from stalk of 8–9. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, connate (or very closely approximate) at base; 7 and 8 anastomosed for most of their lengths beyond cell; cell about one-third the length of wing; discocellular vein curved.

Female genitalia with bursa copulatrix smooth except for signum; signum a small disk with short projecting spine (or spines) from lower margin; ductus bursae considerably longer than bursa, simple except for a moderately broad sclerotization of the tube at genital opening; ductus seminalis from bursa near its junction with ductus bursae.

The genus was erected for a single species described from a single female specimen (not a male as stated by Hampson); so the foregoing diagnosis is incomplete. However, the venation and female genitalia are sufficient to show its distinctness from and close relationship to *Nonia*. It differs from the latter chiefly in having veins 9 of forewing and 8 of hind wing both present.

433. Phestinia costella Hampson

FIGURES 92, 970

Phestinia costella Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 57, 1930.

In general habitus similar to *Nonia exiguella*, but with darker areas more suffused and dark antemedial and discal markings less strongly contrasted. Hampson's description of the dark suffusion as "red-brown" is somewhat exaggerated. There is a faint vinaceous tint to the brown, but it is hardly describable as red. Clarke has examined the genitalia of the female type and furnished me with a sketch of the signum (fig. 970b) and venation (fig. 92). I have seen no examples from the type locality, but have before me a rather worn female from the Cornell Collection, taken at San Germán, Puerto Rico, Apr. 17, 1930, which is certainly congeneric, and probably conspecific, with *costella*. It differs in that the signum (fig. 970a) has only one spine from the lower margin of signum. There are two spines in the type of *costella*. It is also smaller. Otherwise the Puerto Rican example agrees with the type. The venational details of the two specimens are identical. Alar expanse, 16–20 mm.

TYPE LOCALITY: Constant Springs, Jamaica (type in BM).

FOOD PLANT: Unknown.

Genera 124 and 125: *Comotia* and *Bema*

[Venational division E. Forewing with veins 9 and 4 absent, rarely (in some specimens of *Bema*) with a vestigial indication of 9 from 8 near apex. Hind wing with discocellular vein straight, vertical or slanting. Male genitalia with hooked apical process of gnathos small, bifid or partially fused; transtilla incomplete; uncus slender.]

124. Genus Comotia Dyar

Comotia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 343, 1914. (Type of genus: *Comotia torsicornis* Dyar.)

Antenna of male (fig. 478d) pubescent; basal segment enlarged and elongate, flattened on inner side (not triangular or armed with a spine as stated by Dyar); shaft flattened, the first half-dozen segments enlarged and excavated into a pocket (sinus) enclosing modified scales and followed by a ridge of crests on the following three or four segments; female antenna simple. Tongue well developed. Labial palpus upturned. Maxillary palpus filiform. Forewing narrowly elongate, smooth; nine veins; vein 2 from before angle; 3 and 5 shortly stalked; 10 from cell, close to 8; male without costal fold. Hind wing with vein 2 from well before lower angle of cell; 3 and 5 from the angle and approximate at base; 7 and 8 completely fused beyond cell (rarely a vestige of 8 discernible as a short spur near apex); discocellular vein straight and vertical; cell very short, less than one-fourth of wing length. Abdomen of male with a pair of weak ventrolateral tufts from eighth segment.

Male genitalia of the *Mescinia* type, but with vinculum shorter (but slightly longer than broad), apical process of gnathos bifid, aedeagus constricted towards apex. Female with signum a single projecting disk, ductus bursae unsclerotized at genital opening, ductus seminalis from bursa near its junction with ductus bursae.

434. Comotia torsicornis Dyar

FIGURES 117, 478

Comotia torsicornis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 343, 1914.

Forewing sordid white, lightly dusted with fuscous; costal area not appreciably paler; discal dots at end of cell separate, dark fuscous; some dark fuscous dots along termen. Hind wing translucent, smoky white with veins and termen faintly darkened. Alar expanse, 13 mm.

Male genitalia with some fine scobinations on penis.

TYPE LOCALITY: Porto Bello, Panamá (Mar., type in USNM).

FOOD PLANT: Unknown.

Known only from the male type which is somewhat rubbed. Fresh specimens would probably exhibit pattern markings of a more distinctive type and contrasting color. The female from Taboga Isl. which Dyar associated with his type does not belong in *Comotia*. It is a specimen of *Bema myja*.

300329—56——15

435. Comotia convergens (Dyar), new combination

Bema convergens Dyar, Ins. Insc. Menstr., vol. 7, p. 59, 1919.

A trifle larger than *torsicornis* and with slightly longer labial palpi (they reach to vertex in *torsicornis* and slightly beyond in *convergens*), but otherwise similar. The species is known only from the male type and one other male from the type locality (not a female, as stated by Dyar). These specimens are somewhat rubbed, so no distinct wing pattern is discernible. The exact status of *convergens* will have to wait upon more and better material of both it and *torsicornis*. I doubt that it is specifically distinct. Dyar's placement of it in Bema was obviously a blunder. Alar expanse, 15 mm.

TYPE LOCALITY: Cayuga, Guatemala (May, type in USNM).

FOOD PLANT: Unknown.

Comotia sp.

FIGURE 971

The only female of the genus that I have seen is a rubbed specimen in the Cornell Collection from Jajoma Alta, Puerto Rico (collected by W. A. Hoffman, June 18, 1930). Enough of the scaling remains to indicate that fresh specimens of *Comotia* will exhibit a rather well-marked pattern with a sprinkling of rufous scales among the fuscous scaling of the darker areas. The venation of fore and hind wings is identical with that of the male. I suspect that this specimen is a female of *torsicornis*, but exact specific identification must wait upon receipt of more material from Puerto Rico and Central America. Alar expanse, 15 mm.

125. Genus Bema Dyar

Bema Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 356, 1914. (Type of genus: *Bema myja* Dyar.)

Relmis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 336, 1914. (Type of genus: *Relmis ydda* Dyar. New synonymy.)

Antenna of male pubescent, with basal segment enlarged, triangular, and with shaft projecting from one corner (fig. 479e); shaft slightly swollen towards base, otherwise simple. Antenna of female simple. Male head (fig. 479d) hollowed between antennae and with a strongly sclerotized, hollowed tubercle projecting upward from front and bearing a ring of modified scales; these structures absent from female. Labial palpus upturned. Maxillary palpus filiform. Forewing narrowly elongate, smooth; normally with nine veins (in some specimens, see figs. 119 and 120, a vestige of vein 9 present); vein 10 from the cell closely approximate to 8; 2 from before lower angle of cell; 3 and 5 separate; male with costal fold. Hind wing with 2 from well before lower angle of cell; 3 and 5 from the angle and approximate at base; 7 and 8 completely fused beyond cell (rarely with a vestige of vein 8 near terminal end of 7); discocellular vein straight and slanting inward from lower angle; cell short, less than one-third the wing

length. In male a pair of hair tufts on underside of prothorax and lying within grooved forecoxae. Abdomen of male with two pairs of dorsolateral hair tufts from eighth segment; ventral membranous area of eighth segment covered with enlarged scales, these and the hair tufts set in elongate sclerotized tubercles (fig. 479c).

Male genitalia similar to those of *Nonia* except harpe broadly oval, sclerotized costa strongly arched and terminating in a short, free spur at apex; apical process of gnathos partially fused; vinculum long and narrow, with lateral margins subparallel (very slightly concave), and anterior margin indented.

Female genitalia with signum a single projecting digitate disk; ductus bursae unsclerotized at genital opening; ductus seminalis from anterior end of bursa.

The genus is easily identified by its characteristic genitalia. It is difficult to see how Dyar justified his separation of species into two genera (*Bema* and *Relmis*) since he had a female of *myja* and females of *ydda* and *fifaca* before him and not a single structural character to separate them except a trifling difference in the length of the labial palpi, at best specific, and here no greater between females of *myja* and *ydda* than between the females and males of *myja*.

436. Bema neuricella (Zeller), new combination

FIGURES 118, 119, 120, 479, 972

Ephestia neuricella Zeller, Isis von Oken, p. 862, 1848.—Ragonot, Monograph, pt. 2, p. 288, 1901.

Bema myja Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 336, 1914 (new synonymy).

Forewing grayish fuscous, basal area paler; antemedial white line straight and slanting outwardly from costa to inner margin and with a blackish shading along its outer margin; subterminal line obscure, whitish, indented below costa (at vein 8) and, very slightly, at submedian fold; discal dots obscure, blackish; veins more or less outlined by dark scaling. In older specimens the dark markings are a pale brownish fuscous. Hind wings semitransparent, smoky white with veins darker and a dark shade at apex and along termen. Alar expanse, 15–19 mm.

Specific differences in male genitalia are slight in the genus and comparative only, mostly in the size of the aedeagi, the harpes, and the width of the vinculum. Female genitalia with signum very small and of nearly uniform size but variable in shape and number of digitate projections. Variations in signa shown in figures 972a–d. Equal variability exhibited in a series from one locality.

TYPE LOCALITIES: "St. Thomas," [Virgin Islands] (*neuricella*, ♀, in Mus. Univ. Berlin); Taboga Isl., Panamá (*myja*, ♂, in USNM).

FOOD PLANT: *Inga* sp.

DISTRIBUTION: CUBA: *Habana*, Santiago (3 moths reared under E. E. A. de Cuba No. 9600, from larvae boring in seeds of *Inga* sp.; A. Otero, collector; only host record available). BAHAMAS: Cay Santo Domingo (Sept.). PUERTO RICO: Lares (July, Dec.). VIRGIN ISLANDS: St. Thomas, Kingshill (St. Croix, Oct., Nov., Dec.). GUATEMALA: Cayuga (Apr., May., June). PANAMÁ: Taboga Isl. (Feb.). TRINIDAD. FRENCH GUIANA: St. Laurent du Maroni.

This species is represented by 65 specimens (11 ♂ and 54 ♀) in the National and Cornell University Collections. All the males are more or less rubbed and show very little of the original color or pattern. The females are in better condition, especially those from Guatemala and St. Croix, and once the sexes are properly associated it is not difficult to identify the species.

437. Bema fritilla Dyar

Bema fritilla Dyar, Ins. Insc. Menstr., vol. 7, p. 59, 1919.

The only representative of this species is the male type. It is badly rubbed and shows no trace of the original pattern. I suspect that it is nothing but a runted specimen of *neuricella* (=*myja*). There is nothing to distinguish it from the type of *myja* except its smaller size (11 mm.) and proportionally smaller genitalia, which are otherwise identical. The difference in anal tufts which Dyar thought he saw was purely imaginary. The white scaling he mentions is that on the membranous area of the eighth segment and is identical on the two types. I am retaining the name for the present, pending receipt of similar small males from the type locality. The female from Cayuga (May) which Dyar associated with his type is not conspecific or even congeneric. It is a *Unadilla* and probably a small specimen of *maturella* Zeller, if what we have under that name is correctly identified.

TYPE LOCALITY: Cayuga, Guatemala (June, type in USNM).

FOOD PLANT: Unknown.

438. Bema ydda (Dyar), new combination

FIGURE 974

Relmis ydda Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914.

Forewing dark gray (in fresh specimens with a faint violaceous tint); base (and thorax) darker; antemedial pale line faint, bordered outwardly by a broad dark band; subterminal line pale, indented as in *myja*, bordered inwardly by a broad dark shade reaching to cell; outer area beyond subterminal line of a similar dark shade; discal dots obscured, more or less fused. Hind wing smoky fuscous. Abdominal tufts of eighth segment appreciably stouter than those of other species of *Bema*. Alar expanse, 19–20 mm.

Male genitalia with vinculum broader in proportion to its length than that of *myja* or the other species of the genus. The entire genitalia are larger than those of *myja*, otherwise similar. Female genitalia as in *myja* except for enlarged signum.

TYPE LOCALITY: Río Trinidad, Panamá (May, June; type in USNM).

FOOD PLANT: Unknown.

Represented in the National Collection only by the female type and one other female from the type locality and a male from St. Jean Maroni, French Guiana. The outer border of the antemedial and the inner border

of the subterminal lines have the appearance, to the naked eye, of broad, dark, weakly contrasted, transverse fasciae.

439. Bema yddiopsis (Dyar)

Relmis yddiopsis Dyar, Ins. Insc. Menstr., vol. 7, p. 58, 1919.

Similar to *ydda* except ground color paler. Thorax and base of forewing pale clay color; terminal area of forewing also paler than the dark shade inwardly bordering the subterminal line. Alar expanse, 20–21 mm.

Male genitalia similar to those of *myja* except somewhat larger; vinculum as narrow in proportion as that of *myja*.

TYPE LOCALITY: Tánamo, Cuba (Mar., type in USNM).

FOOD PLANT: Unknown.

Known only from the type and one other male from the type locality. The type (in fair condition) shows a few reddish scales in the dark area bordering the subterminal line, but I am unable to find any trace of the "red streak along submedian fold" mentioned by Dyar.

440. Bema fifaca (Dyar), new combination

FIGURE 973

Relmis fifaca Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914.

Known only from the unique female type. This specimen similar in color and markings to fresh specimens of *myja*, of which it may be only a variety. The labial palpi seem a trifle longer than those of *myja* and the signum is somewhat larger but not different enough to rule it out of that species. The outward dentations of the antemedial whitish line, mentioned by Dyar, also appear in some specimens of *myja*, depending upon how much the specimen is rubbed or how much the dark outer shading encroaches upon the white line. They are not constant, and the line properly should be described as slanting and straight. Alar expanse, 18 mm.

TYPE LOCALITY: Porto Bello, Panamá (Dec., type in USNM).

FOOD PLANT: Unknown.

Genera 126–128: *Homoeosoma* to *Rotruda*

[Venational division C. Forewing with 10 veins: 10 from cell, 8 and 9 united, 4 and 5 stalked or connate, 2 and 3 from cell. Hind wing with veins 7 and 8 strongly anastomosed; 3 and 5 from cell; discocellular straight, vertical. Male genitalia with uncus broad, subtriangular; apical process of gnathos fused; vinculum stout, broad. Female genitalia with or without signum; bursa, except for signum and some weak scobinations, not sclerotized; ductus seminalis from bursa or ductus bursae.]

126. Genus Homoeosoma Curtis

Homoeosoma Curtis, Ent. Mag., vol. 1, p. 190, 1833.—Hulst, Phycitidae of N. Amer., p. 191, 1890.—Ragonot, Monograph, pt. 2, p. xiii, 1901.—Hampson *in* Ragonot, Monograph, pt. 2, p. 227, 1901.—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 26, 1945. (Type of genus: *Phycis gemina* Haworth, synonym of *Tinea sinuella* Fabricius; figs. 112, 480, 978.)

Phycidea Zeller, Isis von Oken, p. 178, 1839. (Type of genus: *Tinea sinuella* Fabricius.)

Tongue well developed. Antenna of male pubescent and with a slight notch at base of shaft; of female, simple. Ocelli present but small and lenses flattened in some specimens. Frons rounded, labial palpus upcurved; somewhat rough scaled; reaching to or slightly above vertex; third segment slightly shorter than second. Maxillary palpus filiform. Forewing smooth; narrowly elongate; termen slanting; 10 veins: veins 2 and 3 from near lower outer angle of cell, separate; 4 and 5 stalked for at least half the length of vein 5; 6 from below upper angle of cell, straight; 9 absent; 10 from cell; male with a slight costal fold at base of wing. Hind wing with seven veins; vein 2 from before lower angle of cell; 3 and 5 from angle of cell and closely approximate at base; 6 from upper angle of cell; 7 and 8 fused beyond cell almost to costa; discocellular vein straight, nearly vertical and obsolescent; cell one-third to two-fifths of wing length. Eighth abdominal segment of male simple (fig. 482e) with a single stout, central thorn associated with sternite (figs. 483f–g), or with a pair of weak ventrolateral hair tufts (fig. 489e).

Male genitalia with uncus broad, subtriangular, outer surface densely covered with bristlelike scales. Gnathos terminating in a broadly triangulate or tear-shaped fused apical process with a very small spine at caudal end. Harpe simple; costa strongly sclerotized for most or all of its length; apex broadly rounded. Anellus U-shaped with narrow basal plate and long slender lateral arms, or semitubular. Aedeagus more or less sinuate, smooth or with a few minute scobinations at apex. Penis with a patch or elongate roll of sclerotized wrinklings, otherwise unarmed. Vinculum stout and broad, short to long and with terminal margin broadly rounded.

Female genitalia with bursa copulatrix membranous, finely scobinate over most of its inner surface; signum a coarsely spined plate or altogether absent. Ductus bursae membranous throughout, finely scobinate only at or near junction with bursa copulatrix. Genital opening simple (unsclerotized and without adjacent sclerotized plates or other armature). Ductus seminalis from bursa near its junction with ductus bursae. Ovipositor lobes membranous or sclerotized.

The genus, as here defined, is composed of two quite dissimilar groups which eventually will require generic separation. However, until the exact status of *Patagonia* is established they may remain together in *Homoeosoma*, for I believe that the name *Patagonia* can be used eventually to include the whole of one species group. From *Homoeosoma* I am removing *mucidellum* Ragonot, *reliqueella* Dyar, *olivaceella* Ragonot, *musiosum* Dyar, *cubellum* Dyar, *affusellum* Ragonot, and the European *nimbellum* to a new genus (*Rotruda*), since they differ strikingly on both male and female genitalic characters from other species generally referred to *Homoeosoma*. Further generic division of *Homoeosoma* may be necessary when the genitalia of Old World

species can be thoroughly studied. Our American species divide as follows:

Male with apical process of gnathos broadly triangulate (figs. 481, 975), anellus U-shaped; female with signum, ovipositor lobes unsclerotized.

Male with apical process of gnathos considerably smaller and tear-shaped, anellus semitubular; female without signum, ovipositor lobes sclerotized.

The species of the first group are further divisible into subgroups on the following male characters:

Eighth abdominal segment simple.

Eighth abdominal segment with a strong thornlike process associated with sternite.

Eighth abdominal segment with a pair of ventrolateral scale tufts.

Genus *Homoeosoma*, Species 441–447: *H. electellum* to *H. illuviellum emendator*

[Male with apical process of gnathos broadly triangulate, anellus U-shaped, eighth abdominal segment simple; female with signum, ovipostor lobes unsclerotized.]

441. Homoeosoma electellum (Hulst)

FIGURES 481, 975

Anerastia electella Hulst, Ent. Amer., vol. 3, p. 137, 1887.

Ephestia opalescella Hulst, Ent. Amer., vol. 3, p. 138, 1887 (new synonymy).

Homoeosoma texanella Ragonot, N. Amer. Phycitidae, p. 15, 1887.

Homoeosoma tenuipunctella Ragonot, N. Amer. Phycitidae, p. 15, 1887.

Homoeosoma electella (Hulst), Phycitidae of N. Amer., p. 193, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 243, 1901.

Homoeosoma epalescella (Hulst), Phycitidae of N. Amer., p. 192, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 243, 1901.

Homoeosoma electellum (Hulst), U. S. Nat. Mus. Bull. 52, p. 434, 1903.—Kearfott, Canadian Ent., vol. 37, p. 123, 1905 (description of larva).—Barnes and McDunnough, Contributions, vol. 3, p. 200, 1916.—Forbes, Cornell Mem. 68, p. 634, 1920.—McDunnough, Check list, No. 6374, 1939.—Satterthwait and Swain, Journ. Econ. Ent., vol. 39, p. 575, 1946.

Homoeosoma opalescellum (Hulst), U. S. Nat. Mus. Bull. 52, p. 434, 1903.—McDunnough, Check list, No. 6375, 1939.

Homoeosoma differtella Barnes and McDunnough, Contributions, vol. 2, p. 184, pl. 4, fig. 9, 1913.

This and the three species following have similar genitalia and cannot be separated by any consistent characters in these organs. In all, the vinculum is produced dorsolaterally into a pair of free arms (fig. 481a), the lateral margins of the apical process of gnathos are deeply concave (fig. 481c), and the signum is situated near the cephalic end of the bursa. There is considerable variation in the gnathi and signa, but it is more individual than specific in character. *H. electellum* is readily separable from the other three species on its forewing pattern. The contrasting white subcostal streak (when distinguishable) is diagnostic. It is more or less obsolescent in the paler specimens. Wing color varies from pale powdery gray to whitish ocherous. The name *opalescellum* applies to the more yellowish specimens but represents nothing more than a color form. *H. electellum* is close to the European *nebulellum* which has similar genitalia and larval habits, *nebulellum* being an important enemy of sunflower in Russia (see V. Schzegoleff, Journ. Oil Industry, Moscow, p. 44, November 1928). However, there appear to be enough differences in habitus to distinguish the two as distinct species. Alar expanse, 15–25 mm.

TYPE LOCALITIES: Blanco County, Tex. (*electellum*, in AMNH, ex Rutgers); Texas (*texanellum*, in Paris Mus.); California (*opalescellum*, in USNM; *tenuipunctellum*, in Paris Mus.); Everglades, Fla. (*differtellum*, in USNM).

FOOD PLANTS: Flower heads of various asteraceous plants (*Anthemis, Aster, Bidens, Brauneria, Chrysanthemum, Coreopsis, Dahlia, Helianthus, Heliopsis, Rudbeckia, Tagetes, Viguiera, Ximenesia*); also from flowers of *Opuntia* and cotton and several U. S. Dep. Agr. rearings (at Mission, Hidalgo, and Brownsville, Tex.) from fruit of orange (on the trees). Sunflower seems to be the most favored food plant.

DISTRIBUTION: UNITED STATES: *Florida*, Miami (Apr.), Orlando (June); *Louisiana*, Baton Rouge (July), Vernon Parish (July); *Texas*, Blanco County, Brownsville (Mar., Apr., Aug., Sept.), College Station (June), Hidalgo, Liberty (July), Mercedes (Feb.), Mission (Jan.), New Braunfels (May), Presidio (Sept.), Sabinal (Mar.), San Benito (July, Aug., Sept.), San Diego (May), Smith Point (Sept.), Victoria (Mar., May, Sept.), Zavilla (Apr.); *Mississippi*, Natchez (May); *Missouri*, New Madrid (Aug.), Scott County (Oct.); *Iowa*, Ames (Aug.), Sioux City (June); *Kansas*, Onaga; *Nebraska*, Fort Calhoun; *South Dakota*, Elk Point (Aug.); *Colorado*, Boulder (Sept.), Denver (June), Pueblo (Sept.); *New Mexico*, Fort Wingate (May, June), Jemez Springs (Apr.), Las Vegas, Pecos (June); *Arizona*, South Liberty (Sept.), Santa Rita Mts. (Aug.); *California*, Sacramento (Aug.); *Washington*, Bonneville (July), Pullman (June, July, Aug., Sept.), Walla Walla (June, July), Wenatchee (Aug.). MÉXICO: Cuernavaca (July), Orizaba (May), Tehuacán (May, June). GUATEMALA: Guatemala City. CUBA: Havana (Sept.). BERMUDA (Jan., Mar., Apr., May, July).

The foregoing localities are for specimens before me. The species is generally distributed throughout the United States.

442. Homoeosoma stypticellum Grote

FIGURE 976

Homoeosoma stypticella Grote, Bull. U. S. Geol. Geogr. Surv. Terr. vol. 4, p. 703, 1878.—Hulst, Phycitidae of N. Amer., p. 193, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 252, 1901.

Homoeosoma uncanale Hulst, Trans. Amer. Ent. Soc., vol. 3, p. 162, 1886; U. S. Nat. Mus. Bull. 52, p. 434, 1903.—Barnes and McDunnough, Contributions, vol. 4, p. 175, 1918.—McDunnough, Check list, No. 6324, 1939. (New synonymy.)

Homoeosoma uncanalis Hulst, Phycitidae of N. Amer., p. 192, 1890.

Homoeosoma stypicellum Hulst, U. S. Nat. Mus. Bull. 52, p. 434, 1903 (misspelling).

Homoeosoma stypticellum (Grote), Forbes, Cornell Mem. 68, p. 634, 1920.—McDunnough, Check list, No. 6371, 1939.

Distinguished from other species with the *electellum* type of genitalia by the broad, transverse, antemedial dark brown band and the more or less extended dark shading on inner margin of subterminal line of forewing, this latter dark shading sometimes extending to the dark discal spots at outer margin of cell. Hind wings smoky fuscous. Alar expanse, 18–25 mm.

I agree with McDunnough that the female from Colorado in the Hulst Collection which McDunnough has so labeled is the probable type of *uncanale*. The differences shown in figure 976 between it and the signum of typical eastern *stypticellum* are only individual in character and no more than those exhibited by other eastern examples of *stypticellum*. I find nothing on which to distinguish *uncanale*, even as a western race, from *stypticellum*.

TYPE LOCALITIES: Maine (*stypticellum*, in BM [?]); Custer County, Colo. (*uncanale*, in AMNH, ex Rutgers).

FOOD PLANT: *Cirsium*, *Rhus*.

DISTRIBUTION: UNITED STATES: *Maine*, Orono, Bar Harbor (July), Wales (July); *Massachusetts*, Martha's Vineyard (July, Aug.); *Connecticut*, East River (July, Aug.); *Rhode Island*, Weekapaug (July, Aug.); *New York*, Ilion (June); *Pennsylvania*, Oak Station (Mar.), New Brighton (July); *Illinois*, Palos Park (Aug.); *Arkansas*, Washington County (July); *Texas*; *Colorado*, Custer County, Glenwood Springs (Aug.), Logan's Peak (July). CANADA: *Quebec*, St. Hilaire (July); *Ontario*, Ottawa (June), Trenton (June); *Manitoba*, Aweme (June, July), Rounthwaite (Aug.); *Saskatchewan*, Regina (July).

Among the foregoing, one example (from Palos Park, Ill., Aug. 6, 1939) was reared by A. K. Wyatt from larvae feeding in the flower heads of "swamp thistle."

443. Homoeosoma striatellum Dyar

FIGURE 977

Homoeosoma striatellum Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 38, 1905.—McDunnough, Check list, No. 6367, 1939.

Pale slate gray; the veins of forewing outlined by blackish scaling, transverse lines nearly obsolete, in some specimens indicated by a narrow, dark, angulate, antemedial band and some dark shading towards costa on inner side of subterminal oblique line; discal spots faintly indicated or absent. Hind wings whitish to very pale smoky fuscous. Signum of female somewhat variable, the extent of variation shown in the figure. Alar expanse, 18–23 mm.

TYPE LOCALITY: Phoenix, Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Baboquivari Mts., Ajo, Pima County (Mar.), Phoenix (Mar., Apr.), Tempe (Feb.); *California*, Death Valley (Apr.).

444. Homoeosoma oslarellum Dyar

FIGURE 979

Homoeosoma oslarellum Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 38, 1905.—McDunnough, Check list, No. 6373, 1939.

Dark grayish fuscous with a scattering of whitish scales along costa of forewing; transverse marking obsolete. Hind wing pale smoky fuscous. Alar expanse, 17–23 mm.

Female genitalia with signum similar to that of *striatellum*, considerably larger than that of either *stypticellum* or *electellum*, situated somewhat nearer the middle of the bursa.

TYPE LOCALITY: Chimney Gulch, Golden, Colo. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Colorado*, Golden; *New Mexico*, Beulah (July); *California*, San Francisco (Apr.).

445. Homoeosoma oslarellum breviplicitum, new race

A Southern California race differing from typical *oslarellum* by the much shorter roll of sclerotized wrinklings of penis (but half the length of that in *oslarellum* or the other preceding species), its paler wing color and forewing markings. Color of forewing slate gray (intermediate between that of *oslarellum* and *striatellum*); a faint but distinguishable and sharply angulate, narrow, dark, antemedial band; veins more or less outlined by blackish scaling, especially in outer area of wing; hind wing more whitish and with the veins more darkly contrasted than in typical *oslarellum*. Alar expanse, 20–25 mm.

TYPE LOCALITY: San Diego, Calif. (type in USNM, 61370).

FOOD PLANT: Unknown.

Described from male type and male paratype from the type locality (May 3, 1924, H. G. Dyar); one female paratype from San Diego (June 14, 1924, J. M. Dammers) and three female paratypes from Riverside, Calif. (Apr. 14 and 17, 1937, Grace B. and John L. Sperry).

446. Homoeosoma illuviellum Ragonot

FIGURE 482

Homoeosoma illuviella Ragonot, Nouv. Gen., p. 33, 1888; Monograph, pt. 2, p. 245, 1901.—Hulst, Phycitidae of N. Amer., p. 192, 1890.

Homoeosoma candidella Hulst, Ent. Amer., vol. 4, p. 118, 1888.

Homoeosoma illuviellum Ragonot, Hulst, U. S. Nat. Mus. Bull. 52, p. 434, 1903.—McDunnough, Check list, No. 6366, 1929.

White with a faint scattering of dark scales on forewing; transverse lines obsolete, their usual position indicated only by a couple of dark dots in the antemedial and a very faint transverse shading of dark dusting in the subterminal areas; costal edge dark beyond middle; a small but rather conspicuous dark dot at lower outer angle of cell and a much smaller, more obscure dot at upper outer angle. Hind wings pale smoky fuscous; cilia white. Alar expanse, 22–28 mm.

Male genitalia with apical process of gnathos stouter and with less deeply concave lateral margins than in the preceding species; vinculum not produced dorsolaterally.

TYPE LOCALITIES: Sonora, México (*illuviellum*, in Paris Mus.); Arizona (*candidellum*, in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona* (no further locality), Prescott (July); *Colorado*. MÉXICO: Sonora.

The type and only specimen in Paris is from "Senora" [sic], México, Morrison, 1883, labeled in Ragonot's handwriting "*Homoeosoma illuviella* Rag. pl. xxxiii, fig. 11, type original." It is a female and not a male as stated in the original description. I have examined the genitalia. The type of *candidellum* has been examined by Ragonot as the label indicates. It also is a female with a glued-on abdomen. However, there is no doubt that it is conspecific with *illuviellum*.

447. Homoeosoma illuviellum emendator, new race

FIGURE 980

Differs from typical *illuviellum* only in color and intensity of markings; head, thorax, and forewing a pale slate gray rather than white; dark spots as in *illuviellum* but more conspicuous and the dark shading along outer line more pronounced; hind wings darker. Alar expanse, 25–29 mm.

Genitalia as in *illuviellum*.

The new name is given with considerable hesitation as this may prove to be only a color form. However, as several distinct species in *Homoeosoma* cannot be separated by genitalia and the specimens before me are so different in color from true *illuviellum*, I suspect that they represent something more than a mere color form, possibly a food-plant race.

TYPE LOCALITY: Chimney Gulch, Golden, Colo. (May; type in USNM, 61371).

FOOD PLANT: Unknown.

Described from male type, one male paratype from Breckenridge, Colo. (June), one female paratype from Eureka, Utah (June 2, 1917, Tom Spalding), and two female paratypes from Richfield, Utah (May 20, 22, 1930).

Genus *Homoeosoma*, Species 448–453: *H. imitator* to *H. deceptorium*

[Male with apical process of gnathos broadly triangulate, anellus U-shaped, eighth abdominal segment with a strong thornlike process associated with sternite; female with signum, ovipositor lobes unsclerotized.]

448. Homoeosoma imitator, new species

FIGURES 483, 984

In color and markings similar to *striatellum* Dyar but strikingly different in structure. The presence of the thornlike process on eighth abdominal segment at once distinguishes it from all the species of the foregoing subgroup, and the produced lateral arms of vinculum from all the species of this group except *longiventrellum*. The eighth segment process varies in length in different specimens. Extremes of variation are shown in figures 483f and 483g.

Alar expanse, 19–24 mm.

TYPE LOCALITY: Palm Springs, Riverside County, Calif. (type in USNM, 61372; paratypes in Los Angeles County Mus., Calif.).

FOOD PLANT: Unknown.

Described from male type and three male and three female paratypes from the type locality (Mar.), one male paratype from West Riverside, Calif. (Feb. 16, 1906), and two female paratypes from Palo Verde, Imperial County, Calif. (Feb. 10, 1940).

449. Homoeosoma longiventrellum Ragonot

FIGURE 484

Homoeosoma longiventrella Ragonot, Nouv. Gen., p. 34, 1888; Monograph, pt. 2, p. 253, 1901.

Homoeosoma longiventrella noctividella Ragonot, Monograph, pt. 2, p. 253, 1901.

There are no specimens from tropical America agreeing with Ragonot's description or figure of *longiventrella* in the National Collection. The type is in the British Museum but lacks an abdomen. In Paris, Clarke located but one specimen in the Ragonot Collection, a male from Chiriquí, Panamá, labeled (in Ragonot's handwriting) "var. *noctividella* Rag." If the genitalia (figured) of this specimen represent, as they presumably do, the true *longiventrella* the species should be easily recognized, for it is the only one of the tropical species with projecting arms from vinculum and a thornlike projection from the eighth abdominal segment. The projecting arms of vinculum are exceptionally long.

TYPE LOCALITIES: Chile (?) (*longiventrellum*, in BM); locality not known to me (*noctividellum*, in Mus. Univ. Berlin).

FOOD PLANT: Unknown.

450. Homoeosoma albescentellum Ragonot

FIGURES 487, 983

Homoeosoma albescentella Ragonot, N. Amer. Phycitidae, p. 15, 1887.—Hulst, Phycitidae of N. Amer., p. 192, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 250, 1901.

Homoeosoma elongellum Dyar, Proc. Ent. Soc. Washington, vol. 5, p. 227, 1903.—McDunnough, Check list, No. 6365, 1929. (New synonymy.)

Homoeosoma albescentellum (Ragonot) Hulst, U. S. Nat. Mus. Bull. 52, p. 434, 1903.—McDunnough, Check list, No. 6368, 1939.

Rather pale brownish fuscous, dusted with white scales and with darker markings accented. The white scaling concentrated on the costal half of forewing, giving the lower half a contrasting brownish shade; transverse antemedial band blackish brown, normally angulate but outwardly rounded in occasional specimens; subterminal line inwardly angled at vein 6 and inwardly shaded with blackish brown, especially towards costa; discal spots at end of cell small, but distinct. Hind wing smoky fuscous.

From others in the subgroup having a ventral, thornlike process from the eighth abdominal segment of the male, this and the three species following are distinguished by their simple vinculi (without produced lateral arms). Alar expanse, 21–30 mm.

Male genitalia figured from type of *elongellum*. Female genitalia figured from the type of *albescentellum*

in the Paris Museum. This latter is the only specimen of the species in the Ragonot Collection. There are no characters of structure or pattern by which *elongellum* can be separated from *albescentellum*.

TYPE LOCALITIES: California (*albescentellum*, in Paris Mus.); Williams, Ariz. (*elongellum*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *California; Arizona*, Williams (July), Redington, Santa Catalina Mts.; *Colorado*, Silverton (July).

451. Homoeosoma impressale Hulst

FIGURES 486, 981

Homoeosoma impressalis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 163, 1886; Phycitidae of N. Amer., p. 191, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 239, 1901.

Homoeosoma uncanalis Ragonot (not Hulst), Monograph, pt. 2, p. 253, 1901.

Homoeosoma impressale Hulst, U. S. Nat. Mus. Bull. 52, p. 434, 1903.—Barnes and McDunnough, Contributions, vol. 3, p. 200, 1916; vol. 4, p. 174, 1918.—McDunnough, Check list, No. 6363, 1939.

McDunnough's identification (Contributions, vol. 4, pt. 2, p. 174, 1918) of the true type of this species in the Rutgers Collection is without any doubt the correct one. The specimen is a male without abdomen, labeled Nevada, "3838." It also bears a Hulst name label "*Homoeosoma uncanale*," which is obviously incorrect and can be ignored as an error in labeling. The Nevada specimen is one of the well-marked examples of the species and agrees with the original description.

The markings are variable in the extreme, ranging from pure white examples with only a couple of small blackish discal dots at end of cell and a row of faint blackish dots along termen to white examples with a broad, slanting, blackish, antemedial band and a narrow blackish subterminal band. On the right side of one specimen before me from Manitoba the blackish bands are fused, filling the entire center of the wing. The specimens without transverse markings are superficially like those of *illuviellum*, usually showing the discal spot at upper outer angle of cell a trifle stronger but otherwise only separable on genitalia. The two figures in the Ragonot Monograph (pl. 33, figs. 7, 18) are good illustrations of the normal variation in pattern. Alar expanse, 23–34 mm.

TYPE LOCALITY: Nevada (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona; Nevada; Colorado; Utah*, Stockton (June, July); *California*, Davis Creek, Modoc County (June); *Washington*, Pullman (Aug.), Walla Walla (June). CANADA: *Manitoba*, Cartwright, Rounthwaite (Aug.).

452. Homoeosoma inornatellum (Hulst)

FIGURES 485, 982

Euzophera inornatella Hulst, Canadian Ent., vol. 32, p. 173, 1900.—Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 228, 1904.

Homoeosoma inornatellum (Hulst), McDunnough, Check list, No. 6369, 1939.

A very faintly marked species, especially in the male; forewing pale gray or grayish fuscous with a faint, white subcostal streak (much as in *electellum*); antemedial markings consisting of one or two obscure dark dots; discal dots at end of cell faint. In the female the markings are somewhat stronger. Hind wings pale smoky fuscous. Superficially the males look much like some examples of *electellum*, but the two species are easily separated on structure. In addition to the differences in male genitalia and the eighth abdominal segment, *inornatellum* has veins 2 and 3 of forewing approximate at origin while in *electellum* these veins are well separated, about as far apart as 3 and 4. Alar expanse 23–25 mm.

From other species with simple vinculi (*albescentellum, impressale, deceptorium*), *inornatellum* is readily distinguished by the shape of the harpe and the apical process of gnathos. The signum of the female is situated very near the anterior end of the bursa, as in *electellum*. Dyar's identification of the type of *inornatellum* with *stypticellum* is an obvious error. The two species are not even superficially similar.

TYPE LOCALITY: Anglesea, N. J. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

DISTRIBUTION: *New Jersey*, Anglesea (May, June); *Pennsylvania*, Mount Airy.

A series of males from the type locality is in the National Collection.

453. Homoeosoma deceptorium, new species

FIGURES 488, 985

Color and markings as in the larger, most strongly marked specimens of *stypticellum*, except that the white dusting on forewing is more restricted to the costal half of the wing; transverse antemedial band broad, slanting, not appreciably angulate, blackish brown; subterminal dark band narrower but distinct; discal spots at outer angles of cell distinct. Hind wings pale smoky fuscous with veins outlined by darker scaling. Alar expanse 23–27 mm.

Male genitalia chiefly distinguished from those of other associated species in this subgroup by the shape of the apical process of gnathos. Signum of female located near middle of bursa.

TYPE LOCALITY: New Brighton, Pa. (type in USNM, 61373; paratypes in Canadian Nat. Coll.).

FOOD PLANT: Unknown.

Described from male type and four male and one female paratypes from the type locality (July, Aug.); one male and one female paratype from Alcove, Quebec (July 7, 1936, F. A. Urquart).

Genus *Homoeosoma*, Species 454: *H. discrebile*

[Male with apical process of gnathos broadly triangulate, anellus U-shaped, eighth abdominal segment with a pair of ventrolateral scale tufts; female with signum, ovipositor lobes unsclerotized.]

454. Homoeosoma discrebile, new species

FIGURES 489, 986

White with a very faint cream tint and with three trongly contrasted brown markings on forewing, a transverse slanting antemedial band, a somewhat narrower but equally distinct subterminal band and a large discal spot formed by the fusion of the two dots at outer angles of cell. Hind wings white; veins not outlined by dark shading. Alar expanse, 15–17 mm.

Male genitalia similar to those of *electellum*; vinculum with produced dorsolateral arms. Signum of female large, situated well back of the anterior end of bursa.

TYPE LOCALITY: "S. E. Brazil" (F. D. Jones, "1920–303"; type in BM; paratypes in BM and USNM, 61374).

FOOD PLANT: Unknown.

Described from male type and three female paratypes from the type locality, and one female paratype from Castro, Paraná, Brazil.

An easily recognized species.

Genus *Homoeosoma*, Species 455–461: *H. peregrinum* to *H. nimbosellum*

[Male with apical process of gnathos considerably smaller and tear-shaped, anellus semitubular; female without signum, ovipostor lobes sclerotized.]

455. Homoeosoma peregrinum, new species

FIGURES 490, 987

Forewing very narrow in the male (8 by 1¾ mm.); in female somewhat broader. Color brown, evenly peppered with whitish scales, making the general color grayish fuscous; markings obscure, only the faintest indication of a narrow antemedial dark line and the discal spot at end of cell. Hind wing of a very pale smoky hue with darkened veins and a fuscous line along termen. Alar expanse, 15–17 mm.

Male genitalia chiefly distinguished from those of other species in the group (except *assitum*) by the very small, semicircular sclerotized area of penis (*assitum* is distinguished by its smooth aedeagus and slenderer, more evenly tapering harpes); aedeagus in *peregrinum* finely scobinate at apex. The structural differences among the species of this group are slight and hardly of specific value. In the female the amount and extent of scobination of the bursa varies somewhat from species to species, but almost as much from specimen to specimen. These scobinations (except in *oconequensis*) are more concentrated in a single circular area where they have the appearance of a weak signum, which they are not.

TYPE LOCALITY: Carmel, Calif. (type in USNM, 61375; paratypes in USNM and Lange Coll.).

FOOD PLANT: *Anaphalis margaritosa*.

Described from male type and three male and two female paratypes from the type locality, reared by W. H. Lange (Mar. 4, 1938, and Mar. 25, 1939); and one male paratype from Juan Viñas, Costa Rica (May).

H. peregrinum is the only species of the group known from the United States, and since it also occurs in Costa Rica, the natural assumption is that it is a wanderer from tropical America. It may be the species that Hampson misidentified with his Old World *ephestidiella* (*in* Ragonot, Monograph, pt. 2, p. 256, 1901). The latter belongs to quite a different species group which is not found in the New World.

456. Homoeosoma vepallidum, new species

FIGURES 491, 991, 992

Pale brownish fuscous dusted with white, giving the insect a sordid whitish tint; antemedial markings of forewing reduced to a dark spot extending from inner margin to vein 1b; discal dots at outer angles of cell present but obscure; subterminal line obscure, slanting, narrow, white, and margined inwardly by a few very faint, dark spots; a faint but distinct white subcostal streak. Hind wing smoky white, veins faintly dark-lined. Alar expanse, 18–20 mm.

Genitalia without outstanding specific characters.

TYPE LOCALITY: "Villa Ana, F. C. S. F.," Argentina (type and paratype in BM).

FOOD PLANT: Unknown.

Described from male type and female paratype from the type locality, Nov. 29, 1923, R. J. Hayward. A female from the Cornell University Collection, taken in the Sierra de Córdoba, Argentina, Mar. 9, 1920, is not included among the types because it is paler in color and has a larger bursa copulatrix (fig. 992) than the paratype from Villa Ana, but it is undoubtedly the same species.

457. Homoeosoma ditaeniatellum Ragonot

FIGURE 990

Homoeosoma ditaeniatella Ragonot, Nouv. Gen., p. 33, 1888; Monograph, pt. 2, p. 236, 1901.

According to Clarke's notes this specimen is badly rubbed and stained and the figure and description drawn from it consequently somewhat misleading. The species is probably considerably more whitish than the type would seem to indicate. Its identification will have to wait upon more material from the type locality. Alar expanse, 18 mm.

TYPE LOCALITY: Quillota, Chile (Paulson, 1887; type in Paris Mus.).

Known only from the female type.

458. Homoeosoma oconequensis (Dyar), new combination

FIGURE 989

Eucampyla oconequensis Dyar, Ins. Insc. Menstr., vol. 7, p. 60, 1919.

A pale fuscous gray species almost unmarked; the faintest indication of a narrow, transverse, dark antemedial line and a dark discal dot at lower outer angle

of cell. Hind wing pale smoky white; veins faintly outlined. Alar expanse, 22 mm.

Genitalia distinguished by the very sparse scobination of bursa copulatrix without any trace of a concentration of these scobinations into a conspicuous spot.

TYPE LOCALITY: Oconeque, Carabaya, Perú (Schaus, collector; type in USNM).

FOOD PLANT: Unknown.

Known only from the female type.

459. Homoeosoma assitum, new species

FIGURES 492, 988

A small pale gray species, very faintly but appreciably marked; forewing with a narrow, slanting, dark antemedial line; a very faint, straight, slanting, white, subterminal line; two small, obscure discal dots at outer angles of cell. Hind wing smoky white; veins darkly outlined; a narrow dark line along termen; cilia white. The species resembles *peregrinum* but is smaller and paler. Alar expanse, 13–17 mm.

Male genitalia distinguished by their narrow, tapering harpes and smooth aedeagus.

TYPE LOCALITY: Cañete, Perú (type in USNM, 61376; paratypes in USNM, BM, Paris Mus.).

FOOD PLANT: Unknown.

Described from male type and seven male and four female paratypes from the type locality, taken Mar. 2, 1943, on the foliage of a composite by E. J. Hambleton.

460. Homoeosoma acmaeopterum Ragonot

FIGURE 493

Homoeosoma acmaeoptera Ragonot, Nov. Gen., p. 34, 1888; Monograph, pt. 2, p. 255, 1901.

According to Clarke's notes there are five specimens under this name in the Ragonot Collection at Paris representing what appears to be an assortment of species. The male type, so labeled by Ragonot and from which the figure in his Monograph (pl. 33, fig. 21) was made, is the only specimen that can definitely be called *acmaeopterum*. According to Clarke, the Ragonot figure is a fair representation except that the forewing is too short in proportion to its width and its median dark area too strongly contrasted. Alar expanse, 22 mm.

TYPE LOCALITY: Coquimbo, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

461. Homoeosoma nimbosellum Ragonot

FIGURE 494

Homoeosoma nimbosella Ragonot, Nouv. Gen., p. 34, 1888; Monograph, pt. 2, p. 255, 1901.

The type is a male, and not a female, as stated by Ragonot. According to Clarke, the Ragonot figure (Monograph, pl. 30, fig. 22) is somewhat inaccurate, being too dark and with the subterminal line too well defined. Alar expanse, 18 mm.

TYPE LOCALITY: Valparaíso, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

Known only from the type in Paris.

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Genus *Homoeosoma*, Species 462 (unplaced): *H. unionellum*

462. Homoeosoma unionellum Ragonot

Homoeosoma unionella Ragonot, Nouv. Gen., p. 33, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 235, 1901.

A photograph of the type shows a large, narrow-winged, pale specimen (yellowish white, according to description) with costal edge of forewing beyond middle, blackish. A sketch of the female genitalia shows that the species belongs in the first group (*Homoeosoma* Species 441–454), but more exact placement is impossible without a male. Alar expanse, 28 mm.

TYPE LOCALITY: Milpas, México (type in BM).

FOOD PLANT: Unknown.

Known only from the female type.

127. Genus Patagonia Ragonot

Patagonia Ragonot, Monograph, pt. 2, p. xiii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 236, 1901. (Type of genus: *Homoeosoma magellanella* Ragonot.)

Characters of the second *Homoeosoma* species group, except veins 4 and 5 of forewing connate rather than stalked.

So far represented only by the single female example of the type species. I suspect that this is an individual, venational aberrant and that when further examples are taken they will show the normal *Homoeosoma* venation of forewing, 4 and 5 appreciably stalked. If, however, the connate condition of 4–5 were to prove constant and the genitalia of the male show no marked variation from those of the second *Homoeosoma* group, the venational difference would have a purely specific significance and *Patagonia* could be retained as a valid genus on the genitalic characters of the group; and the species of the group could be referred to it.

463. Patagonia magellanella (Ragonot)

FIGURE 993

Homoeosoma magellanella Ragonot, Nouv. Gen., p. 35, 1888.
Patagonia magellanella (Ragonot), Monograph, pt. 2, p. 226, 1901.

According to Clarke's notes, the figure of the type in Ragonot's Monograph (pl. 33, fig. 25) is faulty in that the forewing is too broad, the whitish costal streak not extensive or white enough, the subterminal striations too much accented, and the wing generally too dark. However, the pattern should make specimens from the type locality easily identifiable. Alar expanse, 19 mm.

TYPE LOCALITY: Punta Arenas, Straits of Magellan, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

128. Rotruda, new genus

TYPE OF GENUS: *Homoeosoma mucidellum* Ragonot.

Tongue, antenna, palpi, venation, and habitus as in *Homoeosoma*. Male genitalia with a comb of strong spines along side of aedeagus. Female genitalia with

two large signa composed of opposed, cup-shaped, strongly spined concave plates; ductus seminalis from ductus bursae.

In addition to *mucidella* and its American allies the European *Homoeosoma nimbella* Zeller should be referred here (fig. 496).

464. Rotruda mucidella mucidella (Ragonot), new combination

FIGURES 495, 994

Homoeosoma mucidella Ragonot, N. Amer. Phycitidae, p. 15, 1887; Monograph, pt. 2, p. 258, 1901.—Hulst, Phycitidae of N. Amer., p. 193, 1890.

Homoeosoma mucidellum Ragonot, Hulst, U. S. Nat. Mus. Bull. 52, p. 434, 1903.—Dyar, Pomona College Journ. Ent., vol. 2, p. 378, 1910.—Barnes and McDunnough, Contributions, vol. 2, p. 223, 1914.—McDunnough, Check list, No. 6370, 1939.

There is nothing except color differences to separate typical *mucidella* from the following supposed species which I am treating as races or synonyms, and these differences are not clear-cut between tropical examples and dark specimens from eastern United States. What color differences there are depend upon the amount of white dusting and the intensity of the dark markings. Typical *mucidellum* is the most heavily dusted with white and has the dark markings of forewing most sharply contrasted (frequently blackish), and to the naked eye seems a paler form than any of the others, although there are intergrading examples between it and *reliquella*. Alar expanse, 15–22 mm.

There is considerable variation in the number of spines in the comb along the side of aedeagus (10 to 15), but this variation is as great between examples of typical *mucidella* as it is between it and any of its races.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANTS: Aster (and presumably other composites).

DISTRIBUTION: UNITED STATES: *California*, Claremont, Colfax (July), Deer Park Springs (Lake Tahoe), La Puerta Valley (July), Loma Linda (July), Los Angeles County (Aug.), Polente (Sept.), Riverside (Nov.), Sacramento (Sept.), San Bernardino Mts. (July), San Diego (July), Shasta Retreat (Siskiyou County, July, Aug., Sept.), Warner Mts. (Modoc County, July); *New Mexico*, Jemez Springs, Las Vegas, Hot Springs (June, Sept.); *Arizona*, Palmerlee, Tempe (June); *Colorado*, Denver (July), Glenwood Springs (Aug., Oct.); *Utah*, Provo (July), Salt Lake, Stockton (June, Aug.); *Wyoming*, Jackson Hole (July); *Oregon*, Crater Lake (July); *Washington*, Bellingham (June), Pullman (May, July, Aug., Oct.), Snake River (July), Walla Walla (June, July), Wenatchee (Aug.). CANADA: *British Columbia*, Kaslo (June).

The range of distribution is probably the entire United States, southern Canada, and northern México from the Rocky Mountains westward to the Pacific Ocean.

The European *nimbella* (fig. 496) is very close to *mucidella*, differing only in the greater number of spines on aedeagus (19 to 23). Were it not for this apparently consistent difference I should be inclined to treat *mucidella* as an American race of the Old World species.

465. Rotruda mucidella reliquella (Dyar), new combination

Homoeosoma reliquellum Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 112, 1904.—Forbes, Cornell Mem. 68, p. 634, 1920.—McDunnough, Check list, No. 6372, 1939.

Darker than typical *mucidella* with forewing somewhat suffused, the dark markings less sharply contrasted and the whitish dusting confined mostly to the costal half of the wing. Apparently confined to the areas of Canada and the United States east of the Rocky Mountains.

Alar expanse, 14–19 mm.

TYPE LOCALITY: Center Harbor, N. H. (type in USNM).

FOOD PLANTS: *Aster*, *Cirsium spinosisimum*, *Silphium laciniata*, *Sonchus asper*, lettuce.

DISTRIBUTION: UNITED STATES: *New Hampshire*, Center Harbor (July), Hampton (June, July); *Massachusetts*, Amherst (June), Cohasset, Framingham (May), Winchendon (June); *Connecticut*, East River (July, Aug.); *New Jersey*, Montclair (Aug.), Newark (Aug.); *Pennsylvania*, New Brighton (May, June, July), Oak Station (June), Pittsburgh (May, June, Aug.); *Illinois*, Edgebrook (Oct.), Chicago (July); *District of Columbia*, Washington (May); *Maryland*, Plummer's Isl. (May); *Virginia*, Great Falls (July); *North Carolina*, Tryon (May); *Georgia*, Savannah (May); *Florida*, Big Pine Key (Apr.), Chokoloskee, Everglades (Apr.), Ft. Myers (Apr.), Lake Alfred (July), Miami (Apr.), Pompano (Mar.). CANADA: *Ontario*, Trenton (May, June, July, Aug.).

466. Rotruda mucidella olivaceella (Ragonot), new combination

Homoeosoma olivaceella Ragonot, Nouv. Gen., p. 33, 1888; Monograph, pt. 2, p. 244, 1901.

Homoeosoma musiosum Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 342, 1915 (new synonymy).

Homoeosoma mucidella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 342, 1915.

Homoeosoma cubella Dyar, Ins. Insc. Menstr., vol. 7, p. 62, 1919 (new synonymy).

There is nothing, structural or otherwise, to separate the female types of *musiosum* and *cubella* from each other or from what Dyar correctly identified as *mucidella* from Central America. I have examined the type of *olivaceella* (♂, in Mus. Univ. Berlin) as well as its genitalia. It is merely a small (13 mm.), somewhat rubbed and faded specimen. I am holding *olivaceella* as a tropical American race of *mucidella* more on geographical distribution than anything else. It shows, in contrast to typical *mucidella*, the same color variations and obscurity of pattern markings as the eastern United States race *reliquella*. When examples are recovered from the intermediate areas of northeastern México it will probably be necessary to sink *reliquella* into the synonymy of *olivaceella*. The races at best are dubious entities, and I doubt that even the distinctness of *mucidella mucidella* will survive extensive collection in the central areas of United States.

Alar expanse, 12–18 mm.

TYPE LOCALITIES: "St. Thomas," [Virgin Islands] (*olivaceella*, in Mus. Univ. Berlin); Porto Bello, Panamá (*musiosum*, in USNM); Baracoa, Cuba (*cubella*, in USNM).

FOOD PLANTS: Unknown.

DISTRIBUTION: CUBA: Baracoa. VIRGIN ISLANDS: St. Thomas. GUATEMALA: Cayuga (Apr., May), Quiriguá (Feb.). COSTA RICA: Juan Viñas (June). PANAMÁ: Cabima (May), Corozal (Nov.), Porto Bello (Feb., Mar.), Río Trinidad (Mar., May). BRAZIL: *Santa Catarina*, New Bremen; *Minas Gerais*, Viçosa (Oct.). PARAGUAY: Villarrica (Sept., Oct.).

467. Rotruda mucidella affusella (Ragonot), new combination

Homoeosoma affusella Ragonot, Nouv. Gen., p. 34, 1888; Monograph, pt. 2, p. 260, 1901.

The name *affusella* is doubtfully placed here in association with *mucidella*, for Ragonot's description and figure suggest something quite different, possibly similar to what I have described as *Homoeosoma vepallidum*. However, Clarke's notes on the type discount the figure (Monograph, pl. 33, fig. 24) and, to a considerable degree, the original description. He states that "the figure is poor. The dorsal spot at basal third is distinct but the excurved line costad is very faint. The s. t. line of dashes, which is so prominent in the figure, is scarcely discernible in the specimen. On the forewing there is a heavier dusting of white than is indicated in the drawing." This suggests a rather pale, not too well marked example of *mucidella*. We shall have to await recovery of examples matching the type from Argentina before the status of the name *affusella* can be definitely settled. The abdomen of the type was no help. It has been glued on and is obviously spurious. I examined the genitalia (♀). They are those of *Ephestia elutella*.

Alar expanse, 18 mm.

TYPE LOCALITY: Córdoba, Argentina (type in Paris Mus.).

FOOD PLANT: Unknown.

Genus 129: *Strephomescinia*

[Venational division B. Forewing with 9 veins: 10 from cell; 8 and 9 united; 4 and 5 united; 2 and 3 stalked. Male genitalia with transtilla incomplete.]

129. Genus Strephomescinia Dyar

Strephomescinia Dyar, Ins. Insc. Menstr., vol. 7, pl 60, 1919. (Type of genus: *Strephomescinia schausella* Dyar.)

Tongue well developed. Antenna pubescent; shaft simple. Labial palpus upturned. Maxillary palpus filiform. Forewing smooth; 9 veins; veins 2 and 3 long stalked from angle of cell; 4 and 5 united; 6 straight; 8 and 9 united; 10 from the cell but closely approximate to 8–9 for some distance; male with weak costal fold. Hind wing with vein 2 from well before angle of cell, straight and parallel with 3; 3 and 5 from angle and closely approximate at base; 6 from upper angle of cell; 7 and 8 completely fused beyond cell; discocellular vein curved; cell about one-fourth the wing length. Abdomen of male with a pair of ventrolateral hair tufts.

Male genitalia with uncus triangulate. Gnathos terminating in a small bifid apical process. Harpe simple; costa broadly sclerotized for most of its length. Aedeagus straight, simple, moderately slender. Penis very weakly scobinate, otherwise unarmed. Vinculum stout, short, terminal margin truncate.

This genus is known only from the male of the type species but is easily identified by its venation. The genitalia show the close affinity of *Strephomescinia* to both *Homoeosoma* and *Mescinia*.

468. Strephomescinia Schausella Dyar

FIGURES 93, 497

Strephomescinia schausella Dyar, Ins. Insc. Menstr., vol. 7, p. 60, 1919.

Forewing whitish gray, irregularly and faintly marked with fuscous; a dark streak along submedian fold and some dark streaking on the veins toward termen; discal spots elongate, separate; no transverse lines distinguishable. Hind wing translucent, with the veins outlined by dark scaling; terminal and costal margins narrowly dark-margined. The one available specimen is badly rubbed. Fresh specimens would probably exhibit a more definable pattern. Alar expanse, 9.5 mm.

Male genitalia with apex of uncus bluntly pointed; cucculus of harpe oval, apex evenly rounded; elements of divided transtilla long and slender.

TYPE LOCALITY: Santiago, Cuba (June; type in USNM).

FOOD PLANT: Unknown.

So far represented only by the unique male type.

Genus 130: *Unadilla*

[Venational division E. Forewing with 9 veins: 10 from cell; 9 absent (8 and 9 united): 4 absent (4 and 5 united); 2 and 3 from cell. Hind wing with discocellular vein straight and vertical. Male genitalia with transtilla incomplete; uncus broad throughout. Female genitalia with genital opening simple (unsclerotized and without adjacent armature).]

130. Genus Unadilla Hulst

Unadilla Hulst, Phycitidae of N. Amer., p. 197, 1890.—Ragonot, Monograph, pt. 2, p. xiii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 261, 1901.—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 25, 1945. (Type of genus: *Unadilla nasutella* Hulst.)

Strymax Dyar, Proc. Ent. Soc. Washington, vol. 47, p. 344, 1914.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 201, 1932. (Type of genus: *Strymax dorae* Dyar. New synonymy.)

Tongue well developed. Antenna pubescent; shaft simple. Labial palpus upturned, somewhat obliquely so in the female. Maxillary palpus filiform. Forewing smooth; 9 veins; veins 2 and 3 separate, 2 near and 3 from the angle of cell; 3 and 5 closely approximate at base; 4 absent; 6 straight; 8 and 9 united; 10 from cell,

well separated from 8–9; male with a short costal fold. Hind wing with vein 2 from well before angle of cell; 3 from before but near angle, approximate to 5; 6 from near upper angle of cell; 7 and 8 completely fused beyond cell (in occasional specimens a rudiment of 8 visible as a short spur from outer fifth of vein 7); discocellular vein straight and vertical; cell approximately one-third the length of the wing. Eighth abdominal segment of male simple.

Male genitalia with uncus broad, subtriangular, outer surface densely covered with bristlelike scales. Gnathos terminating in a moderately large, fused or partially fused, hooked apical process. Harpe simple; costa strongly sclerotized for most of its length; apex broadly rounded. Anellus U-shaped; lateral arms curved and partially encircling aedeagus. Aedeagus straight; somewhat constricted at apex; smooth or with a patch of minute scobinations at apex. Penis with some scobinate wrinklings, otherwise unarmed. Vinculum stout and broad, long and tapering slightly to more or less narrowly rounded terminal margin.

Female genitalia with bursa copulatrix membranous, finely scobinate over caudal half of inner surface; signum consisting of a girdle of fine, narrow, serrate, ridgelike disks about middle of bursa, or completely absent. Ductus bursae membranous throughout, finely scobinate towards junction with bursa. Genital opening unsclerotized. Ductus seminalis from bursa near its junction with ductus bursae.

Richards and Thomson (1932) referred *Strymax* Dyar to *Ephestia* as a subgenus. They did not treat *Unadilla*. Hulst erected the latter for a single species (*nasutella* Hulst) which Hampson placed with two other Zeller species (*ubacensis* and *maturella*) in the synonymy of *erronella* Zeller. Upon the basis of this synonymy, which is doubtful, to say the least, Hampson cites *erronella* as the type of *Unadilla*. Janse follows him in this. Nomenclatorily *nasutella* must be the type of *Unadilla* whether *nasutella* proves to be a synonym of *erronella* or not.

Strymax is an obvious synonym of *Unadilla*. It has no close affinity to *Ephestia* even in the broad sense in which that genus is interpreted by Richards and Thomson. Hind wing venation and genitalia seem to indicate much closer relation to *Homoeosoma*.

On structures of the male and female genitalia the species divide into two distinct groups, as follows:

Male with apical process of gnathos partially fused; female with an encircling band of signa.

Male with apical process of gnathos completely fused; female without signa.

Genus *Unadilla*, Species 469: *U. erronella*

[Male with apical process of gnathos partially fused; female with an encircling band of signa.]

469. Unadilla erronella (Zeller)

FIGURES 121, 498, 995

Homoeosoma erronella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 238, 1881.

Homoeosoma ubacensis Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 239, 1881.

Unadilla erronella (Zeller) Hampson, *in* Ragonot, Monograph, pt. 2, p. 262, 1901.

Ephestia bipunctella Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 255, 1901 (new synonymy).

Strymax dorae Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 344, 1914 (new synonymy).

Strymax pyllis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 344, 1914 (new synonymy).

Ephestia (*Strymax*) *bipunctella* (Hampson) Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 201, 1932.

Ephestia (*Strymax*) *pyllis* (Dyar) Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 202, 1932.

Hampson referred *ubacensis* as a synonym of *erronella*, and, I believe, correctly so, judging from photographs of the male types and their genitalia. The only difference between the two is in the more intensified maculation of *ubacensis*. The same difference is exhibited by the male types of *dorae* and *pyllis*, the latter being a pale example with the normal subbasal markings of forewing almost obsolete. However, in a series of *dorae* from Panamá there are several intergrading examples. *U. erronella* is also variable in size and to some extent in structure, the vinculum being shorter in some specimens from Puerto Rico than in those from Panamá and Colombia, but otherwise the genitalia are remarkably constant. In careful preparations of the genitalia of Dyar's supposed two species (*dorae* and *pyllis*) I am unable to find any of the differences shown in the figures published by Richards and Thomson. The general color of the forewing is whitish gray; subbasal markings, when present, consisting of from one to three pale brownish spots forming a broken antemedial transverse shade; discal dots faint; hind wing white in the male, more or less shaded with pale smoky fuscous in the female. Alar expanse, 9–14 mm.

TYPE LOCALITIES: Honda, Colombia (*erronella*, in BM); Ubaque, Colombia (*ubacensis*, in BM); Nassau, Bahamas (*bipunctella*, in BM); La Chorrera, Panamá (*dorae*, in USNM); Porto Bello, Panamá (*pyllis*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: COLOMBIA; Honda, Mariquita, Ubaque. PANAMÁ: Corazal (Mar., Apr., May), La Chorrera (Apr., May), Paraíso (Apr.), Porto Bello (Feb.), Río Trinidad (Mar., May), Taboga Isl. (Feb., June). BAHAMAS: Nassau. PUERTO RICO: Aguirre Central (Apr.), Catãno (Apr., June), Coamo Springs (Apr.), Dorado (May, June), Isabela (Apr.), San German (Aug.); Puerto Real (Vieques Isl., Apr., July). VIRGIN ISLANDS: Kingshill (St. Croix, Mar., Dec.).

The Puerto Rican specimens (some 40-odd in the Cornell University Collection) may possibly represent a distinct race from the mainland form, but I am unable to find any valid character for their separation. The somewhat shorter vinculum of the male is matched in some Panamá specimens and is of very doubtful significance. *U. erronella* is easily identified as it is the only described species with a partially divided apical process of gnathos and a girdle of signa. The

remaining species (with the possible exception of *nasutella*) belong in the following group.

Genus *Unadilla*, Species 470–472: *U. maturella* to *U. floridensis*

[Male with apical process of gnathos completely fused; female without signa.]

470. Unadilla maturella (Zeller)

FIGURES 499, 996

Homoeosoma maturella Zeller, Horae Ent. Soc. Rossicae, vol. 16, p. 240, 1881.

Hampson made *maturella* a synonym of *erronella*, but a sketch by Clarke of the male genitalia of the male type shows a completely fused apical process of gnathos which places *maturella* in this group of species. A photograph of the type also shows a pale grayish white form with a strong, dark, transverse, antemedial shade extending on a straight, outward slant from below costa almost to inner margin. I have before me a series of similarly marked specimens from Guatemala and Cuba with genitalia similar to those of Zeller's type, and presumably conspecific. Alar expanse, 14–16 mm.

TYPE LOCALITY: Colombia (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: COLOMBIA. GUATEMALA: Cayuga (Mar., Apr., May). CUBA: Baracoa (May), Havana.

471. Unadilla albidiorella (Richards and Thomson), new combination

Ephestia (*Strymax*) *albidiorella* Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 201, 1932.

Described from a single male. From description and figure published by the authors it must be very close to *maturella* if not a race of that species. I have seen no Peruvian examples of *Unadilla*. Alar expanse, 17 mm.

TYPE LOCALITY: Río Ucayale, Contamino, Perú ("Oct.–Dec.," type in BM).

FOOD PLANT: Unknown.

472. Unadilla floridensis, new species

Darker and more decidedly gray than the other species of the genus; dark pattern markings faint, in some specimens almost obsolete, in others conspicuous only as a single antemedial shade or spot and a narrow fainter dark inner shade along subterminal line of forewing; white dusting rather sparse. Alar expanse, 8–13 mm.

The genitalia (♂ and ♀) are similar to those of *maturella*, exhibiting no differences of a specific nature.

TYPE LOCALITY: Key West, Fla. (type in USNM, 61377).

FOOD PLANTS: *Pulchea odorata*, *Melanthera radiata*.

Described from male type and 10 male and 4 female paratypes from the type locality, reared Apr. 23 to May 1, 1945, by the Special Survey of the Division of Foreign Plant Quarantine, U. S. Bureau of Entomology and Plant Quarantine, from larvae feeding in the blossoms and seed pods of *Pulchea* and *Melanthera*. These are the only food-plant records we have for the genus *Unadilla*. The larvae are similar in markings and habitus to those of *Rotruda mucidella* and like them lack the sclerotized rings about seta IIb of mesothorax and seta III of the eighth abdominal segment.

Genus *Unadilla*, Species 473 (unplaced): *U. nasutella*

473. Unadilla nasutella Hulst

Unadilla nasutella Hulst, Phycitidae of N. Amer., p. 197, 1890.

The male type in the Rutgers Collection lacks an abdomen, so it will be impossible to place *nasutella* in its proper species group or to determine its synonymy until more specimens from the southwestern United States are discovered. Except for the Hulst type I have seen no example of *Unadilla* from New Mexico, Arizona, or Texas. Alar expense, 13.5 mm.

TYPE LOCALITY: Hot Springs, N. Mex. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

Hampson referred *nasutella* as a synonym of *erronella* Zeller and it so stands in our lists. This synonymy is probably incorrect and is certainly unwarranted on the evidence before us.

Genera 131–151: *Laetilia* to *Cactobrosis*

[Venational division A. Forewing smooth, oblong, broadest toward termen; color alike in both sexes; 11 veins; 10 from cell, 8 and 9 stalked, 6 straight, 4 and 5 stalked, 2 and 3 separate or approximate, 2 from near lower outer angle of cell; no costal fold or other secondary sexual modifications. Hind wing with 7 veins; 3 and 5 connate or stalked; 2 from before lower outer angle of cell; discocellular vein curved, complete; no sex-scaling or other sexual modifications; cell one-half or somewhat less than one-half the length of the wing. Abdomen of male with a pair (rarely two pairs) of ventrolateral hair tufts at base of eighth segment or with eighth segment simple. Male genitalia with uncus broad, subtriangular, never hook-shaped or otherwise modified, apex broadly rounded, its outer (dorsal) surface densely covered with bristlelike scales; gnathos terminating in a flanged (or lobed) and hooked apical process, frequently bifid, sometimes fused or partially fused; transtilla incomplete (represented by a pair of separate, more or less elongate-triangulate plates), never forming a bridge or otherwise modified; harpe simple, without clasper or extensions from sacculus or costa; anellus U-shaped; aedeagus straight or slightly sinuate, usually smooth, but occasionally with a few very small scobinations at apex; penis smooth, finely scobinate or with sclerotized wrinklings but not otherwise armed; vinculum stout and broad, short or long, and with terminal margin normally broadly rounded. Female genitalia with bursa copulatrix membranous, smooth or more or less minutely scobinate on inner surface, never strongly sclerotized or pigmented; signum frequently absent, when present consisting of a small, ribbed, weakly serrate, finely scobinate or cupped plate; ductus bursae membranous throughout or scobinate for a short distance from genital opening, gradually widening into and not sharply differentiated from bursa copulatrix; genital opening normally simple, sometimes minutely scobinate, occasionally with sclerotized dorsal or ventral plates or a few setae on the inner surfaces of the ductus at the opening, otherwise unmodified or unarmed; ductus seminalis from bursa, rarely from ductus bursae near junction with bursa.]

131. Genus Laetilia Ragonot

Laetilia Ragonot, Entomologica Americana, vol. 5, p. 116, 1889; Bull. Soc. Ent. France, p. viii, January 1890.—Hulst, Phycitidae of N. Amer., p. 182, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, pp. 116, 560, 1901.—Forbes, Cornell Mem. 68, p. 631, 1920. (Type of genus: *Dakruma coccidivora* Comstock.)

Laosticha Hulst, U. S. Nat. Mus. Bull. 52, p. 431, 1902.—Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 159, 1904. (Type of genus: *Dakruma ephestiella* Ragonot.)

Tongue short (greatly reduced in *melanostathma* and *glomis*, but not completely enclosed and hidden by the labial palpi). Antenna pubescent, shaft simple in both sexes. Labial palpus oblique or obliquely upturned (males of *melanostathma* and *zamacrella*). Maxillary palpus filiform or subsquamous (*coccidivora*). Hind wing with veins 7 and 8 anastomosing for at least half their distance beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apex of uncus normally broadly rounded (somewhat narrowly rounded in *coccidivora*, *cardini*, and *myersella*); apical flanged process of gnathos stout, the lobes fusing posteriorly; aedeagus smooth, moderately stout; penis without cornuti, rarely with a few sclerotized folds (*zamacrella*, *myersella*), otherwise smooth; vinculum stout, rarely longer than broad (*fiskella*).

Female genitalia with signum consisting of a narrow, flanged or a small rounded, bluntly dentate plate; bursa copulatrix, except for signum and occasional minute scobinations surrounding the signum, smooth; ductus bursae with a sclerotized ventral plate and a pair of dorsal sclerotized plates at genital opening, otherwise smooth; ductus seminalis from anterior end of bursa copulatrix.

Larvae predaceous on scale insects.

The genus as here defined is structurally a somewhat composite group but is, I think, a natural one, linking in one direction with *Rhagaea*, *Zophodia*, and the cactus-feeding phycitine genera and on another with two or three as yet undefined genera of coccid feeders in the Anerastiinae. Typical *Laetilia* (*coccidivora* to *portoricensis*) are as much an erastiine as phycitine on male genitalic characters (especially the general habitus of the organs as well as the peculiar development of the gnathos), but the tongue, while much reduced, is distinctly exposed as in most other short-tongued Phycitinae. Three of the transition species (*melanostathma*, *amphimetra*, and *glomis*) have the tongue rudimentary and on this structure could go into the Anerastiinae, were it not for their genitalia. The remaining transition species (*zamacrella*, *myersella*, *ephestiella* and *fiskella*), all nearctic species, are definitely phycitine on all characters. On the sum of its characters *Laetillia* must be included in the Phycitinae. Upon one or more structural differences it can be distinguished from any other phycitine or anerastiine genus.

474. Laetilia coccidivora (Comstock)

FIGURES 63, 502, 503, 997

Dakruma coccidivora Comstock, North Amer. Ent., vol. 1, p. 26, 1879; Rep. Comm. Agr. for 1879, p. 241, 1880.—Packard, U. S. Ent. Comm. Bull. 7, p. 54, 1881; U. S. Dep. Agr. Fifth Rep. Ent. Comm., p. 413, 1890.

Dakrum pallida Comstock, Rep. Comm. Agr. for 1879, p. 243, 1880.

Laetilia coccidivora (Comstock) Ragonot, Ent. Amer., vol. 5, p. 116, 1889; Bull. Soc. Ent. France, p. viii, 1890.—Hulst, Phycitidae of N. Amer., p. 182, 1890; U. S. Nat. Mus. Bull. 52, p. 431, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 117, 1901.—Hunter, Pratt, and Mitchell, U. S. Dept. Agr. Bur. Ent. Bull. 113, pp. 24, 26, 1912.—Forbes, Cornell Mem. 68, p.632, 1920.—McDunnough, Check list, No. 6328, 1939.

Zophodia dilatifasciella Ragonot, N. Amer. Phycitidae, p. 13, 1887.—Hulst, Phycitidae of N. Amer., p. 174, 1890; U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 21, 1901.—Hunter, Pratt, and Mitchell, U. S. Dep. Agr. Bur. Ent. Bull. 113, pp. 24, 26, 1912.—McDunnough, Check list, No. 6309, 1939. (New synonymy.)

Laetilia coccidivora hulstii Cockerell, Amer. Nat., vol. 31, p. 588, 1897.—Hulst, U. S. Nat. Mus. Bull. 52, p. 431, 1903.—McDunnough, Check list, No. 6328a, 1939.

Laetilia hulstii (Cockerell) Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 228, 1904.

Palpi, face, head, and thorax brownish fuscous dusted with white, the white more pronounced on undersurface of second segment of labial palpus, on head, and on collar. Forewing pale brownish fuscous heavily dusted with white and with dark brown bordering the transverse lines; the white dusting concentrated on the costal half of wing, giving this area (especially between cell and costa) a distinctly whitish appearance; area between cell and inner margin (and, beyond cell, between vein 3 and tornal margin) more or less suffused with pale ocherous fuscous; costa for a short distance from base blackish brown; in most specimens a rather obscure transverse pale brownish basal band extending from just below base of costa to inner margin near antemedial line (only observable on unfaded specimens, sometimes obsolete); from middle of basal band a short blackish streak; antemedial line slanting outwardly from costa, slightly angled or bent at fold, white and margined inwardly by a very narrow blackish brown band which fades out towards costa, and outwardly margined by a broad blackish brown band, especially contrasted towards costa; subterminal line, faint, sinuate (inwardly angled opposite cell and also, but very slightly, at fold), inwardly margined by a narrow blackish brown band and outwardly edged for a short distance from costa by a broader, more or less triangular, blackish shading; a small blackish dot or line at upper angle of cell and another at lower outer angle, these occasionally fused but normally well separated; along termen at the vein ends a row of obscure brownish dots; cilia ashy gray. Hind wing whitish with a somewhat smoky tint, a dark shading along costa, a narrow dark line along termen and some dark shading on the veins; cilia white with a broad, slightly darker, basal band. Alar expanse, 10–20 mm.

Male genitalia with gnathos terminating in a flanged process with drooping lobes and a pair of short, strongly sclerotized, divergent posterior horns; apex of uncus truncate; penis simple, without cornuti or sclerotized folds.

Female genitalia with signum rather large, a single, elongate, strongly sclerotized, pocketlike projection into bursa; bursa copulatrix, except for signum, smooth.

TYPE LOCALITIES: Washington, D. C. (*coccidivora*, in USNM); Sanford, Fla. (*pallida*, in USNM); Las Cruces, N. Mex. (*hulstii*, in AMNH, ex Rutgers); Arizona (*dilatifacsiella*, in Paris Mus.).

FOOD: Various Coccidae.[12] Specific records include *Pulvinaria vitis* (L.) (originally identified as *Lecanium acericola* or *Pulvinaria innumerabilis*), *Pulvinaria amygdali* Ckll., *Pulvinaria bigeloviae* Ckll., *Toumeyella numismaticum* (Ckll.), *Toumeyella* spp., *Coccus hesperidum* L., *Eriococcus quercus* (Coms.), *Saissetia oleae* (Bern.), *Kermes* spp., *Lecaniodiaspis* sp., *Cerococcus quercus* Coms., *Lecanium arizonensis* King, *Dactylopius* sp., *Dactylopius confusus* Ckll., *Neolecanium cornuparvum* (Tho.), *Dactylopius tormentosus* (Lam.), *Pseudococcus* sp. The larvae will also feed in flowers of cactus (*Platypuntia* spp.)

DISTRIBUTION: *District of Columbia* (July); *Virginia*, Falls Church (Aug.), Vienna (July); *Maryland*, Plummers Isl. (June); *Pennsylvania*, Longhorne (Oct.), Rockville (Apr.); *Ohio*, Newark (Nov.); *Florida*, no specific locality (May), Everglades (Apr.), Chokoloskee, Miami (Feb.); *Alabama*, Mobile (June); *Mississippi*, Biloxi (June); *Louisiana*, Baton Rouge (Aug., Nov.), New Orleans; *Texas*, Sabinal (Mar.), Victoria (Feb.), Brownsville (Jan., Feb., Apr.), Kerrville (Apr., May), San Antonio (Oct.), Uvalde (May, Aug.), Sterling City (Oct.), Dallas (Nov.), Corpus Christi (Feb.); *New Mexico*, Mesilla Park (June), Hot Springs; *Arizona*, Tucson (June, Nov.), Paradise (Mar., Sept., Oct.), Redington, Palmerlee, Huachuca Mts., Wilgus Mts., Baboquivari Mts. (July, Sept., Oct.); *California*, San Bernardino (Nov.), San Diego (Oct.), Palm Springs, no locality (Mar.).

There is considerable variation in size in this species and corresponding differences in the shape of the flanged processes of the gnathos and the length of the lateral arms of anellus, but nothing that would justify separation into races; for the extremes of difference in size and structure are present in the reared cotype series from Washington, D. C. The name *dilatifasciella* applies to Arizona specimens which average larger than those from eastern localities and show some occasional traces of ocherous shading on the lower half of forewing. Here also there is no consistency which would justify even a racial separation. The name has escaped synonymy so far only because specimens identified to it have been placed in the wrong genus. The larvae of *coccidivora* like those of other species of *Laetilia* are predaceous on the Coccidae. For obvious reasons they do not attack the smaller hard-scaled species but otherwise are not restricted, feeding on any of the larger scales and mealy bugs that occur in colonies of sufficient number to provide food. They seem to be fond of the cochineal scale on cactus and on this plant will occasionally vary their diet by feeding upon the flowers. Several moths have been reared from larvae which fed altogether upon the flowers of *Platypuntia*. As a consequence *coccidivora* has been listed as a cactus insect; but this plant feeding is, I believe, only a departure from the normal predaceous habit. Certainly *coccidivora* does not favor the coccids on cactus above those on other plants. Its impartiality in diet and lack of host restriction are probably accountable for its ineffectiveness as an agent of control in scale infestations.

[12] Dr. Harold Morrison was good enough to check the coccid records in connection with rearings of *L. coccidivora* and has supplied the names of coccids here given.

475. Laetilia coccidivora quadricolorella (Dyar), new combination

FIGURES 504, 999

Atascosa quadricolorella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 116, 1904.

Poujadia quadricolorella (Dyar), Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, no. 5819, 1917.—McDunnough, Check list, No. 6422, 1939.

Differs from that of typical *coccidivora* in that the white dusting is more abundant on head, thorax, and forewing, and the brownish fuscous shading largely replaced by ocherous; the basal patch ocherous with a narrow outer border of blackish scales; band outwardly bordering the antemedial line ocherous with a blackish brown dash or narrow smudge at top of cell; area between cell and inner margin and between antemedial and subterminal lines more or less ocherous (in California specimens before me completely so); subterminal line narrowly bordered inwardly and outwardly by blackish scales, especially towards costa; black scales more or less lining the upper margin of cell; blackish discal dots at end of cell and along termen at vein ends rather sharply contrasted against the white dusting of the ground color. Hind wing clear white with no dark scaling on the veins; along termen a narrow brown line. Alar expanse, 15–20 mm.

Male genitalia with apex of gnathos more rounded, posterior horns of apical process of gnathos somewhat shorter and closer together than those of typical *coccidivora;* but otherwise substantially the same. Female genitalia not essentially different from those of typical *coccidivora.*

TYPE LOCALITY: Las Cruces, N. Mex. (type in USNM).

FOOD: Unknown (none of the specimens before me has been reared but the larvae presumably feed upon more than one species of coccids).

DISTRIBUTION: *New Mexico*, Las Cruces, Fort Wingate (May); *Arizona*, Redington; *California*, Mojave (Aug.), Olancha (May, June).

This local color variety (it is hardly more than that) has probably escaped synonymy because it was described in the wrong genus and subfamily. When it is reared we may discover that it has no right even to racial distinction. In New Mexico and Arizona it and typical *coccidivora* occur in the same localities. The California specimens before me, however, show such marked contrasts in color (intensity of the white dusting and light ocherous tint of the normally brownish areas

of forewing) that I hesitate to sink the name completely. It is possible that *hulstii* Cockerell and *quadricolorella* stand for the same form (types of both are from Las Cruces and have clear white hind wings); but the type of the former (♀) is unrecognizable and the name may very well be left where it is.

Dyar's type is a male and not a female as he stated in his description.

476. Laetilia coccidivora cardini Dyar

FIGURES 505, 998

Laetilia cardini Dyar, Ins. Insc. Menstr., vol. 6, p. 139, 1918.

Not distinguishable from small specimens of typical *coccidivora* except that the hind wing is somewhat darker. In addition to the female type I have before me another female from the type locality and three males and eight females from Orlando, Fla. The Florida specimens were reared from larvae feeding on mealy bugs on grapefruit.

The female genitalia differ only in their smaller size from genitalia of normal *coccidivora*, but even in this detail do not differ from equally small examples of *coccidivora*. The male genitalia show apex of uncus rather more pointed and the posterior horns of apical process of gnathos more widely spaced than those of typical *coccidivora*. However there is considerable variability in these structures in *coccidivora* and the differences exhibited by the male of *cardini* may not be constant. In my opinion they do not justify more than racial separaton.

TYPE LOCALITY: Santiago de las Vegas, Cuba (type in USNM).

FOOD: Mealy bugs.

DISTRIBUTION: CUBA: Havana, Santiago de las Vegas. UNITED STATES: *Florida*, Orlando (June).

477. Laetilia obscura Dyar

FIGURES 506, 1000

Laetilia obscura Dyar, Ins. Insc. Menstr., vol. 6, p. 140, 1918.

Brownish fuscous with a sparse scattering of whitish scales on head, thorax, and subcostal area of forewing. Usual transverse markings on forewing nearly obsolete; antemedial line very faint, straight, shaded outwardly towards costa by dark brown; subterminal line a mere trace; discal dot obscure; cilia very little paler than ground color. Hind wing pale smoky fuscous, darkened outwardly and with blackish brown terminal margin; cilia slightly paler with dark basal band. Alar expanse, 9–11 mm.

Male genitalia similar to those of *coccidivora cardini* but with posterior horns of gnathos more widely spaced. Female genitalia with signum similar to but weaker and narrower than that of *coccidivora* or any of its varieties.

TYPE LOCALITY: Santiago de las Vegas, Cuba (type in USNM).

FOOD: Presumably Coccidae (type series apparently reared but without labels to indicate food or dates of emergence).

DISTRIBUTION: CUBA.

Represented in the National Collection only by specimens from the type locality. It may prove to be merely a dark, suffused race of *coccidivora;* but the uniformly dark color, the almost complete obliteration of the usual transverse markings, and the much narrower signum suggest a distinct species.

478. Laetilia portoricensis Dyar

FIGURES 500, 1001

Laetilia portoricensis Dyar, Ins. Insc. Menstr., vol. 3, p. 62, 1915.—Wolcott, Journ. Agr. Univ. Puerto Rico, vol. 20, No. 1, p. 479, 1936.

Palpi, face, head, and thorax pale brownish fuscous with a few white scales on inner side of palpus and on face. Forewing pale brownish fuscous with area between costa and upper vein of cell and antemedial and subterminal lines white; on this white area a rather conspicuous midcostal, blackish brown dash; basal area paler than ground color, whitish toward costa; transverse pale lines obscure, indicated chiefly by their dark outer borders; antemedial line slightly angled at cell, bordered outwardly by blackish brown which is conspicuous on costa and forms a patch at the cell; subterminal line outcurved between veins 2 and 5, rather broadly bordered with blackish brown towards costa; a blackish brown discal dot at upper outer angle of cell; more or less blackish shading along submedian fold and upper vein of cell; a few indistinct dark spots on pale termen between the veins; cilia concolorous with pale terminal margin. Hind wing pale smoky brown; terminal margin dark brown; cilia sordid whitish with dark basal band. Alar expanse, 10–13 mm.

Male genitalia with gnathos terminating in a pair of rather weakly sclerotized, liplike lobes without posterior horns; uncus rather broad but laterally folded, apical margin rounded; penis without cornuti. Female genitalia with signum a rather small, nearly round, sclerotized, scobinate disk; bursa copulatrix, except for signum and area immediately adjoining it, smooth; vinculum long.

TYPE LOCALITY: Río Piedras, Puerto Rico (type in USNM).

FOOD: *Saissetia oleae, Lecanium* sp.

DISTRIBUTION: PUERTO RICO: Río Piedras (Nov.), Bayamón (Aug.), Comerio (Aug.).

The genitalia and the midcostal dark dash on forewing readily distinguish this species from anything else in the genus. Dyar described it as "gray," but the ground color and general effect, except for the contrasted whitish subcostal area, is more brown than gray.

479. Laetilia melanostathma (Meyrick), new combination

FIGURES 501, 507, 1002

Euzophera melanostathma Meyrick, Exotic Microlepitoptera, vol. 5, pt. 5, p. 134, 1937.

Palpi, head, and thorax pale grayish brown. Forewing light gray with a whitish suffusion in subcostal

area and a faint lilac tint due to sparsely scattered, reddish brown scales; antemedial line very faintly indicated, straight, slanting inwardly from costa, and bordered outwardly in cell by a blackish blotch, this black marking not continued to costa; at outer end of cell a similar conspicuous, large, round black spot; a faint dark streak on midcosta; subterminal line faint, sinuous, bordered outwardly and inwardly by blackish bands, the latter rather broad and well defined from costa but fading out toward inner margin; a few irregular black dots on termen between the veins; cilia slightly paler than ground color of the wing. Hind wing very pale smoky fuscous, translucent and almost white towards base, somewhat darker in the female; terminal margins dark; cilia slightly paler than wing. Alar expanse, 11–12 mm.

Male genitalia with gnathos terminating in a broad heart-shaped process composed of two partially cleft, partially fused lobes ending in a single, slender posterior horn; vinculum rather long and broad; penis without cornuti.

Female genitalia with ductus bursae strongly and broadly sclerotized on ventral side toward genital opening; bursa copulatrix minutely scobinate; signum similar to that of *coccidivora*, but smaller.

TYPE LOCALITY: Concordia, Entre Ríos, Argentina (type in BM).

FOOD: *Tachardiella argentina.*

As yet known only from the type locality.

The four specimens examined had been reared (Nov. 1936) and were submitted by K. J. Hayward, and presumably formed part of the original series from which the type and paratypes were selected.

This species is a somewhat anomalous *Laetilia*. The very short tongue, short and acuminate third segment of labial palpus, and definitely filiform maxillary palpus suggest other generic placement; but the genitalia show that it is closely allied to typical *Laetilia*. It certainly does not belong in *Euzophera* where it was originally placed. The two conspicuous black spots on the cell of forewing will identify it specifically, and distinguish it from other described species of the genus with the possible exception of *amphimetra*.

480. Laetilia amphimetra (Meyrick), new combination

Euzophera amphimetra Meyrick, Trans. Ent. Soc. London, vol. 89, pt. 4, p. 47, 1939.

This species is known to me only from the description. In the National Collection there are five badly rubbed specimens (one ♂ and four ♀) reared from larvae feeding on a *Ceroplastes* sp. at Valemar, Chile, by P. A. Barry ("9–21–40") which might be *amphimetra*. What is left of the pattern matches well enough with Meyrick's description. The markings are similar to those of *melanostathma* and the male genitalia are identical, except that the vinculum is shorter in the Chilean specimen. It and its accompanying females, however, are appreciably darker than typical examples of *melanostathma*. If the Chilean specimens are *amphimetra*, the latter is probably no more than a color variety of *melanostathma*.

TYPE LOCALITY: Concordia, Entre Ríos, Argentina (type in BM).

FOOD: *Ceroplastes* sp. on guava.

481. Laetilia zamacrella Dyar

FIGURES 508, 1004

Laetilia zamacrella Dyar, Ins. Insc. Menstr., vol. 13, p. 12, 1925.—McDunnough, Check list, No. 6327, 1939.

Palpi, face, head, thorax, and forewing grayish fuscous rather evenly dusted with white (the head densely so) making the general color to the naked eye a pale slate gray. Forewing blackish at base for a very short distance; antemedial line nearly vertical, slightly indented at fold, white, bordered within and without by blackish brown, outer dark border appreciably broadened at top of cell; a conspicuous blackish discal spot at outer margin of cell; subterminal line sinuate (outwardly angled between veins 1 and 5), white, narrowly bordered inwardly and outwardly by blackish fuscous; along termen a row of more or less fused blackish spots; cilia ashy gray. Hind wing semihyaline with a pale fuscous shade bordering costa and a fine fuscous line along termen from apex to vein 1b; veins slightly darker than wing membrane; cilia white. Alar expanse, 24–25 mm.

Male genitalia with apical process of gnathos partially fused, large, the lobes broadly flaring, the posterior projections stubby and close together; penis with several long sclerotized folds but without cornuti. Female genitalia with a pair of strongly sclerotized dorsal plates in ductus bursae at genital opening; ventral plate at opening large; signum a small flanged plate; bursa copulatrix smooth except for a few minute scobinations surrounding signum.

TYPE LOCALITY: Mount Wilson, Calif. (type in USNM).

FOOD: Scales on pine.

DISTRIBUTION: *California*, Mount Wilson (July), Mount Hamilton (Apr., May).

The seven Mount Hamilton specimens were reared by H. E. Burke, under Hopkins No. 19013d, from larvae feeding on an unidentified scale on *Pinus radiata*. The moth superficially resembles *Dioryctria abietella* and might easily be mistaken for a *Dioryctria* species except for its reduced hind wing venation and the black rather than white discal spot on forewing. Its genitalia, except for their squat appearance, resemble those of *Zophodia* and *Cactobrosis* and show the close affinity of *Laetilia* to the cactus-feeding phycitine genera.

482. Laetilia myersella Dyar

FIGURES 509, 1003

Laetilia myersella Dyar, Proc. Ent. Soc. Washington, vol. 12, p. 54, 1910.—Forbes, Cornell Mem. 68, p. 632, 1920.—McDunnough, Check list, No. 6330, 1939.

Palpi, face, head, and thorax brownish fuscous sparsely dusted with white, the white dusting most conspic-

uous on the middle third of tegulae, throwing into contrast their dark basal and even darker apical areas. Forewing ashy white with brownish areas forming a rather strongly contrasted pattern; basal area brownish fuscous with a narrow pale subbasal border; antemedial line well marked, somewhat sinuate and slanting outward from costa to inner margin, white, with a narrow dark inner border and a broad darker outer border which is appreciably broadened towards inner margin; discal dots fused into a large, dark spot at end of cell; subterminal line slightly sinuate (outwardly angled between veins 1 and 5), white, rather broadly bordered inwardly and outwardly by dark brownish fuscous; terminal area of the pale ground color with terminal margin dark brown; cilia pale brownish fuscous. Hind wing pale fuscous with a dark line along termen; cilia whitish. Alar expanse, 14–16 mm.

Male genitalia with apical process of gnathos partially fused, large, the lobes flaring but not so broadly so as those of *zamacrella*, the posterior projections sharp and appreciably separated; penis with several long sclerotized folds but without cornuti (similar to that of *zamacrella*).

Female genitalia with a pair of strongly sclerotized plates in ductus bursae at genital opening; ventral plate at opening large; signum a small plate with from two to four bladelike projections; bursa copulatrix smooth except for a few minute scobinations surrounding signum.

TYPE LOCALITY: Rockville, Pa. (type in USNM).

FOOD: Scales on pine.

DISTRIBUTION: *Pennsylvania*, Rockville (May); *North Carolina*, Tryon, Southern Pines (Sept.).

Twelve specimens examined.

This species is apparently confined to the Eastern States. It is readily separable on habitus and structure from the western *zamacrella* but is obviously closely related to that species.

483. Laetilia ephestiella (Ragonot)

FIGURE 510

Dakruma ephestiella Ragonot, N. Amer. Phycitidae, p. 13, 1887.
Laetilia ephestiella (Ragonot) Hulst, Phycitidae of N. Amer., p. 185, 1890.—Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 159, 1904; vol. 7, p. 37, 1905.—McDunnough, Check list, No. 6326, 1939.
Lasiosticha ephestiella (Ragonot), Monograph, pt. 2, p. 109, 1901.
Laosticha ephestiella (Ragonot) Hulst, U. S. Nat. Mus. Bull. 52, p. 431, 1903.
Maricopa lustrella Dyar, Proc. Ent. Soc. Washington, vol. 5, p. 227, 1903.

Ashy fuscous, resembling *myersella* very closely in color and markings but with the transverse pale lines and dark areas of forewing less strongly contrasted; antemedial and subterminal lines faint but distinguishable and otherwise as on *myersella*, their dark borders a paler brown, not so broad and more obscured than those on *myersella*. Hind wing translucent, with a very pale ocherous tint; termen hardly darker; cilia concolorous. Alar expanse, 17–20 mm.

Male genitalia with apical process of gnathos partially fused, large, the lobes flaring and similar to those of *myersella*, the posterior projections short, blunt and close together as in *zamacrella*. Uncus narrower than that of either *myersella* or *zamacrella*.

TYPE LOCALITIES: Arizona (*ephestiella*, in Paris Mus.); Williams, Ariz. (June; *lustrella*, in USNM).

FOOD: Unknown, presumably scales.

DISTRIBUTION: *Arizona*.

This species is known to me only from Dyar's male type. I have no reason to question the synonymy which he proposed in 1905. The three species, *zamacrella*, *myersella*, and *ephestiella*, can readily be separated on color and genitalic characters but they are obviously very closely related and form a distinct subgroup within the genus.

484. Laetilia fiskella Dyar

FIGURES 511, 1005

Laetilia fiskella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 221, 1904.—McDunnough, Check list, No. 6331, 1939.

Similar in color and markings to *myersella* except that central area of forewing (between antemedial and subterminal lines) is much darker, blackish brown; the basal area is paler than the median area, but the entire wing lacks the dusting of white so characteristic of *myersella*; antemedial white line outwardly angulate at middle; discal dot as in *myersella*, but sometimes obscured by the general dark suffusion. Hind wing dark smoky fuscous; cilia slightly paler. Alar expanse, 16–20 mm.

Male genitalia of the *Baphala* type; uncus with lateral edges concave; apical process of gnathos consisting of a pair of tear-shaped lobes fused at apex; vinculum long; penis smooth. Female genitalia with pair of sclerotized plates in ductus bursae at genital opening; ventral plate at genital opening large; ductus bursae long and much more slender than in *myersella*; signum a small plate armed with several irregularly shaped, thornlike projections; bursa copulatrix triangulate, smooth except for a few minute scobinations surrounding signum.

TYPE LOCALITY: Tryon, N. C. (type in USNM).

FOOD: Unknown, presumably scale insects.

Known to me only from the type series, two males and three females from the type locality (not one male and four females as stated by Dyar). The species is a transition one linking typical *Laetilia* and *Baphala*; it has *Baphala* genitalia but lacks the other diagnostic characters of that genus, the eighth abdominal segment of the male being simple, the male antenna without sinus or sex-scaling on the base of shaft, and veins 3 and 5 of hind wing strongly stalked.

485. Laetilia glomis (Dyar), new combination

FIGURE 512

Euzophera glomis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 335, 1914.

Clay colored, with extreme base of forewing blackish; antemedial line slanting outwardly to inner margin and with a slight notch at vein 1b, distinct and blackish; subterminal line faint, narrow, subdenticulate, blackish, bordered outwardly by a somewhat wider pale band;

two faint, dark discal dots at outer angles of cell; along termen a row of faint blackish dots. Hind wing glossy smoke brown; cilia very slightly paler, nearly concolorous with wing. Alar expanse, 16 mm.

Male genitalia with lateral edges of uncus concave (but not so deeply as in *fiskella*); apical process of gnathos partially fused, the lobes small, rounded, the posterior fused portion rather broad and forked at apex; vinculum short (as wide as long); penis with a few weakly sclerotized folds, otherwise unarmed.

TYPE LOCALITY: Taboga Isl., Panamá (Feb., type in USNM).

FOOD: Unknown, presumably scales.

Represented only by the unique type, a male (not female, as stated by Dyar). The tongue is greatly reduced and less exposed by the labial palpi than that of *melanostathma* Meyrick, indicating *glomis* as another direct link between *Laetilia* and the coccid-feeding Anerastiinae. Its genitalia, however, show that *glomis* is better placed in the Phycitinae and in *Laetilia* than with the coccid-feeding complex referred to the Anerastiinae.

Baphala, new genus

TYPE OF GENUS: *Euzophera homoeosomella* Zeller.

Tongue well developed. Antenna pubescent; in male some rough scaling in a very shallow sinus toward base of shaft. Labial palpus obliquely upturned, reaching to level of or slightly above vertex. Maxillary palpus filiform. Hind wing with veins 7 and 8 anastomosing for most of their length (free end of 8 very short and weak); 3 and 5 closely approximate or connate at lower angle of cell; cell less than one-half (little more than one-third) the length of the wing. Abdomen of male with a pair of ventrolateral hair tufts from eighth segment.

Male genitalia with uncus narrowed at middle, the lateral edges deeply concave, apex rounded; apical process of gnathos a pair of moderately large lobes fusing and hooked posteriorly; aedeagus smooth; penis with weakly sclerotized wrinklings, otherwise unarmed; vinculum stout, longer than broad.

Female genitalia with signum a small coarsely dentate plate; bursa copulatrix more or less finely scobinate on inner surface; ductus bursae with a sclerotized ventral plate and internal scobinations at genital opening, otherwise smooth; ductus seminalis from anterior end of bursa.

Larvae predaceous on scale insects.

The genus is close to but distinct from *Laetilia*, easily distinguished by its stronger tongue, the sex-scaling on shaft of male antenna, the narrower median area of uncus, the abdominal tufts on eighth segment of the male, and the shorter cell and the approximate (rarely connate) condition of veins 3 and 5 of hind wing. Structural differences separating the species are slight and chiefly in the size and shape of the terminal process of gnathos. Differences in the female signa (usually of specific value) are unreliable in *Baphala*, for they are as great among individuals of a given species as they are between any two of the species themselves. The hind wings are similarly colored and exhibit the same sexual difference in the several species, whitish and semihyaline in the male, pale smoky fuscous in the female.

486. Baphala basimaculatella (Ragonot), new combination

FIGURES 514, 1006

Vitula basimaculatella Ragonot, N. Amer. Phycitidae, p. 15, 1887.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 82, 1901.—McDunnough, Check list, No. 6325, 1939.

Vitula basimaculella Hulst, Phycitidae of N. Amer., p. 179, 1890; U. S. Nat. Mus. Bull. 52, p. 431, 1902 (misspelling).

Laetilia eremiella Dyar, Proc. Ent. Soc. Washington, vol. 12, p. 54, 1910.—McDunnough, Check list, No. 6329, 1939. (New synonymy.)

Forewing pale whitish gray, very little darker along inner margin; discal dots and transverse dark markings blackish and strongly contrasted especially toward costa; the discal dots normally separated but occasionally partially fused. The palest species in the genus and the only one known from the United States. The male type in Paris lacks an abdomen but is obviously what Dyar later described as *eremiella*. It was sent to Ragonot by C. V. Riley and is labeled "Am. Sept." In the Stainton Collection in the British Museum are two matching specimens from Texas. The male genitalic figure was drawn from one of these. The two specimens in Paris from Loja, Ecuador, associated by Hampson with *basimaculatella* are not that species. I have examined the genitalia (male) of one of these Loja specimens but am unable to match them with those of any described species of Phycitinae known to me.

Alar expanse, 15–19 mm.

TYPE LOCALITIES: United States (*basimaculatella*, in Paris Mus.); Stockton, Utah (*eremiella*, in USNM).

FOOD: Unknown. Larvae presumably predaceous on coccids.

DISTRIBUTION: *Texas; Utah*, Stockton (Aug.), Provo (July, Aug.).

487. Baphala goyensis (Ragonot), new combination

FIGURES 513, 1009

Zophodia goyensis Ragonot, Nouv. Gen., p. 31, 1888; Monograph, pt. 2, p. 25, 1901.

Extreme base of forewing blackish fuscous; contrastingly whitish beyond to the broad blackish fuscous antemedial band; latter somewhat irregular, more or less angulate; ground color of wing between lower margin of cell and costa and between antemedial and subterminal transverse markings, whitish; remainder of wing shading to smoky fuscous with only a faint dusting of white at apex; dark border of subterminal line well contrasted especially towards costa; midcosta contrastingly edged with blackish fuscous; a single rather large discal spot at end of cell (formed by the complete fusion of the ordinary pair of discal dots). Easily identified by the conspicuous discal spot and other blackish fuscous markings. Alar expanse 18–20 mm.

TYPE LOCALITY: Goya, Argentina (type in Paris Mus.).

FOOD: Black and wax scales (*Ceroplastes* and *Saissetia* spp.).

DISTRIBUTION: Southeastern Brazil, Uruguay, Argentina. Six specimens are before me: A male collected by Schaus at Castro, Paraná, Brazil; another Brazilian male without locality label, reared from a larva feeding on a *Ceroplastes* and received from Dr. Costa Lima; and four females reared at the South American Parasite Laboratory of the U. S. Bureau of Entomology and Plant Quarantine, at Montevideo, Uruguay, from larvae feeding on black and wax scales.

488. Baphala goyensis olivacea, new race

FIGURE 1010

Similar in color and markings to *goyensis* except that the thorax and the dark markings on forewing are olivaceous rather than blackish fuscous, and the discal dots at end of cell are usually separated and not fused into a single conspicuous dark spot. Alar expanse, 18–20 mm.

The genitalia show no characters of specific significance to distinguish them from those of typical *goyensis*.

TYPE LOCALITY: Posadas, Argentina (type in USNM, 61378; paratypes in Paris Mus. and BM).

FOOD: Scale insects (not identified).

Described from male type and two male and six female paratypes from type locality, reared (Dec., Jan.) under No. 578–7, at the South American Parasite Laboratory of the U. S. Bureau of Entomology and Plant Quarantine, at Montevideo, Uruguay, from larvae predaceous on scales; and one female paratype from Metán, Argentina (Apr.). This last is from the collection of the British Museum and had been identified as *squalida* Walker. Judging from a photograph of the type of Walker's species I do not think it could possibly be that species. Even in its somewhat faded condition the olivaceous color of the thorax and dark forewing markings are distinctly discernible. If this color had been present in the type of *squalida*, Walker or Ragonot would certainly have mentioned it.

489. Baphala homoeosomella (Zeller), new combination

FIGURES 517, 1011

Euzophera homoeosomella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 231, 1881.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 61, 1901.

Vitula bodkini Dyar, Ins. Insc. Menstr., vol. 1, p. 99, 1913; Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914 (new synonymy).

Vitula rusto Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 338, 1914 (new synonymy).

Vitula taboga Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914 (new synonymy).

Vitula saissetiae Dyar, Proc. Ent. Soc. Washington, vol. 31, p. 16, 1929 (new synonymy).

A pale brownish gray species, averaging smaller than either *basimaculatella* or *goyensis* and with the transverse dark markings on forewing weakly contrasted, much obscured in some specimens; discal dots when distinguishable small, not fused; the whitish dusting limited chiefly to a shade along costa and some pale dusting in basal area. Alar expanse, 11–16 mm.

There are no male genitalic structural characters to separate any of Dyar's supposed species from typical *homoeosomella* and only trifling and inconsistent color differences to distinguish them from each other. The females show considerable variation in their signa, but as much or more among specimens of any one of the forms as between typical females of the forms themselves. The greatest variation is shown among specimens from a reared series of typical *saissetiae* (figs. 1011b–f).

TYPE LOCALITIES: Honda, Colombia (*homoeosomella*, in BM); Georgetown, British Guiana (*bodkini*, in USNM); Paraíso (*rusto*, in USNM), Taboga Isl. (*taboga*, in USNM), Barro Colorado Isl. (*saissetiae*, in USNM), all in Canal Zone, Panamá.

FOOD: *Saissetia* spp. and *Ceroplastes* spp. (wax and black scales), *Toumayella* sp.

DISTRIBUTION: CUBA. VIRGIN ISLANDS: St. Croix (July). PANAMÁ CANAL ZONE: Barro Colorado Isl. (May), Paraíso (May), Taboga Isl. (Feb.), Río Trinidad (May). BRITISH GUIANA: Georgetown (June). COLOMBIA: Honda (Apr., Aug., Sept.). BRAZIL: São Paulo (Feb.).

The most widely distributed and apparently the commonest phycitine predaceous on scales in tropical America.

490. Baphala haywardi, new species

FIGURES 516, 1007

In color and markings similar to the more strongly marked color forms of *homoeosomella*, the female hardly distinguishable from the female paratype of *saissetiae;* basal area of forewing, midcostal area above cell, and terminal area beyond subterminal line rather strongly dusted with whitish scales; dark transverse antemedial band pale grayish brown, outwardly angulate and diffusing into a similar shade through most of area between inner margin and cell; sinuate subterminal white line bordered inwardly and outwardly by pale grayish brown; discal dots at end of cell similarly colored; a row of somewhat darker dots along termen. Alar expanse, 15–16 mm.

Male genitalia with vinculum shorter and apical process of gnathos stouter than those of *homoeosomella* or any of the other described species of the genus. Female genitalia with fine scobinations of bursa distributed over most of inner surface; sclerotization of ductus bursae at genital opening weaker than that of *homoeosomella* (compare figs. 1011h and 1007).

TYPE LOCALITY: Concordia, Entre Ríos, Argentina (type in USNM, 61379).

FOOD: *Ceroplastes grandis*.

Described from male type and female paratype from type locality, reared by K. J. Hayward from larvae feeding on the large wax scale (♂, "9–4–1935," ♀, "14–VII–1935," Hayward No. 3185). They were submitted as examples of *homoeosomella*, which they could easily be on color and markings; but their genitalia,

especially those of the male, seem to rule them out from that species.

491. Baphalà glabrella (Dyar), new combination

FIGURES 515, 1008

Euzophera glabrella Dyar, Ins. Insc. Menstr., vol. 7, p. 57, 1919.

A suffused, grayish brown species with markings obscure, the pale transverse antemedial and subterminal lines and the dark discal dots faintly indicated; general color darker (more brownish) than that of *homoeosomella*. Probably only a variety of that species, but a reared series would be needed to determine this. The genitalia show some trifling differences from *homoeosomella*, but none that could be classed as specific.

Alar expanse, 15–16 mm.

TYPE LOCALITY: Cayuga, Guatemala (Apr., May, June; type in USNM).

FOOD: Unknown.

The species is known only from the original series of five specimens upon which the name was based.

492. Baphala squalida (Walker), new combination

Nephopteryx squalida Walker, List, pt. 27, p. 59, 1863.
Zophodia squalida (Walker) Ragonot, Monograph, pt. 2, p. 25, 1901.

I know this species only from photographs of the male type and its genitalia submitted by Tams. The photograph of the moth shows a specimen almost completely suffused with blackish fuscous except for a small area from outer part of cell to costa. The subterminal pale line of forewing, the two discal dots, and the row of terminal dots are distinct, but the antemedial line and the usually contrasted dark transverse markings are indistinguishable in the general dark suffusion. The hind wing shows the veins strongly outlined by dark scaling and the apical area of the wing darkly clouded (unusual markings for a male of this genus). Alar expanse, 20 mm.

TYPE LOCALITY: Rio de Janeiro, Brazil (type in BM).

FOOD: Unknown.

Certain specific application of Walker's name will have to wait upon recovery of more material in reared series from the type locality. If, as I suspect, a series of rather dark *homoeosomella* in the United States National Museum from São Paulo (four males and eight females reared from larvae on wax scales) should prove to be *squalida*, Walker's name will take precedence and *homoeosomella* will fall as a synonym. However, none of our Brazilian specimens is over 16 mm. in expanse and their small size seems to rule them out.

133. Rhagea, new genus

TYPE OF GENUS: *Zophodia packardella* Ragonot.

Tongue well developed. Antenna pubescent, shaft simple in both sexes. Labial palpus porrect. Maxillary palpus filiform. Hind wing with veins 7 and 8 anastomosing for about half their distance beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apex of uncus broad, apical process of gnathos bifid, large; aedeagus moderately long and stout; penis with some very weakly sclerotized scobinations or pubescence but without cornutus.

Female genitalia without signum; bursa copulatrix smooth or (*stigmella*) minutely scobinate-granulate; ductus bursae with a weak bandlike sclerotized ventral plate or scobinate patch on inner surface at genital opening, otherwise membranous; ductus seminalis from anterior end of bursa.

Larvae feeding in roots of Crassulaceae or flowers of Orobanchaceae.

This genus is close to *Zophodia* Hübner. It differs in having porrect labial palpi in both sexes, the eighth segment of male simple, the antennal shaft of the male simple and the female bursa without trace of signum.

493. Rhagea packardella (Ragonot), new combination

FIGURES 518, 1012

Zophodia packardella Ragonot, N. Amer. Phycitidae, p. 12, 1887.—Hulst, Phycitidae of N. Amer., p. 173, 1890; U. S. Nat. Mus. Bull. 52, p. 430, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 22, 1901.—McDunnough, Check list, No. 6305, 1939.

Zophodia orobanchella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 111, 1904.—McDunnough, Check list, No. 6307, 1939. (New synonymy.)

Palpi, head, thorax, and forewings white dusted with brown, giving the moth a pale ash gray appearance. Forewing with costal area paler than remainder of wing; no trace of any transverse antemedial line; dark dustings outlining most of the veins and forming rather conspicuous longitudinal lines through center of cell, on basal third of lower vein of cell, and along the basal third of the fold; a large conspicuous discal spot at end of cell covering the entire crossvein between veins 3 and 8; subterminal line indicated by dark shading which extends from costa near apex to about vein 2, indented between veins 4 and 6 and distinct only towards costa; terminal margin dark; cilia ash gray. Hind wing pale smoky white, with veins and terminal area slightly darker and a fine dark line along termen; cilia sordid white with slightly darker basal band. Alar expanse 18.5–25 mm.

Male genitalia with vinculum shorter and divided apical process of gnathos larger in proportion to remainder of genitalia than those of *stigmella*. Female genitalia with inner surface of ductus bursae finely scobinate-granulate at genital opening; bursa copulatrix minutely and sparsely scobinate.

TYPE LOCALITIES: California (*packardella*, in Paris Mus.); Wawawai, Wash. (*orobanchella*, in USNM).

FOOD PLANT: *Orobanche ludoviciana* Nutall (larvae feeding in the flowers).

DISTRIBUTION: *Washington*, Wawawai (Aug.); *Utah*, Provo (July), Eureka (July); *California*, Dixieland (Apr.); *Arizona*, Phoenix (Mar.); *Colorado*, Fort Collins (Sept.).

Dyar had his specimens of *orobanchella* under *packardella* in the National Collection but, to the best of my knowledge, the synonymy had not been published.

The species is easily recognized by the large, dark, discal spot on the forewing, the most conspicuous marking on the insect.

494. Rhagea stigmella (Dyar), new combination

FIGURES 519, 520, 521, 1013, 1014

Zophodia stigmella Dyar, Pomona Coll. Journ. Ent., vol. 2, No. 4, p. 378, 1910.—Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5716, 1917.

Yosemitia maculicula Dyar, Ins. Insc. Menstr., vol. 1, p. 34, 1913.—Barnes and McDunnough, Contributions, vol. 3, p. 200, 1916.

Zophodia stigmella maculicula (Dyar), Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5716, 1917.

Eumysia stigmella (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list, No. 6300, 1939.

Eumysia maculiella Dyar, Ins. Insc. Menstr., vol. 13, p. 221, 1925 (misspelling for *maculicula*).

Eumysia stigmella maculicula (Dyar), McDunnough, Check list, No. 6300, 1939.

Palpi, face, and head pale brown dusted with white, the scales brown with their tips white. Thorax grayish white shading to pale argillaceous. Forewing grayish (ashy) white with blackish brown markings and a rather broad pale argillaceous shading along the fold and fainter traces of the same color between the veins beyond cell; veins, except on lower half of wing, faintly lined with blackish brown; antemedial line incomplete, acutely angled, in most specimens indicated only by a broad blackish spot on the basal third of inner margin extending from inner margin to vein 1b, a rather conspicuous blackish patch on lower vein of cell just beyond middle and an obscure blackish shade on basal third of costa; subterminal line often obsolete, otherwise indicated by a narrow blackish streak from costa to vein 8, a more or less broken line between veins 5 and 2, and a small blackish patch or spot on vein 1b; rarely are the transverse markings strongly indicated; a more or less pronounced blackish discal spot at lower outer angle of cell and a few obscure blackish spots along termen between the vein ends; cilia argillaceous with the scale tips white. Hind wing semihyaline white with a smoky shade toward apex, a fine dark line along termen, and the veins faintly outlined by smoky scaling; cilia white with a very faint ocherous basal shade. Alar expanse, 21–30 mm.

Male genitalia with vinculum appreciably longer and apical process of gnathos proportionately smaller than those of *packardella*. The type of *stigmella* (fig. 519) is abnormal in that the apical process of gnathos is partially fused. The normal bifid condition is shown in figures 520 and 521. Female genitalia with a weak, bandlike, sclerotized ventral plate on inner surface of ductus bursae at genital opening; bursa copulatrix smooth.

Larva unusual for the family in that the sclerotized rings about setal tubercles IIb on mesothorax and III of eighth abdominal segment are absent. In this respect it is similar to the caterpillar of *Etiella zinckenella* which it otherwise resembles in superficial appearance.

TYPE LOCALITIES: San Diego, Calif. (*stigmella*, in USNM); La Puerta, Calif. (*maculicula*, in USNM).

FOOD PLANT: (*Sedum*) *Hasseanthus elongatus* (larvae boring in the roots; probably also in the roots of other succulents).

DISTRIBUTION: UNITED STATES: *California*, San Diego (Mar., May, June, July, Aug., Oct.), Loma Linda (June), La Puerta (July), Laguna (May), Half Moon Bay (Aug.). MÉXICO: Baja California (June).

This is a variable species in size, markings, and structure. Extremes of difference in genitalia are shown in the figures. Barnes and McDunnough (1916) pointed out that *maculicula* was only a color variety of *stigmella* and in their Check List reduced the name to subspecific rank. I do not believe that it deserves even this status for it represents only one of many color variants. In some specimens the transverse markings on forewing are nearly obsolete, in others more or less indicated but incomplete, and in one specimen before me (Half Moon Bay, Calif., Aug. 11, 1937, W. H. Lange No. 27) the discal spot and transverse lines are conspicuous and the latter complete except at the fold, the subterminal line running from outer fourth of costa transversely to outer third of inner margin, broken between veins 2 and 1b and with a sharp outward angulation near vein 5. The genitalic differences shown in our figures at first glance seem rather striking; but they are not consistent and represent only individual variation.

This species seems to be native to southern California and northwestern México. We have a series of reared specimens from Laguna, Calif. A few larvae and pupae have been intercepted at quarantine ports in California from roots of succulents ("*Sedum* sp.") shipped from México and from another similar interception at San Francisco a large (35 mm.) male was reared.

134. Genus Zophodia Hübner

Zophodia Hübner, Verzeichniss bekannter Schmett[er]linge, p. 370 [1825].—Ragonot, Ent. Monthly Mag., vol. 22, p. 19, 1885.—Hulst, Phycitidae of N. Amer., p. 172, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 18, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 207, 1910.—Dyar, Ins. Insc. Menstr., vol. 13, p. 220, 1925.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 401, 1939.—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 39, 1945. (Type of genus: *Tinea convolutella* Hübner.)

Dakruma Grote, Bull. U. S. Geol. Geogr. Surv. Terr., vol. 4, p. 702, 1878. (Type of genus: *Dakruma turbatella* Grote.)

Tongue well developed. Antenna of male pubescent and with a series of modified, papillalike setae on the inner sides of several basal segments of the shaft; of female simple and very shortly pubescent. Labial palpus oblique in the male, porrect in the female. Maxillary palpus filiform. Hind wing with veins 7 and 8 anastomosing beyond the cell; 3 and 5 connate (in occasional specimens very shortly stalked). Eighth abdominal segment with a pair of weak ventrolateral hair tufts.

Male genitalia with apical process of gnathos bifid, large; apex of harpe evenly rounded; vinculum long; anellus with base of plate narrowly sclerotized, arms moderately long, slender, slightly twisted; aedeagus

moderately long and stout; penis partially ribbed and pubescent.

Female genitalia with a small weak signum developed as a plate with an inwardly projecting flange; bursa copulatrix small, minutely and very weakly scobinate; ductus bursae minutely scobinate, with two rather large, sclerotized, dorsal plates at genital opening; ductus seminalis from bursa near signum.

As here defined the genus is limited to its type species. Its distribution is central and southern Europe, the northern part of the United States and southern Canada.

495. Zophodia convolutella (Hübner)

FIGURES 522, 1015

Tinea convolutella Hübner, Sammlung europäischer Schmetterlinge, Lepidoptera 8, Tineae 2, pl. 5, fig. 34, 1796.

Tinea grossulariella Hübner, Geschichte europäischer Schmetterlinge, Tinea II, pl. C.a.b., fig. 2.a.b.c., [1807–1809] (larva).

Phycis grossulariella (Hübner) Zincken, in German and Zincken, Mag. der Ent., vol. 3, p. 144, 1818.—Treitschke, Die Schmetterlinge von Europa, vol. 9, pt. 1, p. 172, 1832; op. cit., vol. 10, pt. 3, p. 275, 1835.—Duponchel, Histoire naturelle des Lépidoptères, ou papillons de France, vol. 10, p. 206, pl. 279, fig. 9, 1836.

Zophodia grossularialis Hübner, Verzeichniss bekannter Schmett[er]linge p. 370, [1825] (emended spelling for *grossulariella* and to replace *convolutella*).

Zophodia convolutella (Hübner), Verzeichniss bekannter Schmett[er]linge (sic), p. 370, [1825].—Heinemann, Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, no. 2, p. 190, 1865.—Ragonot, Ent. Monthly Mag., vol. 22, p. 19, 1865.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 20, 1901.—Staudinger and Rebel, Catalog der Lepidopteren des palaearctischen Faunengebietes, vol. 2, p. 25, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 207, 1910.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 402, 1939.

Myelois (*Zophodia*) *convolutella* (Hübner) Zeller, Isis von Oken, 1839, p. 178; 1848, p. 679.

Homoeosoma convolutella (Hübner) Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa, vol. 4, p. 107, 1849.

Pempelia grossulariae Riley, First annual report on the noxious, beneficial and other insects of the State of Missouri, p. 140, 1869; Papilio, vol. 1, p. 108, 1881 (suggests synonymy with *convolutella*).—Packard, Guide to the study of insects, p. 331, 1869.

Dakruma turbatella Grote, Bull. U. S. Geol. Geogr. Surv. Terr. vol. 4, pp. 702, 703, 1878; North Amer. Ent., vol. 1, p. 11, 1879.

Myelois convolutella (Hübner) Packard, Guide to the study of insects, ed. 7, p. 331, 1880.

Dakruma grossulariae (Riley) Grote, North Amer. Ent., vol. 1, p. 68, 1880.

Dakruma convolutella (Hübner) Grote, New check list of North American moths, p. 55, 1882 (gives *grossulariae* and *turbatella* as synonyms).

Zophodia grossulariae (Riley) Hulst, Phycitidae of N. Amer., p. 173, 1890; U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 21, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 37, 1905; Ins. Insc. Menstr., vol. 13, p. 221, 1925.—Pack, Utah Agr. Exp. Station. Bull. 216, pp. 1–12, 1930.—McDunnough, Check list, No. 6303, 1939.

Euzophera franconiella Hulst, Phycitidae of N. Amer., p. 177, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 61, 1901.

Zophodia bella Hulst, Canadian Ent., vol. 24, p. 61, 1892.—Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 228, 1904.

Zophodia franconiella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5706, 1917.

Zophodia grossulariae franconiella (Hulst) Dyar, Ins. Insc. Menstr., vol. 13, p. 221, 1925.

Zophodia grossulariae ihouna Dyar, Ins. Insc. Menstr., vol. 13, p. 221, 1925.

Zophodia grossulariae dilativitta Dyar, Ins. Insc. Menstr., vol. 13, p. 222, 1925.

Zophodia grossulariae magnificans Dyar, Ins. Insc. Menstr., vol. 13, p. 222, 1925.

Forewing fuscous dusted with white, the white color strongest in central costal area, the general color gray; antemedial line outwardly oblique to lower vein of cell and notched between cell and inner margin, white, bordered outwardly by a more or less extended black shade; subterminal line oblique, slightly dentate and sinuate, white, bordered inwardly by a black line and outwardly by a narrow black line for a short distance from costa; the fold and veins at extreme base of wing and in area beyond subterminal line faintly outlined in black; discal mark at end of cell black, curved, rarely replaced by a pair of dots; a row of black dots along termen between the vein ends. Hind wing pale smoky white with a narrow dark line along termen. Alar expanse, 25–36 mm.

Male genitalia with lateral margins of vinculum broadly and shallowly excavate, its posterior margins straight. Female genitalia with signum small and weak. The eighth-segment collar is subject to considerable variation in the size and shape of the unsclerotized dorsal area; but these variations do not conform to the varieties that have been named and can be found in any series from one locality.

TYPE LOCALITIES: Germany (*convolutella* and *grossulariella*, no known existing types); Missouri (*grossulariae*, no known existing type); Oldtown, Maine (*turbatella*, in BM); Franconia, N. H. (*franconiella*, in AMNH, ex Rutgers); Massachusetts (*bella*, in AMNH, ex Rutgers); southern Utah (*ihouna*, in USNM); San Diego, Calif. (*dilativitta*, in USNM) Seattle, Wash. (*magnificans*, in USNM).

FOOD PLANTS: *Ribes grossularia* Linnaeus and other *Ribes* species (larva feeding in the fruit).

DISTRIBUTION: EUROPE (central and southern). UNITED STATES: *Maine*, Orono; *New Hampshire*, Hampton (May), Durham; *Missouri; Colorado*, Manitou, Denver (Apr.), Fort Collins (Mar., Apr.); *Utah*, Logan ("June"), Beaver Canyon ("vii"); *Oregon; California*, San Diego; *Washington*, Seattle, Bellingham (Apr.). CANADA: *Quebec*, St. Johns County (Apr.), Mount St. Hilaire (May); *Ontario*, Hymers; *Alberta*, Edmonton (May), Bilby (May); *British Columbia*, Kaslo (Apr.), Wellington (Apr.), Alberni (May), Goldstream (May), Vancouver Isl. (Apr.).

The foregoing localities are for the specimens before me. The species is generally distributed over the northern part of the United States and southern Canada.

The species is more extensively treated in my paper on the cactus-feeding Phycitinae (Proc. U. S. Nat. Mus., vol. 86, pp. 402–405, 1939). In this country it is popularly known as the "gooseberry fruit-worm." It has a rather extensive economic literature and is the most im-

portant lepidopterous pest of the gooseberry here and abroad, often doing serious injury. It is also recorded as an occasional enemy of currants.

There is one generation a year, the moths flying from mid-April to early June. About 10 months are passed in the pupal stage, the insects overwintering as pupae in loose cocoons on the ground under fallen leaves and other rubbish.

135. Genus Melitara Walker

Melitara Walker, List, pt. 27, p. 136, 1863.—Hulst, Phycitidae of N. Amer., p. 171, 1890.—Ragonot, Monograph, pt. 2, p. 12, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 133, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 338, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, pp. 38, 39, 58, 1940. (Type of genus: *Melitara prodenialis* Walker.)

Megaphycis Grote, Canadian Ent., vol. 14, p. 30, 1882. (Type of genus: *Zophodia bollii* Zeller.)

Tongue developed (stout, but rather short). Antenna of male bipectinate, of female shortly bipectinate. Labial palpus porrect. Maxillary palpus squamous. Hind wing with veins 7 and 8 approximate beyond cell; 3 and 5 connate (rarely very shortly stalked). Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid; harpe with apex evenly rounded; vinculum short; anellus with base of plate narrowly sclerotized, arms moderately long and stout; aedeagus stout, moderately long.

Female genitalia without signum, the latter replaced by a few very fine scobinations (not distinguishable in most preparations except under high magnification), bursa copulatrix otherwise simple; ductus seminalis from bursa near junction of ductus bursae and bursa copulatrix.

Larva bluish, not banded; sclerotized plates surrounding body setae rather small; 3 setae in group VII on abdominal segments 7 and 8.

The larvae feed gregariously in the joints of various species of *Platypuntia*.

Eggs laid in chains ("egg sticks").

Melitara and the 16 genera following (*Olycella* to *Cactobrosis*) form what appears to be a natural group of genera and species more closely related to each other than to other Phycitinae, although they also show distinct affinities to *Zophodia* and the coccid feeders of the *Laetilia* complex. They all have a common host association, their larvae being internal feeders in the fruits and stems of various cacti. A fuller treatment of the several species will be found in my paper on the cactus-feeding Phycitinae (Proc. U. S. Nat. Mus., vol. 86, pp. 331–413, 1939).

The genus *Melitara* as here defined is separated from the other cactus-feeding Phycitinae by the following combination of characters: Antennae bipectinate in both sexes; labial palpi porrect in both sexes; veins 7 and 8 of hind wing approximate; veins 3 and 5 of hind wing connate; eighth abdomial segment of male simple; larvae not banded or conspicuously spotted, gregarious in habit throughout feeding period.

Two species are recognized as belonging to the genus, and its distribution is apparently limited to the United States and adjacent areas in northern México.

496. Melitara prodenialis Walker

FIGURES 74, 527, 1016

Melitara prodenialis Walker, List, vol. 27, p. 137, 1863.—Hulst, Phycitidae of N. Amer., vol. 17, p. 171, 1890; U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Ragonot, Monograph, pt. 2, p. 13, 1901.—Hunter, Pratt, and Mitchell, U. S. Dep. Agr. Bur. Ent. Bull. 113, p. 28, 1912.—Dodd, Council for Sci. and Ind. Res., Australia, Bull. 34. p. 27, 1927; Biological campaign against prickly-pear, Brisbane, Australia, p. 77, 1940.—Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 133, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 339, 1939.—McDunnough, Check list, No. 6277, 1939.

Zophodia bollii Zeller, Verh. zool.-bot. Ges. Wien, p. 550, pl. 3, fig. 21, 1872.

Megaphycis bollii (Zeller) Grote, Canadian Ent., vol. 14, p. 30, 1882.

Melitara prodenialis bollii (Zeller) Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 133, 1928.

Palpi, head, and thorax cinereous fuscous sparsely dusted with white, especially on basal segments of labial palpi; posterior margin of thorax blackish. Forewing cinereous fuscous with a heavy dusting of white on costal half; the fuscous and whitish areas contrasted but not sharply defined, the white dusting most pronounced between antemedial and subterminal lines and in subapical area beyond subterminal line; a few black scales scattered over entire wing; antemedial line narrow, black, outwardly angled from basal fourth of costal margin to 1b, less sharply defined from there to inner margin; subterminal line narrow, black outwardly margined by a narrow border of white, beyond which is a faintly dark shading which forms an obscure line paralleling the subterminal line, the parallel black lines most pronounced from costal margin near apex to vein 6; subterminal line irregularly dentate and sinuate, the angulations rather shallow; discal dots fused, forming a black line or smudge along discocellular vein; a row of black dots along termen at the vein ends; cilia grayish fuscous; underside of wing grayish fuscous, in some specimens with a more ocherous tint. Hind wing white, semihyaline with more or less fuscous suffusion at apex and along costal and terminal margins, the fuscous shading more extended in female than male; cilia white with a narrow, dark subbasal line. Alar expanse, 31–45 mm.

Male genitalia with outer margins of vinculum evenly curved; elements of transtilla rather broad. Female genitalia with ductus bursae rather slender for most of its length.

TYPE LOCALITIES: "United States" (*prodenialis*, in BM); Texas (*bollii*, Cambridge Mus. Nat. Hist.).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: *Texas*, Dallas, Freeport, Utopia, College Station (Oct.), Brownsville; *Mississippi*, Biloxi (Sept.); *Oklahoma*, Wichita National Forest (June); *Florida*, Altamont (Sept., Oct.), Key West, Lakeland (Apr.), Crescent City (May), Miami (Oct.), St. Petersburg (Mar., June, Sept., Oct.), Fort Meade (Apr.), Fort

Myers (Apr.), Venice (May); *North Carolina*, Southern Pines (June); *Delaware*, Indian River Bay (July); *New Jersey*, Lakehurst (Sept.); *New York*, Rye (July).

497. Melitara dentata (Grote)

FIGURES 528, 1017

Zophodia dentata Grote, Canadian Ent., vol. 8, p. 158, 1876; Bull. U. S. Geol. Geogr. Surv. Terr., vol. 3, p. 799, 1877.

Megaphycis dentata (Grote), Canadian Ent., vol. 14, p. 30, 1882.

Melitara dentata (Grote) Hulst, Phycitidae of N. Amer., p. 172, 1890; U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Kellogg, Kansas Univ. Quart., vol. 1, p. 39, 1892.—Ragonot, Monograph, pt. 2, p. 14, 1901.—Hunter, Pratt, and Mitchell, U. S. Dep. Agr. Bur. Ent. Bull. 113, p. 28, 1912.—Dodd, Council for Sci. and Ind. Res., Australia, Bull. 34, p. 29, 1927; Biological campaign against prickly-pear, Brisbane, Australia, p. 79, 1940.—Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Heinrich, Proc. U. S. Nat. Mus. vol. 86, p. 341, 1939.—McDunnough, Check list No. 6278, 1939.

Melitara doddalis Dyar, Ins. Insc. Menstr., vol. 13, p. 13, 1925; Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Dodd, Council for Sci. and Ind. Res., Australia, Bull. 34, p. 29, 1927; Biological campaign against prickly-pear, Brisbane, Australia, p. 80, 1940.

Melitara junctolineella Hulst (in part), Canadian Ent., vol. 32, p. 173, 1900.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916.

Melitara bollii Dodd (not Zeller), Council for Sci. and Ind. Res., Australia, Bull. 34, p. 29, 1927.

General color and pattern as in *prodenialis* except: Blackish shading on posterior margin of thorax less pronounced and in some specimens not distinguishable. Forewing with white dusting rather evenly distributed over the entire wing, the whitish and fuscous areas not contrasted except (in some specimens) for a rather narrow pale suffusion along costal margin and a more or less pronounced dark shade from end of cell to middle of inner margin; the subterminal line with no black shading beyond its white border except for a short distance from apex, markedly dentate and sinuate, the angulations deep, the angulation between veins 5 and 6 reaching to the cell. Hind wing semihyaline, in the male almost pure white with little or no fuscous shading, the latter, when present, confined to a narrow band along costal margin and a fine line along termen; in the female fuscous shadings nearly always pronounced, though limited to a narrow line along costal margin, a slight clouding at apex, and a thin line along termen; cilia white. Alar expanse, 33–50 mm.

Male genitalia with outer margins of vinculum slightly sinuate; elements of transtilla slightly narrower than those of *prodenialis*. Slight differences in the shape of the anellus between the two species shown in figures 527e–f and 528b. Female genitalia essentially like those of *prodenialis* except that ductus bursae is normally stouter.

TYPE LOCALITIES: Clear Creek Canyon, Colo. (*dentata*, in BM); Mesilla Park, N. Mex. (*doddalis*, in USNM).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: UNITED STATES: *Wyoming*, Evanston (July), Medicine Bow (July); *Colorado*, Glenwood Springs (July, Aug., Sept.), Fort Collins, Denver, Rocky Ford (Sept.); *Utah*, Buckskin Valley (Iron County, June, July), Eureka (Aug.), Dividend (Aug., Sept.); *Kansas*, Manhattan (Sept.); *Arizona*, Mormon Lake (July), Douglas (Aug., Sept.), Oracle (Sept.), Globe (Sept.), Quijotoa (Oct.), Chiricahua Mts.; *New Mexico*, Mesilla Park (Sept.), Silver City (Sept.), Jemez Springs (July, Aug., Sept.); *Texas*, Uvalde (Sept., Oct., Nov.), Henrietta (Oct.), Trent (Oct.), Rock Springs, Laredo (Sept.), Shafter (Sept.), Albany, Panhandle (Aug.). MÉXICO: Chihuahua (city), Julimes (Sept., Oct.), Morelia (Oct.).

Shortly after the publication of my 1939 paper on the cactus-feeding phycitids (in which I discussed the synonymy of *dentata* and *doddalis*) we received through Mr. Leith Hitchcock a series of moths from Uvalde, Tex., labeled *Melitara bollii*. They were evidently the specimens that Dodd distinguished from *prodenialis* in treating *bollii* as a distinct species. Dyar was responsible for the original identification of *bollii* with *prodenialis* as a race or variety. He apparently was confused by Dodd's biological notes on the Uvalde moths. Some of these moths he placed with other Texas specimens of true *bollii*, while others from the same Uvalde rearing he included under his *doddalis*. *M. bollii* Zeller is a synonym of *prodenialis* while *bollii* Dodd (not Zeller) is merely a southern Texas form of the exceedingly variable *dentata* Grote.

136. Genus Olycella Dyar

Olycella Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 343, 1939.—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 40, 1945. (Type of genus: *Melitara junctolineella* Hulst.)

Tongue developed (as in *Melitara*). Antenna of male bipectinate, of female shortly bipectinate. Labial palpus obliquely ascending (sometimes in the female the third segment is bent forward, which gives the palpus a porrect appearance, but the second segment is always deflected upward and reaches nearly as high as the top of the head). Maxillary palpus squamous. Hind wing with veins 7 and 8 approximate beyond the cell; 3 and 5 connate. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid; harpe with apex evenly rounded; vinculum short; anellus with base of plate narrowly sclerotized, arms moderately long and stout; aedeagus stout, moderately long.

Female genitalia with signum, the latter a small ridged plate; bursa copulatrix wrinkled, otherwise simple and without scobinations; ductus bursae with a pair of sclerotized plates on inner wall at genital opening; ductus seminalis from center of bursa.

Larva white with broad blackish or purplish cross bands on the caudal margins of the segments; sclerotized plates surrounding setae rather small; three setae in group VII on abdominal segments 7 and 8.

The larvae feed gregariously for a short period after hatching (probably during the first instar) but thereafter are solitary in habit. They feed in the joints of various Platypuntias.

The genus is close to *Melitara*, distinguished from it only by the following characters: Labial palpi obliquely ascending; larvae transversely banded and solitary in habit during most of the feeding period.

Three species and one local race are here recognized. They are remarkably alike in structure, the genitalia exhibiting difference of only an individual character. The species, however, can be distinguished by color differences which seem to be constant.

498. Olycella junctolineella (Hulst)

FIGURES 75, 529, 1018

Melitara junctolineella Hulst, Canadian Ent., vol. 32, p. 173, 1900; U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Hunter, Pratt, and Mitchell, U. S. Dep. Agr. Bur. Ent. Bull. 113, p. 25, 1912.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916.—Dodd, Council for Sci. and Ind. Res., Australia, Bull. 34, p. 27, 1927.

Olyca junctolineella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5695, 1917.

Olycella junctolineella (Hulst) Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 344, 1939.—McDunnough, Check list, No. 6281, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, pp. 39, 59, 81, 1940.

Head, thorax, and forewing ocherous fuscous dusted with white and marked with patches and lines of black scales. Labial palpus with the apical ends of the segments blackish. Maxillary palpus crossbanded with black scales. Thorax with some black dusting on posterior margin. Forewing with whitish dusting slightly intensified in costal area; veins faintly outlined in black; a row of more or less obscure black dots on termen between the vein ends; antemedial line interrupted, sometimes obscure, in fresh, well-marked specimens its outer dentation much extended and meeting a shade from the inner angulation of the subterminal line at the fold (which indicates the normal position of the absent vein 1c); subterminal line interrupted, strongly indicated only between veins 5 and the fold and for a short distance from inner margin; black discal dots at end of cell more or less fused and pronounced; cilia ocherous fuscous. Hind wing pure white in male; in female generally suffused with fuscous. Alar expanse, 38–55 mm.

The genitalia presenting no outstanding specific characters.

TYPE LOCALITY: Texas (type in AMNH, ex Rutgers).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: *Texas*, Brownsville (Apr., June, July, Aug.), Corpus Christi (Sept., Oct.), Burnet County, San Benito (Mar., Aug., Sept.), Shovel Mountain (May), Kerrville (Apr.), Victoria (Oct., Nov.), Laredo (Sept.).

This species is most readily distinguished from the others in the genus by its ocherous fuscous color, which seems to be constant. It is remarkably so in the specimens before me. *O. nephelepasa* and *subumbrella* are decidely gray in appearance.

Rather full notes on the life history and larval habits of *junctolineella* are given by Dodd and by Hunter, Mitchell, and Pratt. The latter also give descriptions of the larva and pupa.

The species has two generations a year.

499. Olycella junctolineella pectinatella (Hampson)

FIGURE 530

Olyca pectinatella Hampson, *in* Ragonot, Monograph, pt. 2, p. 35, 1901.

Olyca junctolineella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5695, 1917 (in part).

Olycella junctolineella (Hulst) Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928 (in part).

Olycella junctolineella pectinatella (Hampson) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 345, 1939.

Known only from two males from the type locality.

These two specimens are a trifle paler than normal *junctolineella* and are less clearly marked except for the pronounced discal spots. The transverse lines on the forewing are almost obsolete and the veins very slightly indicated by dark shading.

Inasmuch as we have no larvae or females, or any information on the life history of the form from Jalapa (which is far south of the known range of typical *junctolineella*), I do not think we are justified in treating it as a mere synonym; or, on the evidence before us, as a distinct species.

TYPE LOCALITY: Jalapa, State of Veracruz, México (type in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) spp.

500. Olycella nephelepasa (Dyar)

Olyca nephelepasa Dyar, Ins. Insc. Menstr., vol. 7, p. 55, 1919.

Olycella nephelepasa (Dyar), Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 346, 1939.

Similar in pattern and general appearance to *junctolineella*, but darker. The forewing is grayish fuscous with a slight brownish tint, but decidedly more grayish brown than ocherous fuscous. Also the hind tibiae of *nephelepasa* are heavily dusted with fuscous, while those of *junctolineella* are nearly pure white. Alar expanse, 42–52 mm.

The genitalia cannot be distinguished from those of *junctolineella*.

TYPE LOCALITY: Tehuacán, México (type in USNM).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: MÉXICO: Tehuacán (Sept.), México (city), Cuernavaca, Aguascalientes, San Luis Potosí (June).

The known distribution of this species is confined to the central plateau of México. In the National Collection there is one female (determined as *nephelepasa*) from Monclova, México. This specimen is colored like typical *subumbrella* and is, I think, only a southern example of that species.

O. nephelepasa has two generations a year.

501. Olycella subumbrella (Dyar)

FIGURE 1019

Olyca subumbrella Dyar, Ins. Insc. Menstr., vol. 13, p. 14, 1925.
Olycella nephelepasa (Dyar), Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928 (in part).
Olycella subumbrella (Dyar) Heinrich, Proc. U. S Nat. Mus., vol. 86, p. 347, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, p. 39, 1940.

Similar to *nephelepasa* except that the forewing is less brownish and more grayish. The general color is decidedly gray rather than brownish or ocherous. Alar expanse, 40–55 mm.

Male genitalia as in *nephelepasa* and *junctolineella*. Female genitalia like those of *junctolineella*. The figure shows the extreme variation from typical *junctolineella;* but the differences in the shape of the sclerotized areas of the collar of the eighth segment and the length of the supporting rods of the collar are not specific. Every intergrade between this and typical *junctolineella* may be found in each of the species in the genus.

TYPE LOCALITY: Carlsbad, N. Mex. (type in USNM).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: *Texas*, El Paso (Mar.); *New Mexico*, Carlsbad (Sept.); *Arizona*, Dewey, Redington, Palmerlee, Paradise (Cochise County, Mar., Apr., May, June), Douglas (May, Aug.,) Pinal Mts. (Apr.), Haualapai Mts. (May); *California*, Warner (Sept.), Santa Clara (Apr.); *Utah*, Dividend (May, June), Stockton (May), Richfield (May); *Nebraska*, Scotts Bluff (June).

In addition to the above there are before me two specimens from Monclova, Coahuila, México (E. Mortensen Collection, Sept. 1926), which probably are referable here. One (a male) was in the collection under *junctolineella*, the other (a female) under *nephelepasa*. The male is in very poor condition but obviously belongs with the female. The latter is in fair shape, and its color is that of typical *subumbrella*. More material is needed from northern México before we can determine what species inhabits that region.

In 1928 Dyar sank *subumbrella* in the synonymy of *nephelepasa;* but Dodd informs me that the larval habits of the two are quite different. In *nephelepasa* "the larvae are banded with blue or blue-black and do not keep entrance hole in plant open for discharge of frass," while in *subumbrella* the larvae have "rather pale purplish bands and maintain the hole open for the discharge of frass." These differences in larval habit, coupled with the slight but apparently consistent color differences in the moths seem to warrant the separation of *subumbrella* from *nephelapasa*.

O. subumbrella has one generation a year.

137. Genus Olyca Walker

Olyca Walker, List, pt. 11, p. 725, 1857.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 34, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 133, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 348, 1939. (Type of genus: *Olyca phryganoides* Walker.)

Tongue reduced (shorter than in *Melitara*). Antennae pubescent in both sexes (the pubescence longer in the male than in the female), slightly serrate in the male. Labial palpus of the male obliquely ascending; of the female porrect and downcurved. Maxillary palpus squamous. Hind wing with veins 7 and 8 shortly anastomosed beyond cell; 3 and 5 connate (occasionally very shortly stalked). Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid; harpe with apex evenly rounded; vinculum short; anellus with base of plate narrowly sclerotized, arms moderately long and stout; aedeagus stout, moderately long, apex armed with many minute, hairlike spines.

Female genitalia without signum; bursa copulatrix simple except for a few microscopic scobinations; ductus bursae short; ductus seminalis from bursa somewhat caudad of middle.

Larvae not banded, solitary in habit, feeding in Platypuntias (presumably in the stems).

Eggs unknown.

Olyca is readily separated from other genera of the cactus-feeding Phycitinae having veins 3 and 5 of hind wing connate by having the antennae pubescent in both sexes.

The male genitalia are similar to those of *Olycella*, differing only in slight details; the vinculum is slightly shorter, the uncus broader in proportion to its length, the cleft apical process of gnathos smaller, the elements of transtilla longer and straighter.

The females differ chiefly in that they lack the signum in the bursa and the sclerotized plates in the opening of the ductus bursae.

The genus as here defined contains only the type species from the West Indies.

502. Olyca phryganoides Walker

FIGURES 71, 531, 1020

Olyca phryganoides Walker, List, pt. 11, p. 726, 1857.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 35, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 348, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, p. 40, 1940.

General color (except hind wings) pinkish white, more or less spotted and suffused with black. Palpi, thorax, and underside of body heavily dusted and shaded with black. Forewing of male with no distinguishable antemedial line, the latter being replaced by two more or less transversely extended black spots; subterminal line only partially and faintly indicated, irregularly dentate; vein ends marked with blackish dots or dashes; black discal spot large, conspicuous; below the discal dot a more or less extended black smudge.

On the female about three-fourths of the forewing is suffused with black, the pinkish white color being strongly contrasted and limited to a rather narrow area along the costa, with a triangular projection at the end of the cell; terminal area and a patch on inner margin opposite discal spot also pale, but duller and less contrasted than the costal color. Hind wing white with a blackish fuscous shade on terminal margin and a some-

what wider dark shade along costal margin; these dark shadings broader in the female than the male; also in the female the veins are outlined by fuscous scaling; cilia white with a dark subbasal line. Alar expanse, 35–47 mm.

Male genitalia figured from specimen from Azuda.

Female genitalia with bursa copulatrix containing a scattering of microscopic scobinations, otherwise simple; scobinations in genital opening stronger and more dense, also in genital opening a few fine setae (the latter probably a generic character).

Eggs unknown.

Larva "cream or buff colored, with dark spiracular markings," according to Dodd.

TYPE LOCALITY: Hispaniola (type in BM).

FOOD PLANT: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: DOMINICAN REPUBLIC: Azuda (Jan.). HAITI: Port-au-Prince (Jan.).

Nothing has been published on the life history of this species, and little is known about it. The larvae are presumably solitary in habit and confined to the Platypuntias. The distribution of *phryganoides* is probably confined to the West Indies.

138. Genus Alberada Heinrich

Alberada Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 350, 1939. (Type of genus: *Melitara parabates* Dyar.)

Tongue as in *Melitara*. Antenna of male bipectinate, of female pubescent. Labial palpus porrect and downcurved. Maxillary palpus squamous. Hind wing with veins 7 and 8 anastomosing beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid, the two prongs rather widely separated; harpe with the apex evenly rounded; vinculum short; anellus with base of plate narrowly sclerotized, arms moderately long and stout; aedeagus stout, weakly sclerotized in middle except on midventer.

Female genitalia with signum developed as a ridged plate; bursa copulatrix finely scobinate and wrinkled; ductus seminalis from middle of bursa.

Larvae bluish, not banded; solitary feeders in the joints of Cylindropuntias.

Eggs laid singly or in masses of two or three.

The genus is close to *Melitara*, differing in the following characters: Veins 7 and 8 of hind wing anastomosed, 3 and 5 stalked, aedeagus only partially sclerotized, apical process of gnathos with prongs well separated, bursa copulatrix with signum.

The distribution is apparently limited to México and the southwestern part of the United States.

503. Alberada parabates (Dyar)

FIGURES 533, 1021

Melitara parabates Dyar, Proc. U. S. Nat. Mus., vol. 44, p. 322, 1913; Proc. Ent. Soc. Washington, vol. 30, p. 134, 1928.—Barnes and McDunnough, Contributions, vol. 4, p. 175, 1918.—Dodd, Council for Sci. and Ind. Res., Australia, Bull. 34, p. 27, 1927.

Alberada parabates (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 350, 1939.

Forewing fuscous with area between lower vein of cell and costal margin and from antemedial to subterminal lines heavily dusted with white; area between lower vein of cell and inner margin and from base to subterminal line suffused with ocherous fuscous; on the middle of this area a more or less extended smudge of blackish brown; antemedial line black, bordered inwardly by a line of white scales, dentate and sinuate, a sharp dentation at vein 11, a longer one in the cell (extending nearly to middle of wing), another equally long and acute dentation at the fold, and two very slight dentations between 1b and inner margin; subterminal line black with a white outer border, dentate and sinuate, the angulations deep, the angulation between 5 and 6 reaching almost to cell; area beyond subterminal line dark fuscous, paler in some specimens; along termen a row of black dots at the vein ends; discal black dot at end of cell conspicuous in most specimens. Hind wing white, semihyaline; costal margin bordered with fuscous and a fine dark fuscous line on termen for a short distance from apex; in many females a stronger fuscous shading in apical area. Alar expanse, 35–48 mm.

Male genitalia over twice as large as those of *bidentella;* aedeagus more extensively sclerotized. Female genitalia larger than those of the other species of the genus and with scobinations in bursa finer.

Eggs laid singly or in masses of two or three.

TYPE LOCALITY: Cerritos, San Luis Potosí, México (type in USNM).

FOOD PLANTS: *Opuntia* (*Cylindropuntia*) *imbricata* (Haworth) and probably several other Cylindropuntias.

DISTRIBUTION: UNITED STATES: *California*, San Diego, Warner (Sept.), Palm Springs (Apr.), Oceanside (Aug.), Riverside (Oct.); *Arizona*, Christmas (Gila County), Fort Grant (July), Oracle (July), Redington, Santa Catalina Mts. (Sept.), Baboquivari Mts. (Apr., June, July, Aug., Sept., Oct.), Sells Post Office (Indian Oasis, Apr.), Douglas (June, Sept.), Mohave County (Aug.); *Texas*, Presidio County (July), Brewster County. MÉXICO: San Luis Potosí, Cerritos (Aug.), Tamaulipas, Tula (June).

504. Alberada bidentella (Dyar)

FIGURES 532, 1022

Zophodia bidentella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 114, 1908.

Eumysia bidentella (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.

Alberada bidentella (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 352, 1939.

Much smaller and paler than *parabates* but with similar pattern, the ground color more ocherous than fuscous, the white dusting on forewing heavier, the dentations of antemedial and subterminal lines shorter; discal dots distinct and not fused as is frequently the case in *parabates*. Alar expanse, 19–24 mm.

Male genitalia similar to those of *parabates* but much smaller and with central ventral part of aedeagus more

narrowly sclerotized. Female genitalia appreciably smaller than those of *parabates;* bursa wrinkled and more coarsely scobinate.

TYPE LOCALITY: San Antonio, Tex. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas,* San Antonio (July), San Benito (June, Aug., Sept.), Brownsville (June); *Arizona,* Phoenix, "route between Dewey and Salome."

A uniformly marked and colored species, known only from collected specimens.

505. Alberada holochlora (Dyar)

FIGURE 1023

Zophodia holochlora Dyar, Ins. Insc. Menstr., vol. 13, p. 15, 1925.
Alberada holochlora (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 352, 1939.

This is probably a synonym or, at most, a variety of *bidentella.* The three females of the type series are the only specimens I have seen. They are a trifle smaller than typical *bidentella,* and there are some slight, though hardly significant, differences in the female genitalia (shown in figs. 1022 and 1023). However, until males of *holochlora* are discovered and *bidentella* has been reared, it will be wiser to keep the two as separate species.

According to Dodd the larvae are solitary in habit and dark blue and the eggs laid singly.

Alar expanse, 18 mm.

TYPE LOCALITY: Uvalde, Tex. (type in USNM).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) *leptocaulis* De Candolle.

139. Genus Nanaia Heinrich

Nanaia Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 353, 1939. (Type of genus: *Nanaia substituta* Heinrich.)

Tongue well developed. Antenna of male bipectinate; of female pubescent. Labial palpus obliquely porrect (second segment obliquely upturned nearly to top of face and third segment bent forward or slightly downcurved); third segment long (in the female as long as second segment), pointed in the male, blunt in the female. Maxillary palpus large, developed as a broad, curved, somewhat flattened tuft of scales which reaches well above middle of face. Hind wing with veins 7 and 8 anastomosing beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid, the two prongs narrowly separated; harpe with the apex somewhat tapering but bluntly rounded; vinculum moderately long (longer than broad); anellus with base of plate narrowly sclerotized, arms long, tapering, and slightly twisted; aedeagus moderately stout, strongly sclerotized throughout.

Female genitalia without signum; ductus bursae and bursa copulatrix simple except for fine scobinations in ductus at genital opening; ductus bursae long; bursa copulatrix small; ductus seminalis from middle of bursa.

Larva bluish, not banded; sclerotized plates surrounding body setae small; 2 setae in group VII on abdominal segments 7 and 8.

The larvae are solitary feeders in the trunks of *Cylindropuntia* and *Trichocereus.*

Egg and egg-laying habits unknown.

This genus is close to *Alberada* but distinguished by several characters: The forewings are distinctly narrower, the vinculum is longer in proportion to its width, the aedeagus more evenly sclerotized, the apical process of gnathos more narrowly cleft, the anellus more decidedly curved, the bursa simple, without signum or scobinations, the transverse markings on forewing almost obliterated, and the maxillary palpi much larger. The maxillary palpi are similar to those of *Sigelgaita,* the moths of which resemble in general habitus those of *Nanaia.* The two genera, however, are easily distinguished by their different labial palpi, porrect in *Nanaia,* upturned in the males of *Sigelgaita.*

Known only from Perú.

506. Nanaia substituta Heinrich

FIGURES 534, 1048

Nanaia substituta Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 354 1939.

General color (except hind wings) ocherous fuscous peppered with black and white; the type darker than most of the paratypes. Forewing with pale color confined to costal half of wing; terminal area and the area between cell and inner margin darker, with very little white dusting; in most specimens a rather pronounced, broad, longitudinal, ocherous fuscous shade in the fold; transverse and discal markings almost obsolete, in a few specimens the antemedial line faintly indicated and in the palest of the paratypes the discal black dots distinguishable, also some black scaling along the veins. Hind wing white (whitish ocherous on female) with a smoky tint toward apex and termen; terminal margin blackish fuscous; cilia smoky white with a dark subbasal line. Alar expanse, 37–40 mm.

Female genitalia with no appreciable scobinations or granulations in bursa; ductus bursae minutely scobinate at genital opening, otherwise smooth.

TYPE LOCALITY: Cuzco. Perú (type in USNM).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) *exaltata* Berger.

140. Genus Cactoblastis Ragonot

Cactoblastis Ragonot, Monograph pt. 2, p. 15, 1901.—Dyar, Proc. Ent. Soc. Washington, vo. 30, p. 135, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 354, 1939.—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 45, 1945. (Type of genus: *Zophodia cactorum* Berg.)

Neopyralis Brèthes, *in* Ronna, Chacaras e Quinaes, vol. 20, No. 1, p. 18, 1920. (Type of genus: *Neopyralis ronnai* Brèthes.)

Tongue considerably reduced. Antenna of male pubescent, of female shortly pubescent. Labial palpus of male ascending (upcurved), of female porrect. Hind wing with veins 7 and 8 shortly anastomosed beyond cell; 3 and 5 shortly stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos partially fused, the prongs separated only for a short distance;

harpe with apex evenly rounded; vinculum short; anellus with base of plate narrowly sclerotized, arms moderately long and rather slender, slightly twisted, very finely serrate on outer edges toward apices; aedeagus stout, moderately long.

Female genitalia with signum developed as a series of more or less fused plates; bursa copulatrix weakly and very finely scobinate; ductus seminalis from bursa at junction of ductus bursae and bursa copulatrix.

Larva bright orange or red, with rows of large black spots resembling broken crossbands; two setae in group VII on abdominal segments 7 and 8.

The larvae feed gregariously in the joints of *Platypuntia, Cylindropuntia, Trichocereus, Echinopsis,* and *Denmoza.*

Eggs laid in long chains.

The genus as here defined is distinguished from other cactus-feeding phycitids by the following combination of characters: Antennae of both sexes pubescent; labial palpi upcurved in the male, porrect in the female; veins 7 and 8 of hind wing shortly anastomosed; veins 3 and 5 shortly stalked; apical process of gnathos partially fused; eighth abdominal segment of male simple; larvae bright orange or red, with rows of large black spots resembling broken crossbands, gregarious in habit.

Four (possibly five) species are recognized as belonging to the genus. Its natural distribution is apparently limited to South America south of the Equator, but at least one of its species (*cactorum*) has been introduced and become established in Australia.

507. Cactoblastis cactorum (Berg)

FIGURES 66, 535, 1024

Zophodia cactorum Berg, Anales Soc. Cient. Argentina, vol. 19, p. 276, 1885.

Cactoblastis cactorum (Berg) Ragonot, Monograph, pt. 2, p. 16, 1901.—Dodd, Council for Sci. and Ind. Res., Australia, Bull. 34, p. 30, 1927; Bull. Ent. Res., vol. 27, p. 509, 1936; Biological campaign against prickly-pear, Brisbane, Australia, 177 pp., 1940.—Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 135, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 356, 1939.

Head sordid whitish ocherous. Palpi pale cinereous, the tips of the maxillary palpi and the ends of the segments of the labial palpi blackish fuscous. Thorax dull ocherous fuscous rather heavily dusted with blackish fuscous on posterior half. Forewing ocherous fuscous more or less dusted with white on costal half between antemedial line and apex; antemedial line black, angulate, the apex of angle at vein 1b, sometimes obscure except on costal half; subterminal line black, with a narrow whitish outer border and beyond this a faint fuscous band, the black line straight from near apex to vein 6, thence sinuate and dentate to inner margin, the ends of the dentations rounded; a black spot at end of cell and a few scattered black scales on disc; along termen at vein ends a row of seven distinct black dots. Hind wing white, semihyaline, costal margin narrowly bordered with fuscous and on termen a fine black line, the latter not extending to inner angle, on the female the fuscous shading is rather broad at apex and along termen for a short distance from apex. Midtibia pale cinereous with a narrow, black, transverse band at outer fourth. Alar expanse, 23–40 mm.

Genitalia not exhibiting any marked specific characters.

TYPE LOCALITY: Argentina (location of type unknown).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp. Apparently limited to the Platypuntias.

DISTRIBUTION: ARGENTINA: La Plata, Concordia, Tacanitas, Santiago del Estero. URUGUAY: Piriápolis. AUSTRALIA (introduced and established).

According to Dodd "*cactorum* is a native of Uruguay and the northern Argentine provinces of Entre Ríos, Corrientes, Sante Fe, Santiago del Estero, Tucumán, Salta, and Chaco." He also includes Paraguay and southern Brazil in its possible range, but we have no adult specimens from the latter localities.

This is the species that has been used with such remarkable success in the biological campaign against the prickly-pear in Queensland and New South Wales. All available information on the species is given in Dodd's 1940 paper.

508. Cactoblastis ronnai (Brèthes)

Neopyralis ronnai Brèthes, *in* Ronna, Chacaras e Quinaes, vol. 20, No. 1, p. 18, 1920.—Costa-Lima, Terceiro catalogo dos insectos que vivem nas plantas do Brazil, p. 268, No. 1031, 1936.

Cactoblastis ronnai (Brèthes) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 357, 1939.

Probably a synonym of *cactorum.* Its identity will have to wait upon rearing of *Cactoblastis* from southern Brazil.

TYPE LOCALITY: Rio Grande do Sul, Brazil (type lost?).

FOOD PLANT: "Spineless cactus."

509. Cactoblastis doddi Heinrich

FIGURES 536, 1025

Cactoblastis bucyrus Dodd (not Dyar), Council for Sci. and Ind. Res., Australia, Bull. 34, p. 30, 1927.

Cactoblastis doddi Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 358, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, pp. 39, 59, 75, 1940.

Similar to that of *cactorum* except as follows: White dusting on forewing less contrasted, sparser; general color darker, decidedly grayish fuscous in specimens from Tucumán; dentations of subterminal line of forewing acute and their ends pointed; black dots along termen very faintly indicated, normally altogether absent. Hind wing of male semihyaline white; of female dark smoky fuscous throughout. Alar expanse, 31–41 mm.

Male genitalia similar to those of *cactorum,* differing chiefly in the shorter cleft between the prongs at apex of gnathos. This character, however, is subject to some individual variation, and should be used with discretion. Female genitalia with scobinations of bursa somewhat more uniformly distributed than in

other species of *Cactoblastis*, not an altogether reliable or satisfactory character in this genus.

TYPE LOCALITY: Tapia, Tucumán, Argentina (type in USNM).

FOOD PLANTS: *Opuntia* (*Platypuntia*) *sulphurea* G. Don, *Opuntia* (*Platypuntia*) *ficus-indica* (Linnaeus).

Represented only by the type series from the type locality.

According to Dodd, this species "is distributed along the eastern edge and foothills of the Andes from Mendoza right to the northern boundary of the Republic in *O. sulphurea*, and almost certainly into southern Bolivia at altitudes to 8,000 feet and probably more. Hence, as far as our information goes, No. 49 (*doddi*) inhabits territory lying in between that of *cactorum* and the Peruvian insect (*mundelli*)."

O. sulphurea seems to be the favored host of *doddi*. Dodd tells me that *cactorum* does not attack this cactus although it is abundant in territory within the range of that insect. He also states that there are consistent differences in the eggs and egg sticks between the two species and that their larvae can be distinguished in the field. I am unable to separate alcoholic specimens of the larvae with any certainty. The moths can be distinguished easily enough by the following combination of characters: Forewing without terminal row of dots or with but 3 or 4 very faintly indicated; hind wing of male semihyaline white, of female dark smoky fuscous.

510. Cactoblastis mundelli Heinrich

FIGURE 537

Cactoblastis mundelli Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 359, 1939.

Head ocherous. Palpi cinereous, dusted with black. Thorax ocherous fuscous, heavily dusted with white and black scales, especially on tegulae and posterior margin. Forewing ocherous fuscous with a fine dusting of white scales in costal area from base to apex; some black scaling on the veins; discal dot at end of cell somewhat obscured by a dark smudge which extends beyond the cell toward vein 1b; transverse black lines distinct and well contrasted against the ground color; dentations of subterminal line as in *doddi;* a row of seven small black dots on termen at the vein ends. Hind wing of male dull white with a faint smoky tint; veins faintly outlined in fuscous ocherous; some fuscous shading along costa and a fine fuscous line on termen from apex to about vein 1b; hind wing of female pale smoky fuscous throughout. Alar expanse, 38–42 mm.

Male genitalia with base of apical process of gnathos nearly square when viewed from beneath. Female genitalia not specifically different from those of *cactorum* except for a somewhat shorter ductus bursae.

TYPE LOCALITY: Arequipa, Perú (type in USNM).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) *exaltata* Berger (apparently does not attack the Platypuntias).

The species is known only from the type series from the type locality.

It is easily recognized by the color of the hind wings and the ocherous suffusion on the forewings.

511. Cactoblastis bucyrus Dyar

FIGURES 538, 1026

Cactoblastis bucyrus Dyar, Ins. Insc. Menstr., vol. 10, p. 16, 1922; Proc. Ent. Soc. Washington, vol. 30, p. 135, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 360, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, p. 39, 1940.

The male is much darker than the males of other species of *Cactoblastis*. Palpi and thorax heavily dusted with blackish scales. Head and collar ocherous. Forewing brownish fuscous; white dusting inconspicuous, the pale scales more ocherous than white in the male, in female more whitish than ocherous and a trifle more noticeable; black antemedial and subterminal lines somewhat obscured by the dark ground color, conspicuous only toward costa, dentations of subterminal line as in *doddi;* a row of seven black dots along termen at vein ends. Hind wing brownish fuscous in both sexes. Alar expanse, 30–41 mm.

Male genitalia with arms of anellus somewhat shorter than those of *cactorum*, *doddi*, and *mundelli*. Female genitalia with bursa very minutely and sparsely scobinate. The signum, like that of other species of *Cactoblastis*, is individually variable. Extremes of variation are shown in figures 1026 and 1027.

TYPE LOCALITY: Mendoza, Argentina (type in USNM).

FOOD PLANTS: *Trichocereus*, *Echinopsis*, *Denmoza*.

DISTRIBUTION: ARGENTINA: Tucumán, Tapia, Mendoza, Catamarca, Andalgalá.

141. Genus Cahela Heinrich

Cahela Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 361, 1939. (Type of genus: *Olyca ponderosella* Barnes and McDunnough.)

Tongue short but stout. Antennae of male and female pubescent, the pubescence shorter in the female. Labial palpus of male obliquely upturned, of female porrect, with third segment downcurved and second and third segments longer than those of male; male palpus not extending above middle of front and with third segment short. Maxillary palpus squamous. Hind wing with veins 7 and 8 shortly anastomosing beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos fused; harpe with apex evenly rounded; vinculum short; anellus with base of plate narrowly sclerotized, arms long and broad, slightly twisted; aedeagus stout, sclerotized throughout.

Female genitalia with signum developed as a ridged plate (a hollow, blunt, flattened, more or less thornlike projection into the bursa); bursa copulatrix large, finely scobinate expecially in the neighborhood of the signum; ductus bursae scobinate at genital opening; ductus seminalis from bursa near signum.

Larvae whitish, not banded or conspicuously spotted; solitary in habit; stem borers in Cylindropuntias.

Eggs laid singly.

This genus and the following (*Rumatha*) are distinguished from all others in the cactus-feeding group by the complete fusion of the apical process of the gnathos. Several male characters distinguish the two genera from each other, but *Cahela* is most easily recognized by the black longitudinal lines between the veins on the forewing.

The genus is apparently limited in distribution to the southwestern part of the United States and northern México.

512. Cahela ponderosella (Barnes and McDunnough)

FIGURES 539, 1027

Olyca ponderosella Barnes and McDunnough, Contributions, vol. 4, No. 2, p. 175, 1918.
Zophodia purgatoria Dyar, Ins. Insc. Menstr., vol. 13, p. 222, 1925.
Cactobrosis interstitialis Dyar, Ins. Insc. Menstr., vol. 13, p. 223, 1925; Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.
Cactobrosis phoenicis Dyar, Ins. Insc. Menstr., vol. 13, p. 223, 1925; Proc. Ent. Soc. Washington, vol. 30, p. 136, 1938.
Cactobrosis (?) *ponderosella* (Barnes and McDunnough) Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.—McDunnough, Check list, No. 6284, 1939.
Cahela ponderosella (Barnes and McDunnough) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 361, 1939.

Head, thorax, forewings, and body dark fuscous-gray peppered with white and with pronounced, longitudinal, black lines on the forewing; a long black line through the cell and extending from near base of wing to termen; another long black line from base to tornus running parallel and very close to the fold; in outer area, from beyond cell to apex and termen, five other shorter black lines, the largest and most pronounced above vein 6; all the black lines between and not on the veins; antemedial and subterminal lines normally obsolete; in very few specimens a faint indication of a partial, black, antemedial line and in several specimens a dark shade from end of cell to middle of inner margin, but no trace of any transverse subterminal line; body somewhat paler than forewing or thorax. Hind wing white, semihyaline, termen for a short distance from costa very faintly and narrowly edged with fuscous; a more pronounced fuscous shading along termen on the female. Alar expanse, 30–42 mm.

Male genitalia show some variation in the shape and size of the terminal process of the gnathos in different specimens from any given locality. The extremes of variation are shown in the figure. In the female genitalia the size of the signum and bursa varies somewhat in different specimens but the variations are slight and can be found in any series from one locality.

TYPE LOCALITIES: Palm Springs, Calif. (*ponderosella* and *phoenicis*, in USNM); Colorado Desert, Yuma County, Ariz. (*purgatoria*, in USNM); Presidio, Tex. (*interstitialis*, in USNM).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) *imbricata* (Haworth) and probably other Cylindropuntias.

DISTRIBUTION: *California*, Palm Springs (Apr., Aug.), San Bernardino (Apr., May); *Utah*, St. George (May, June); *Nevada*, Charlestown Mts. (July), Clark County (Apr., May, June); *Arizona*, Yuma County, Mohave County (Apr., May), Dewey (June), "en route from Dewey to Salome" (Apr.), Maricopa County (July), Prescott (Apr., June), Redington, Baboquivari Mts. (Pima County, May, July, Aug.), Phoenix (May), Tucson (June), Douglas (May), Christmas (Gila County), Paradise (Cochise County, June); *Texas*, Brewster County, Alpine (Apr.), Presidio.

Dodd states that the range of the species includes the central plateau of México, which is what we should expect. I have seen no specimens from México.

The species is remarkably uniform in color and marking but varies considerably in size, which accounts for some of the synonymy. Superficially *ponderosella* is similar to both *Eremberga leuconips* (Dyar) and *Cactobrosis strigalis* (Barnes and McDunnough). They also are dark gray with conspicuous black longitudinal lines on their forewings, but in *leuconips* and *strigalis* the black lines are on the veins, while in *ponderosella* they lie between the veins. This character at once distinguishes it from other known cactus-feeding phycitids.

142. Genus Rumatha Heinrich

Rumatha Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 363, 1939. (Type of genus: *Zophodia bihinda* Dyar.)

Tongue more or less developed (very short in *glaucatella*, but not hidden by palpi). Antenna of male shortly serrate and pubescent, of the female simple and pubescent, the pubescence shorter in the female than in the male. Labial palpi porrect in both sexes; third segment of palpus about half as long as second. Maxillary palpus squamous. Hind wing with veins 7 and 8 anastomosing beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos fused; harpe with apex evenly rounded and with a subbasal sclerotized pocket (pkt., fig. 540) between sacculus and costa; uncus truncate and short in proportion to its breadth; vinculum short, truncate, almost square in outline; anellus with base rather broadly sclerotized, arms short, broad, slightly twisted; aedeagus very short, stout, partially sclerotized (on ventral half only). The entire genitalia have a squat appearance that is characteristic.

Female genitalia with signum developed as a ridged plate with inwardly projecting ridge bluntly serrate (except in *glaucatella*, in which the signum is as in *Cahela ponderosella*); bursa copulatrix large, finely scobinate, especially in neighborhood of signum; ductus bursae scobinate at genital opening and with a pair of more or less defined sclerotized plates on the dorsal membrane of the ductus at the opening; ductus seminalis from bursa near signum (but somewhat farther removed than in *Cahela*).

Larva of only one species (*glaucatella*) known; whitish, not banded or conspicuously spotted; solitary in habit; stem borer in *Cylindropuntia*.

Eggs laid singly.

This genus is very close to *Cahela*. Both genera have similar larvae and host associations and a like structure

of the gnathos; but there are too many other differences in male characters and adult habitus to permit their lumping. The partially sclerotized aedeagus, the short stout arms of the anellus, the squat appearance of the whole male genitalia, the porrect male labial palpi, and the serrate male antennae at once distinguish the males of *Rumatha* from those of *Cahela;* and the wing patterns readily separate both sexes. In *Rumatha* the discal dot is prominent and the transverse lines on the forewing are well defined for at least half their length. In *Cahela* the distinctive wing markings are longitudinal.

Three species are recognized as belonging to the genus. Its distribution is limited apparently to the southwestern part of the United States and possibly the adjacent regions of northern México, although as yet no specimens have been received from México.

513. Rumatha glaucatella (Hulst)

FIGURES 542, 1028

Honora glaucatella Hulst, Ent. Amer., vol. 4, p. 117, 1888.
Zophodia glaucatella (Hulst) Phycitidae of North Amer., p. 174, 1890; U. S. Nat. Mus. Bull. 52, p. 430, 1903.—Ragonot, Monograph, pt. 2, p. 23, 1901.—McDunnough Check list, No. 6311, 1939.
Rumatha glaucatella (Hulst) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 365, 1939.

Palpi, head, and thorax pale fuscous, sparsely sprinkled with white; posterior margin of thorax edged with blackish fuscous. Forewing dull white, sparsely sprinkled with fuscous and with a very pale fuscous stain in a broad area bordering inner margin; antemedial line angulate, fuscous, rather faint but complete and always distinguishable; subterminal line double, consisting of two parallel, faint, pale fuscous lines, almost vertical and but very slightly dentate; discal spot at end of cell blackish fuscous, prominent; a row of small blackish dots along termen between the vein ends. Hind wing whitish with a very pale fuscous line edging termen. Alar expanse, 15–20 mm.

Male genitalia much smaller than those of either *bihinda* or *polingella*; basal portion of aedeagus narrower in proportion; harpe with apex more bluntly rounded than that of *polingella* but with width of harpe less in proportion to its length than that of *bihinda*.

Female genitalia with signum similar to that of *Cahela ponderosella*, the inwardly projecting edge not appreciably serrate; sclerotized plates in genital opening very weak, hardly distinguishable except under very high magnification.

Larvae solitary in habit, white, not banded or conspicuously spotted.

TYPE LOCALITY: Texas (type in AMNH, ex Rutgers).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) *leptocaulis* De Candolle.

DISTRIBUTION: *Texas*, San Benito (May, June, July, Aug.), Brownsville (June), San Diego (May), Laredo (July), San Antonio; *Florida* (one female, so labeled and without other locality, from the Fernald Collection, in USNM).

The labial palpus of the male is somewhat misleading. In natural position the third segment is projected forward, but in relaxed and badly prepared specimens it may be bent upward.

514. Rumatha bihinda (Dyar)

FIGURES 540, 1030

Zophodia bihinda Dyar, Ins. Insc. Menstr., vol. 10, p. 173, 1922.
Eumysia bihinda (Dyar), Ins. Insc. Menstr., vol. 13, p. 221, 1925.—McDunnough, Check list No. 6301, 1939.
Rumatha bihinda (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 366, 1939.

Palpi, head, thorax, forewing, and abdomen dark fuscous, dusted with white, giving a decidedly grayish fuscous appearance to the moth; the white dusting heavy on costal half of forewing and upper surface of abdomen; discal spots and transverse markings on forewings blackish fuscous. Forewing with area between cell and inner margin brownish, with little or no white dusting and with transverse lines obscured; costal half (especially above cell) strongly suffused with white; transverse antemedial line blackish, distinct only from costa to fold; subterminal line markedly dentate and sinuate, blackish, oblique, broad and conspicuous from costa to vein 8, with a slight dentation between veins 8 and 6 and a deep angulation between veins 5 and 6 extending to cell, between vein 5 and the fold straight and inwardly slanting, thence obscure to inner margin of forewing; discal dots at end of cell normally conspicuous and fused into a single black spot, obscure in a few specimens; a row of black dots along termen at the vein ends; in some specimens faint traces of a black longitudinal line through center of cell and a line of blackish scales along the fold. Hind wing white, semihyaline, with a fine, faint, fuscous line along termen and some fuscous shading on costal margin. Undersurface of abdomen decidedly brownish fuscous, sparsely dusted with white. Legs with femora whitish, with some fuscous spotting; coxae uniformly dark brown, with no white dustings or markings, strongly contrasted against femora. Alar expanse, 30–36 mm.

Male genitalia appreciably larger than those of other species in the genus; harpe broader in proportion to its length and with apex more broadly rounded. Female genitalia similar to those of *polingella* and hardly to be distinguished; signum with inner projecting edge irregularly and bluntly serrate.

TYPE LOCALITY: Jemez Springs, N. Mex. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Alpine (Apr.); *New Mexico*, Jemez Springs (June, July); *Arizona*, Yuma County (Apr.), "en route from Dewey to Salome" (Apr.), Dewey (May), Mohave County (Mar.); *Nevada*, Clark County (Mar., Apr., May), Bellevue (Washington County, May).

This species has never been reared and its larva is unknown. From its close relationship to *glaucatella* we may expect that its host will prove to be one of the Cylindropuntias.

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515. Rumatha polingella (Dyar)

FIGURES 541, 1029

Zophodia polingella Dyar, Journ. New York Ent. Soc., vol. 14, p. 31, 1906.—McDunnough, Check list, No. 6312, 1939.
Rumatha polingella (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 367, 1939.

Similar in appearance to that of *bihinda* but with transverse antemedial and subterminal lines more distinctly continued to inner margin of forewing; indentations of subterminal line not so deep as in *bihinda* and not extending to cell; a scattering of pinkish scales among the white scales on costal area of forewing. Alar expanse, 23–35 mm.

Male genitalia similar to those of *bihinda* but with harpe narrower, apex of harpe more acutely rounded, and aedeagus slightly narrower in proportion to its length. Female genitalia essentially like those of *bihinda* except that the sclerotized plates in genital opening are not so distinct and the signum is on the average smaller.

TYPE LOCALITY: Southern Arizona (type in USNM).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) *leptocaulis* De Candolle.

DISTRIBUTION: *Arizona*, Douglas (June, Aug.), Redington, Palmerlee, Paradise (Cochise County, July, Sept.), Pinal Mts. (Apr.), Baboquivari Mts. (June, July, Aug., Sept.), Santa Catalina Mts. (Aug.), "southern Arizona" (Apr.); *Texas*, Presidio (Aug.).

The Texas record is from a small reared male, giving us our first food plant record for the species.

143. Genus Yosemitia Ragonot

Yosemitia Ragonot, Monograph, pt. 2, p. 17, 1901.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 368, 1939. (Type of genus: *Spermatopthora graciella* Hulst.)
Yosemetia Hulst, U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Dyar, Ins. Insc. Menstr., vol. 13, p. 220, 1925. (Misspelling.)

Tongue well developed. Antenna of male weakly serrate and pubescent, of female simple and shortly pubescent. Labial palpi obliquely porrect. Maxillary palpus fan shaped and held vertically to the face. Hind wing with veins 7 and 8 anastomosing beyond cell; veins 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid; harpe with apex evenly rounded; vinculum moderately long; anellus with arms broad, short, slightly twisted, and base of plate broadly sclerotized; aedeagus short and slender, sclerotized throughout.

Female genitalia with signum developed as a small, shortly spined plate; ductus bursae short; bursa copulatrix finely scobinate, especially in area about signum; ductus seminalis from bursa near junction of bursa and ductus bursae.

Larvae bluish, dark, not banded, or conspicuously spotted.

The larvae feed gregariously (sometimes singly) in *Echinocereus*, *Coryphantha*, *Homalocephala*, and presumably also in *Echinocactus* and *Neomamillaria*.

Eggs laid singly.

This genus as here defined is distinguished by the following combination of characters: Male antenna serrate and pubescent; labial palpi porrect in both sexes; maxillary palpi fan shaped; male genitalia with vinculum moderately long and rather narrow, apical process of gnathos bifid, anellus small and stout with broad short arms, aedeagus slender; eighth abdominal segment of male simple; female genitalia with signum a small, shortly spined plate, ductus bursae short and ductus seminalis from bursa copulatrix near junction of bursa and ductus bursae; larvae not banded and normally gregarious.

The male genitalia have a characteristic habitus which makes them easy to place generically; but the differences between species are very slight and not altogether trustworthy, hardly more than might be expected within specific limits.

Four species are recognized as belonging to the genus. Its distribution is the southwestern part of the United States and México.

516. Yosemitia graciella (Hulst)

FIGURES 68, 547, 1033

Spermatopthora graciella Hulst, Ent. Amer., vol. 3, p. 134, 1887.
Zophodia graciella (Hulst), Phycitidae of N. Amer., p. 173, 1890.
Yosemitia graciella (Hulst) Ragonot, Monograph, pt. 2, p. 13, 1901.—Barnes and McDunnough, Contributions, vol. 3, p. 199, 1916.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 369, 1939.—McDunnough, Check list, No. 6293, 1939.
Yosemetia graciella (Hulst), U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Dyar, Ins. Insc. Menstr., vol. 13, p. 220, 1925.

Forewing pale brownish fuscous dusted and streaked with black and dusted with white scales; the white scaling concentrated on and strongly whitening the costal half of the wing; the black scaling thinly dusted over the lower half of the wing (between cell and inner margin) and outlining the veins; transverse lines incomplete, blackish; the antemedial line indicated only by a transverse dash in the cell and a dot or very short streak on inner margin; subterminal line prominent from costa near apex to vein 8 (sometimes to vein 6), inwardly slanting, interrupted between veins 6 and 5, obscure between vein 2 and inner margin; discal dots fused into a line of black scales on discocellular vein; a row of small black dots along termen between the vein ends. Hind wing whitish to very pale smoky fuscous, faintly darker at apex, along costa, and narrowly along termen; cilia white with a very fine, pale fuscous, subbasal line. Alar expanse, 25–30 mm.

Male genitalia very little different from those of other species in the genus; the vinculum is not so broad as that of *fieldiella* or so long as that of *didactica*; the anelli of the several species seem to offer the best characters for separating the species on genitalic characters; those of *graciella* and *longipennella* are much alike, but in *didactica* the arms appear to be more sharply twisted and in *fieldiella* the basal portion is more narrowly sclerotized and the free arms, therefore, correspondingly longer. These characters, however, may not be con-

stant in long series. Female genitalia with signum a trifle smaller than that of any other *Yosemitia*, otherwise not specifically distinguished.

Larvae dark, dull blue and solitary or gregarious in habit, according to Dodd.

TYPE LOCALITY: Blanco County, Tex. (type in AMNH, ex Rutgers).

FOOD PLANTS: *Echinocereus viridiflorus* Engelmann, *E. polyacanthus* Engelmann, and *Coryphantha aggregata* (Engelmann).

DISTRIBUTION: *Colorado*, Denver (July), and one specimen with only the State designation; *Nevada*, Clark County (Apr., May); *California*, San Bernardino County (Apr.), Providence Mts. (May), one specimen with only State designation (Apr.); *Arizona*, Yavapai County, Ajo (Pima County, Mar.), Baboquivari Mts. (May), White Mts. (June), Pinal Mts. (Apr.), Quijotoa Mts. (June), Santa Rita Mts. (June), Sells Post Office (Pima County, May), "en route from Dewey to Salome" (Apr.), Mojave County (May), Roosevelt (June), Phoenix (Mar., Apr.), Redington, no locality except the State (2 specimens reared from *Coryphantha aggregata*, June); *New Mexico* (Mar.); *Texas* (no specific locality, one specimen reared from *Echinocereus viridiflorus*; Apr.).

517. Yosemitia longipennella (Hulst)

FIGURES 546, 1032

Zophodia longipennella Hulst, Ent. Amer., vol. 4, p. 118, 1888.
Zophodia graciella (Hulst, in part), Phycitidae of N. Amer., p. 173, 1890.
Yosemitia graciella (Hulst, in part) Ragonot, Monograph, pt. 2, p. 13, 1901.
Yosemetia graciella longipennella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5699, 1917.
Yosemetia longipennella (Hulst) Dyar, Ins. Insc. Menstr., vol. 13, p. 220, 1925.
Yosemitia longipennella (Hulst) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 370, 1939.—McDunnough, Check list, No. 6294, 1939.

Similar to *graciella* except black dusting on forewing sparse, veins not or but very faintly outlined by black scales, transverse subterminal line not interrupted between veins 6 and 5, dentate. Alar expanse, 21–26 mm.

Genitalia similar to those of *graciella* but with signum of female a trifle larger.

Larvae dark dull blue and gregarious in habit, according to Dodd.

TYPE LOCALITY: Texas (type in AMNH, ex Rutgers).

FOOD PLANT: *Homalocephala texensis* (Hopffer). According to Dodd the larvae also feed in *Neomamillaria*.

DISTRIBUTION: *Texas*, Uvalde (June), "Big Bend" (Apr.), San Antonio (June), Van Horn (June), San Diego (Apr.), San Benito (Apr., May).

518. Yosemitia fieldiella (Dyar)

FIGURE 544

Zophodia fieldiella Dyar, Ins. Insc. Menstr., vol. 1, p. 35, 1913.—McDunnough, Check list, No. 6310, 1939.
Yosemitia fieldiella (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 371, 1939.

Forewing heavily dusted with white on costal half and with some scattered white scales on remainder of wing; area between inner margin and cell pale brownish; antemedial line incomplete, distinct only from costa to lower vein of cell; subterminal line complete but obscure except for the blackish costal dash, dentate, the incurvation between veins 6 and 5 shallow; from antemedial line, where it meets the cell, a thin, obscure, curved, blackish line extends to upper outer angle of cell; discal dot small, obscure; on some specimens a few black scales outlining vein 6; on termen a row of obscure blackish dots lying between the vein ends. Hind wing white, in female faintly tinted with smoky fuscous; a very pale fuscous line along termen. Alar expanse, 22–25 mm.

Male genitalia with basal portion of anellus more narrowly sclerotized and arms correspondingly longer than in the other species of the genus; vinculum also broader and shorter. Female genitalia similar to those of *longipennella*, but signum somewhat larger.

TYPE LOCALITY: La Puerta Valley, Calif. (type in USNM).

FOOD PLANT: Unknown

DISTRIBUTION: *California*, La Puerta Valley (July); *Arizona*, Catalina Springs (May).

519. Yosemitia didactica Dyar

FIGURE 545

Yosemitia didactica Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 408, 1915.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 372, 1939.

Forewing heavily dusted with white on costal half; a short blackish line on midcosta; lower half of wing concolorous with thorax; antemedial line obscure, incomplete; discal dot at outer end of cell distinct, blackish; subterminal line complete, dentate, double for a short distance from apex and thence outwardly margined by a narrow pale shade, obscure toward inner margin, parallel to termen; veins 5 to 9 very faintly outlined by dark scaling; terminal row of dots almost obsolete. Hind wing whitish, faintly smoke tinted, somewhat darker toward apex and along termen; cilia with a pale smoky subbasal line. Alar expanse, 22–23 mm.

Male genitalia with vinculum rather longer than that of any other species in the genus; anellus with arms bent about aedeagus. Female genitalia similar to those of *graciella*.

TYPE LOCALITY: Tehuacán, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: México: Tehuacán (May, June), Orizaba.

This species resembles *graciella* but is somewhat paler and the male has slightly darker (smoky) hind wings. It is at once distinguished by the dark line on the midcosta of the forewing. Its life history is unknown.

144. Genus Tucumania Dyar

Tucumania Dyar, Ins. Insc. Menstr., vol. 13, p. 224, 1925.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 373, 1939. (Type of genus: *Tucumania tapiacola* Dyar.)

Tongue rather short, but stout (as in *Melitara*). Antenna of male shortly serrate and pubescent, of female simple and shortly pubescent. Labial palpus of male upturned, reaching almost to level of top of eye; of female porrect (the second segment oblique, the third slightly downcurved). Maxillary palpus squamous. Hind wing with veins 7 and 8 anastomosing for a short distance beyond cell; 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid; harpe with apex bluntly pointed or elliptically rounded; vinculum moderately long (it is somewhat foreshortened in fig. 543), broad; anellus with base of plate moderately sclerotized, arms rather broad and long, slightly twisted; aedeagus long, slender; penis weakly scobinate toward outer extremity.

Female genitalia with signum a small ridged or granulate plate; bursa copulatrix with some fine scobinations in the area about signum; ductus seminalis from bursa near junction of bursa and ductus bursaae.

Larva purplish or wine colored with sclerotized areas about body tubercles dark brown and large; two setae in group VII on abdominal segments 7 and 8.

The larvae are solitary feeders in the joints of Platypuntias.

Eggs laid singly.

This genus is distinguished from others having serrate and pubescent male antennae and squamous maxillary palpi by its host association, its upturned male palpi, slender aedeagus, female genitalia with signum, and with ductus seminalis from the bursa. It is nearest to *Eremberga*, but that genus is broad-winged and has a flat, more strongly sclerotized anellus, a scobinate aedeagus, stouter male genitalia, no signum, and the ductus seminalis coming from the ductus bursae. In *Tucumania* the wings are long and rather narrow.

The known distribution is Argentina and Uruguay.

520. Tucumania tapiacola Dyar

FIGURES 65, 543, 1034

Tucumania tapiacola Dyar, Ins. Insc. Menstr., vol. 13, p. 225, 1925.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 374, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, pp. 39, 59, 83, 1940.

Palpi, face, head, thorax, and forewing dark grayish fuscous with a sparse scattering of obscure whitish scales (Dyar states that the coxae and parts of the femora and tibiae of the legs are black, but even on these parts there is some scattered pale scaling and the ground color is fuscous rather than black). Forewing almost uniformly dark, sometimes a very faint luteous tint in the median area and a slight pale suffusion in terminal area; transverse lines black but not strongly contrasted against the dark ground color; antemedia line bidentate, its apex extending almost to center of cell; subterminal line dentate, sinuate, the dentations short, bordered outwardly by a pale line and beyond this by a rather broad blackish band, from costa well before apex; discal spot at end of cell large; veins beyond cell faintly outlined by dark scaling; a row of black dots along termen at the vein ends. Hind wing whitish, semihyaline, strongly shaded with fuscous at apex and narrowly along margin of termen almost to anal angle, this fuscous shading more extended on the female. Alar expanse, 27–30 mm.

Male genitalia with apex of harpe bluntly pointed; anellus with the apices of the arms appreciably broadened. These are presumably specific characters. I have seen no males of any other species of *Tucumania*. Female genitalia with scobinations of bursa very weak and distinguishable only in area surrounding signum; signum somewhat granulate.

TYPE LOCALITY: Tapia, Tucumán, Argentina (type in USNM).

FOOD PLANTS: *Opuntia* (*Platypuntia*) *discolor* Britton and Rose, *O.* (*Platypuntia*) *aurantiaca* Lindley.

DISTRIBUTION: ARGENTINA.

Only three specimens are before me, the male type and a pair (♂ and ♀) reared in Australia from Argentine stock and sent me by Dodd.

521. Tucumania porrecta Dyar

FIGURE 1035

Tucumania porrecta Dyar, Ins. Insc. Menstr., vol. 13, p. 225, 1925.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 375, 1939.

Large and paler than *tapiacola*. Thorax pale fawn color. Forewing pale purplish fuscous with black markings diffused; antemedial and subterminal lines narrow, black, irregularly dentate, distinguishable throughout but somewhat interrupted; discal dots at end of cell rather large but not sharply contrasted against ground color of the wing because of scattered black dusting in the surrounding area; dots along termen distinct; a short black streak from base through middle of cell to apex of angulate antemedial line. Hind wing white, faintly smoke tinted, especially toward apex. Legs pale purplish fuscous; femora and tibiae transversely banded with blackish fuscous on outer sides. Alar expanse, 32–35 mm.

Female genitalia with scobinations of bursa very fine but denser than in *tapiacola;* a small patch of somewhat larger scobinations in neck of bursa; signum larger, with a thin even keel but no granulations.

TYPE LOCALITY: Paysandú, Uruguay (type in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) sp.

DISTRIBUTION: URUGUAY.

Represented in the National Collection only by the type and paratype from the type locality (Dodd, Feb. 1925), both females. The male is unknown.

145. Genus Eremberga Heinrich

Eremberga Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 375, 1939. (Type of genus: *Cactobrosis leuconips* Dyar.)

Tongue reduced (small and weak). Antenna of male serrate and pubescent, of female simple and shortly pubescent. Labial palpus of male upturned, of female obliquely porrect. Maxillary palpus squamous. Hind wing with veins 7 and 8 very shortly anastomosed beyond cell: 3 and 5 stalked. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos bifid; harpe with apex evenly rounded; vinculum broad and short; anellus with base of plate broadly and strongly sclerotized, arms short, broad, not twisted or bent and with apices pointed; aedeagus moderately long, rather slender, sclerotized throughout and with a minutely scobinate flange at apex.

Female genitalia without signum; bursa copulatrix smooth or with a few scattered microscopic scobinations; ductus bursae short, scobinate at genital opening; ductus seminalis from ductus bursae.

Larva white with dark spots forming incomplete crossbands; two setae in group VII on abdominal segments 7 and 8.

The larvae are solitary or semigregarious feeders in *Echinocereus*. The larva of only one species (*leuconips*) is known but the characters here given presumably apply to the genus.

Eggs laid singly.

This genus is close to *Tucumania* and has many characters in common with *Olyca*. The latter, however, has veins 3 and 5 of the hind wing connate, the ductus seminalis from the bursa rather than from the ductus bursae, the male labial palpus oblique, the aedeagus stout, and the basal plate of the anellus narrowly sclerotized. The characters separating *Eremberga* from *Tucumania* have been discussed in connection with the latter genus.

Three species are here recognized as belonging to *Eremberga*. Its distribution is the southwestern part of the United States and México.

522. Eremberga leuconips (Dyar)

FIGURES 548, 1031

Cactobrosis leuconips Dyar, Ins. Insc. Menstr., vol. 13, p. 224, 1925; Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.—McDunnough, Check list, No. 6288, 1939.

Eremberga leuconips (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 376, 1939.

Palpi, head, thorax, and forewing grayish fuscous densely sprinkled with white, giving the insect a pale slate color. Labial palpus banded with blackish fuscous toward the ends of the segments. Forewing with vein 3 to 10 outlined in black, the black scaling especially strong on lower vein of cell; antemedial and subterminal lines very fine and faint but usually discernible, black; antemedial line acutely angulate and irregularly sinuate and dentate, more or less broken and normally obliterated at costa; subterminal line also irregularly sinuate and dentate, decidedly slanting, obscured toward costa; no distinct discal marks at end of cell and no dots along termen. Hind wing of male glistening white, semihyaline with a band of fuscous shading along costa and a fine, pale fuscous line along termen for a short distance from apex; of female, dark smoky fuscous, the fuscous shading extending into the cilia and strongly outlining most of the veins, and the wing paler towards base. Alar expanse, 26–27 mm.

Male genitalia with lateral edges of anellus finely and irregularly serrate; vinculum with terminal margin evenly rounded, lateral margins not concave or excavate. Female genitalia without any trace of signum; bursa nearly smooth; ductus seminalis from ductus bursae a short distance from genital opening.

TYPE LOCALITY: Baboquivari Mts., Ariz. (type in USNM).

FOOD PLANT: *Echinocereus polyacanthus* Engelmann.

DISTRIBUTION: *Arizona*, Baboquivari Mts. (July, Sept.), Roosevelt (July), Oracle (July), Huachuca Mts. (Aug.), Chiricahua Mts., Mohave County (Sept.).

This species bears a strong resemblance to *Cactobrosis strigalis* (Barnes and McDunnough) and might easily be confused with it. The latter, however, has filiform maxillary palpi while those of *leuconips* are distinctly squamous. Dyar seems to have overlooked this character in placing many of his species. Also there is a difference in the longitudinal markings. In *strigalis* the strongest black longitudinal line is that along the top of the cell and vein 6, while in *leuconips* the strongest line is that along the lower vein of the cell.

In two males and some of the females of *leuconips* there is a faint brownish fuscous suffusion on the lower third of the forewing (bordering the inner margin), but this is not distinguishable on all specimens and does not seem to be a specific character.

523. Eremberga creabates (Dyar)

FIGURE 550

Olyca creabates Dyar, Ins. Inst. Menstr., vol. 11, p. 29, 1923.

Cactobrosis creabates (Dyar), Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.—McDunnough, Check list, No. 6289, 1939.

Eremberga creabates (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 377, 1939.

Palpi grayish fuscous. Head grayish fuscous shaded with white. Thorax luteous, whitish toward anterior margin. Forewing with basal area (to antemedial line), and all the area between antemedial and subterminal transverse dark shade, and the fold and costa, white; area between fold and inner margin luteous; outer area (beyond subterminal dark shade) ashy white, shading to luteous at tornus; transverse antemedial line well contrasted against ground color, thin black, irrorate, forming a sharp angle at the fold, the apex of the angle extending almost to the middle of the fold; subterminal line obsolete, replaced by a dark, transverse shade below end of cell and some scattered blackish dusting toward apex; veins 2 to 10 and upper and lower veins of cell more or less outlined in black, the lines very faint

on all the veins except vein 4; along termen, between the vein ends, a row of very faint blackish dots; no discal marks at end of cell. Hind wing shiny white, semihyaline, with a faint pale fuscous shading along costa, on veins 6, 7, and 8, and at extreme apex. Alar expanse, 34 mm.

Genitalia with lateral margins of anellus smooth; vinculum with terminal margin straight, rather broad, lateral margins excavate.

TYPE LOCALITY: San Diego, Calif. (July; type in USNM).

FOOD PLANT: Unknown.

Known only from the unique male type. It is a striking species and should be easily recognized from the description and genitalic features.

524. Eremberga insignis Heinrich

FIGURE 549

Eremberga insignis Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 378, 1939.

Palpi, face, head, thorax, and forewing dark grayish fuscous. Forewing very faintly dusted with white on costal half; lower half of wing faintly shaded with dull luteous ocherous; antemedial and subterminal lines as in *leuconips*, except antemedial not obliterated toward costa; veins 2 to 9 very faintly outlined in black, the black lining most distinct on lower vein of cell; a conspicuous black spot at end of cell; along termen, between the vein ends, a row of rather conspicuous black dots. Hind wing shiny white, semihyaline, with a fuscous shade bordering costa and a pale fuscous line on termen for a short distance from apex. Alar expanse, 35 mm.

Male genitalia with lateral margins of anellus smooth; vinculum with terminal margin straight and narrow, lateral margins outwardly angled.

TYPE LOCALITY: San Luis Potosí, México (type in USNM).

FOOD PLANT: Unknown.

This species is known only from the male type. It is easily distinguished from the other two species in the genus by the conspicuous discal spot on forewing.

146. Genus Salambona Heinrich

Salambona Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 379, 1939. (Type of genus: *Zophodia analamprella* Dyar.)

Tongue well developed. Antenna of male pubescent and slightly serrate, of female simple and shortly pubescent. Labial palpi of both sexes porrect with the third segment downcurved, the third segment slightly longer in the female than in the male. Maxillary palpus squamous. Hind wing with veins 7 and 8 anastomosed for more than one-half their lengths beyond the cell; 3 and 5 stalked. Eighth abdominal segment with a pair of strong ventrolateral hair tufts.

Male genitalia with apical process of gnathos bifid, small; uncus constricted toward apex; harpe with apex oblique; vinculum long; anellus with base of plate narrowly sclerotized, arms long, curved and twisted part way around aedeagus; aedeagus long, stout.

Female genitalia without signum or scobinations in bursa; bursa small, smooth; ductus bursae long, slender, smooth; ductus seminalis from near end of bursa.

Larvae grayish green or blackish, according to Dodd; not banded or conspicuously spotted; solitary feeders in fruits of *Platypuntia*.

Eggs laid singly.

The genus is distinguished from other genera in the cactus-feeding group by the following combination of characters: Antenna of male serrate and pubescent; labial palpi of both sexes porrect and downcurved; maxillary palpus squamous; harpe of genitalia with apex oblique; vinculum long; eighth abdominal segment of male bearing a pair of ventrolateral tufts; bursa copulatrix of female small and without signum or scobonations (smooth); ductus seminalis from near end of bursa; larvae unbanded, dark, fruit feeders in Platypuntias.

Only the type species is recognized as belonging to the genus. It is known only from Argentina.

525. Salambona analamprella (Dyar)

FIGURES 552, 1045

Zophodia analamprella Dyar, Ins. Insc. Menstr., vol. 10, p. 17, 1922.

Salambona analamprella (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 380, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, p. 40, 1940.

Palpi, head, thorax, and forewings dark stone gray; the scales under magnification dark grayish fuscous tipped with dull white. Forewing with the costa broadly margined (to top of cell) with white, the white streak diminishing toward base of wing and terminating before apex; no transverse lines, or discal or terminal dots. Hind wing semihyaline with a smoky shade along costa and a narrow smoke-brown line along termen; the smoky shade somewhat more extended on the female. Alar expanse 25–27 mm.

Male genitalia characters as given for the genus. Female genitalia with bursa very small and ductus bursae long and very slender.

TYPE LOCALITY: Carmen Patagones, Argentina (type in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) *sulphurea* G. Don and probably other species of *Platypuntia*.

DISTRIBUTION: ARGENTINA: Carmen Patagones (Jan.), Andalgalá (Mar.), La Rioja.

According to Dodd this insect is the chief enemy of the cochineal scales in Argentina and is usually predaceous on cochineal (*Dactylopius* spp.) but not uncommonly the larvae feed in *Opuntia* fruit and flower buds. From the genitalic and other structural characters of the moth I am inclined to doubt this. I think *analamprella* will prove to be primarily a cactus feeder and only secondarily predaceous on the cochineal scales on the cactus. It is the other way around with *Laetilia coccidivora* (Comstock). The latter is a true predator and follows its coccid hosts no matter to what plant

they may go. It also varies its diet somewhat by occasional feedings on buds and flowers. According to Dodd it sometimes feeds in *Opuntia* flowers; but this is a secondary habit and the association with *Opuntia* accidental. *Laetilia* is close to but not a part of the cactus-feeding group of Phycitinae. *Salambona*, on the other hand, is, in all adult characters, definitely a member of the group.

The species is a striking one, easily recognized by the strongly contrasted, white costal stripe on forewing.

147. Genus Parolyca Dyar

Parolyca Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 17, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 381, 1939.—(Type of genus: *Olyca asthenosoma* Dyar.)

Tongue well developed. Antenna of male unipectinate. Labial palpus of male upcurved. Maxillary palpus squamous. Hind wing with veins 7 and 8 shortly anastomosed beyond cell; 3 and 5 shortly stalked. Eighth abdominal segment with a strong pair of ventrolateral tufts.

Male genitalia with apical portion of gnathos bifid; uncus narrowed well before apex; harpe with apex oblique; vinculum long, its terminal margin rounded, its lateral margins excavate (probably a specific character only); anellus with base of plate broadly sclerotized, arms long, rather broad and slightly twisted; aedeagus long, stout; penis weakly scobinate.

The genus is known only from the male of its type species. Its biology is unknown, but from the genitalic and other structural characters of the adult its larvae are presumed to be cactus feeders. It is easily recognized, for it is the only genus in the cactus-feeding group with unipectinate antenna. The habitat is French Guiana.

526. Parolyca asthenosoma (Dyar)

FIGURES 69, 551

Olyca asthenosoma Dyar, Ins. Insc. Menstr., vol. 7, p. 55, 1919.
Parolyca asthenosoma (Dyar), Proc. Ent. Soc. Washington, vol. 30, p. 137, 1929.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 381, 1939.

Palpi, head, and thorax sordid white. Forewing white, with a yellowish tint on area between fold and inner margin; antemedial band angulate, consisting of parallel black lines and a central white line; a black oblique dash in median area from inner margin to dashes at apex, black dots on the veins, and a black spot on inner margin; a black discal dot at end of cell and some black scaling on bases of veins 2 to 4; a row of small black dots along termen, between the vein ends. Hind wing white, semihyaline, with a pale fuscous shade along costa, a narrow fuscous line along termen, and some pale fuscous scaling on veins 2 to 8. Alar expanse, 30 mm.

Male genitalia with lateral margins of vinculum excavate.

TYPE LOCALITY: Maroni River, French Guiana (type in USNM).

FOOD PLANT: Unknown.

Known only from the unique male type.

148. Genus Sigelgaita Heinrich

Sigelgaita Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 382, 1939. (Type of genus: *Sigelgaita chilensis* Heinrich.)

Tongue well developed. Antenna of male bipectinate (in *transilis* with a few flattened setae on the inner row of pectinations of the first five or six segments of the shaft); antenna of female shortly pubescent. Labial palpus of male upcurved, of female porrect (the second segment obliquely upturned, the third bent forward). Maxillary palpus large, extending above front, flamboyant. Hind wing with veins 7 and 8 anastomosing beyond cell; 3 and 5 stalked. Eighth abdominal segment with two pairs of thin hair tufts (very slight in *chilensis*).

Male genitalia with apical process of gnathos small, bifid; harpe with apex oblique; vinculum long; anellus with base of plate somewhat broadly sclerotized, arms moderately long, slightly twisted (in *transilis*); aedeagus moderately stout, long; penis weakly scobinate.

Female genitalia with signum weak or absent; bursa small and finely scobinate; ductus bursae moderately long, finely scobinate toward bursa and genital opening; ductus seminalis from middle of bursa.

Larva blue or blue-green according to Dodd; not banded or conspicuously spotted; two setae in group VII on abdominal segments 7 and 8.

The larvae are solitary feeders in the fruits of *Eulychnia*, *Trichocereus*, and *Platypuntia*.

Egg and egg-laying habits unknown.

This genus is closest to *Amalafrida* but in many characters more nearly resembles *Nanaia*. The maxillary palpi are long in both *Sigelgaita* and *Nanaia* but are not so closely appressed to the face in the former as in the latter. The labial palpi of the males (upcurved in *Sigelgaita*, porrect in *Nanaia*) readily separate the two genera.

527. Sigelgaita chilensis Heinrich

FIGURES 554, 1046

Sigelgaita chilensis Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 383, 1939.

Palpus, head, and thorax fuscous, strongly irrorated with white; head and collar more whitish than fuscous; posterior margin of thorax shaded with black. Forewing fuscous, dusted with white, giving the wing an ashy gray (in some specimens a bluish gray) color; a white suffusion filling the cell; antemedial line near middle of wing, black, outwardly angulate; from upper angle of cell to middle of inner margin a more or less prominent blackish shade; subterminal band dentate, consisting of a thin, black, inner line, a parallel outer black line, and a central pale line, the dentations of the outer line acute and extended in short dashes onto the veins; a row of black dots along termen between the vein ends. Hind wing whitish, smoky fuscous toward termen, apex, and costa, and on the veins; cilia white

with a pale fuscous subbasal line. Alar expanse, 31–44 mm.

Male genitalia with harpe fairly broad, aedeagus somewhat stouter than in *transilis*, vinculum shorter. Female genitalia with signum present, the latter consisting of three or four minute, more or less coalesced, blunt spines.

TYPE LOCALITY: Ovalle, Chile (type in USNM).

FOOD PLANT: *Eulychnia acida* Philippi, *Trichocereus chiloensis* (Colla).

DISTRIBUTION: CHILE: La Serena, Ovalle, Tofa.

Superficially this species and *huanucensis* resembles *Nanaia substituta*. The latter, however, lacks altogether the dark shade between the outer angle of the cell and the inner margin so characteristic of *chilensis* and *huanucensis*. The forewings of the three species are similar—long, and narrow and of about the same size and shape.

528. Sigelgaita huanucensis Heinrich

FIGURE 1047

Sigelgaita huanucensis Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 383, 1939.

Similar to *chilensis*, except as follows: Paler, white dusting on head, thorax, and forewing more pronounced; general color of forewing brownish rather than gray; transverse dark shade from outer upper angle of cell to inner margin pale brown; antemedial and subterminal lines interrupted, the latter indicated only by blackish scaling on the veins; a pale brownish shade in area bordering inner margin. Hind wing pure white, with a very faint fuscous shade along costa and a thin, pale fuscous line on termen for a short distance from apex, this line a trifle broader on female than on male and extending nearly to anal angle of wing. Alar expanse, 45 mm.

Female genitalia without signum.

TYPE LOCALITY: Huánuco, Perú (type in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) *ficus-indica* (Linnaeus).

Known only from the female type and male paratype from the type locality.

529. Sigelgaita transilis Heinrich

FIGURE 553

Sigelgaita transilis Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 384, 1939.

Palpi, head, thorax, and forewing dark grayish fuscous finely peppered with white, giving them a slate-gray color. Forewing with antemedial and subterminal lines obscured, indicated by faint whitish lines bordered, for a short distance from costa, by blackish streaks; discal spot at end of cell blackish, rather large; a row of black dots along termen between the vein ends. Alar expanse, 26 mm.

Genitalia with harpe narrower than that of *chilensis*, vinculum considerably longer, and aedeagus slenderer and appreciably tapering toward apex.

TYPE LOCALITY: Santa Eulalia, Perú (type in USNM).

FOOD PLANT: *Trichocereus* sp.

Known only from the male type.

149. Genus Amalafrida Heinrich

Amalafrida Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 385, 1939. (Type of genus: *Cactoblastis leithella* Dyar.)

Tongue well developed. Antenna of male bipectinate; on each of the inner pectinations of the first five segments a row of from three to five flattened, spinelike setae; antenna of female simple and finely pubescent. Labial palpus of male obliquely ascending, of female obliquely porrect. Maxillary palpus squamous. Hind wing with veins 7 and 8 anastomosing for over half their lengths beyond cell; veins 3 and 5 stalked. Eighth abdominal segment of male with two pairs of ventrolateral hair tufts.

Male genitalia with apical process of gnathos bifid; harpe with apex oblique; vinculum long; anellus with base of plate rather broadly sclerotized, arms long, slightly twisted; aedeagus long, moderately stout; penis scobinate.

Female genitalia without signum; bursa copulatrix large, weakly and scatteringly scobinate; ductus bursae long, slender; ductus seminalis from about middle of bursa.

Larva grayish in color with a tendency toward pale transverse bands[4] after the manner of *Olycella* larvae, according to Dodd; solitary tunnelers in *Platypuntia*.

Eggs unknown.

The genus at present is represented by only the type species. It is closest to *Sigelgaita*, one species of which (*transilis*) also has setiferous pectinations on some of the basal segments of the male antennal shaft. The form of the maxillary palpi, as well as the shape of the forewings, distinguish the two genera. In *Sigelgaita* the forewing is much longer in proportion to its width and the termen more rounded than is the case in *Amalafrida*. According to Dodd, *leithella* differs markedly from the species of *Sigelgaita* in larval and pupal habits.

530. Amalafrida leithella (Dyar)

FIGURES 555, 1044

Cactoblastis leithella Dyar, Proc. Ent. Soc. Washington, vol. 30, p. 135, 1928.

Amalafrida leithella (Dyar) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 386, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, p. 40, 1940.

Forewing with the areas between cell and costa, between vein 1b and inner margin for a short distance, and along costal half of termen, white with a scattering of black scales; ground color of remaining areas ocherous fuscous, very faintly shaded with rufous above inner margin; transverse and discal markings black; antemedial line incomplete, indicated by a thin, blackish, irregular line from inner margin to cell and a broad black streak from costa to about middle of the fold (in some specimens this fuses with a black streak, which extends from middle of vein 1b to end of cell); subterminal line black, faint (obscured below vein 6 in some specimens), sinuate and dentate, outwardly bordered by a whitish line and beyond this by a second, very faint, parallel, pale fuscous line; at end of cell a large, irregular, black spot; a line of distinct black dots along

termen between the vein ends. Hind wing of male white, semihyaline, with a narrow pale fuscous shade along costa and termen; of female dark smoky fuscous shading to white towards base; cilia white with a fuscous basal band. Alar expanse, 30–33 mm.

Male genitalia as given for the genus. Female genitalia with bursa very large and irregularly shaped, minutely scobinate.

TYPE LOCALITY: Curaçao, Dutch West Indies (type in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) sp.

DISTRIBUTION: DUTCH WEST INDIES: Curaçao (Jan.). VENEZUELA. Caracas (Jan.). COLOMBIA: Province of Colombia (Jan.)

Superficially *leithella* resembles *Cactoblastis cactorum* but is easily distinguished on structural characters of the male and female genitalia and of the male antennae.

150. Genus Ozamia Ragonot

Ozamia Ragonot, Monograph, pt. 2, p. 34, 1901.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 386, 1939. (Type of genus: *Trachonitis lucidalis* Walker.)

Antenna of male serrate (except in *hemilutella* and *punicans*, where it is simple) and pubescent with a series of modified, papillalike setae on the inner side of several basal segments of the shaft (fig. 557d); antenna of the female simple and pubescent. Labial palpi obliquely ascending in both sexes. Maxillary palpus squamous. Hind wing with veins 7 and 8 anastomosing beyond the cell; 3 and 5 stalked. Eighth abdominal segment bearing one pair or two (*odiosella*) pairs of ventrolateral hair tufts.

Male genitalia with apex of gnathos small or moderately large, bifid; apex of harpe oblique (except in *punicans*); vinculum long; anellus with base of plate broadly rather than narrowly sclerotized, arms long, slightly twisted and curved; aedeagus rather long and moderately stout (except in *lucidalis*); penis scobinate.

Female genitalia with signum weak or absent (*lucidalis*), when present developed as a thin, short, scobinate or shortly thorned plate or a series or cluster of small, weak spines; bursa copulatrix minutely scobinate, at least toward ductus bursae (wrinkled in the South American species); ductus bursae long or moderately long, scobinate toward bursa; ductus seminalis from bursa near signum.

Larva wine colored, olive green, or blackish, not banded or conspicuously spotted; with two setae in group VII of abdominal segments 7 and 8; solitary feeders in fruits and flower buds of *Opuntia* and *Cereus*, sometimes (some South American species) in the stems of *Cereus*.

This genus divides into two natural groups: The North American species with unwrinkled bursa and minutely scobinate ductus bursae, and all fruit or bud feeders; and the South American species with wrinkled bursa and coarsely scobinate ductus bursae and either fruit or stem feeders. The West Indian species (*lucidalis*) is anomalous in some genitalic characters (small abdominal tufts, rather slender aedeagus, long ductus bursae, and no signum), but on habitus and other characters it appears closely allied to the North American group. When males of all the species are known it may be possible to give a separate generic designation to the South American forms, but in the absence of definitive male characters that does not seem justified.

The papillalike setae on the male antennal shaft of *Ozamia* also occur in *Cactobrosis* and *Zophodia*, but the last two genera are distinguished by filiform maxillary palpi.

Eight species are here recognized as belonging to the genus. Its distribution appears to be the southwestern part of the United States, Central and South America, and the West Indies.

531. Ozamia lucidalis (Walker)

FIGURES 556, 1042

Trachonitis lucidalis Walker, List, vol. 27, p. 39, 1863.
Ozamia lucidalis (Walker) Ragonot, Monograph, pt. 2, p. 34, 1901.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 388, 1939.—McDunnough, Check list, No. 6290, 1939.

Palpi, head, thorax, and forewing sordid white. Forewing with ferruginous-fuscous spottings on the area bordering inner margin; transverse markings black, shading to ferruginous fuscous toward inner margin; antemedial line angulate, white, bordered on inner and outer sides by black or ferruginous, the outer black marking at costa a broad spot; subterminal line dentate, slanting from costa near apex to outer fourth of inner margin, bordered inwardly and outwardly by dark lines, shading from black to ferruginous; discal spot at end of cell irregular, frequently extended beyond cell into two short dashes, black; a row of black dots along termen at the vein ends. Hind wing white, semihyaline, with a fine fuscous line along termen; cilia white with a faint, dark, subbasal line. Abdominal tufts small. Alar expanse, 25–30 mm.

Male genitalia with apical process of gnathos small; end of vinculum bluntly rounded. Female genitalia without signum; bursa and part of ductus bursae minutely scobinate; ductus bursae long, slender, bent at middle.

TYPE LOCALITY: Santo Domingo [Dominican Republic] (type in BM).

FOOD PLANT: *Opuntia* (*Platypuntia*) sp.

DISTRIBUTION: CUBA; JAMAICA, Kingston (Jan.).

I have seen no specimens from the type locality.

532. Ozamia fuscomaculella (Wright)

FIGURES 557, 1043

Euzophera fuscomaculella Wright, Ent. News, vol. 27, p. 27, 1916.—McDunnough, Check list, No. 6320, 1939.
Ozamia heliophila Dyar, Ins. Insc. Menstr., vol. 13, p. 222, 1925.
Ozamia odiosella fuscomaculella (Wright) Heinrich, Proc. U. S. Nat. Mus., vol. 86, pl 390, 1939.

Ground color and markings of forewing similar to those of *lucidalis* except that transverse markings are blackish throughout, paling somewhat toward inner

margin but not shading into ferruginous; no ferruginous coloring on forewing. Abdominal tufts much stronger than in *lucidalis* and in two distinct pairs. Alar expanse, 23–28 mm.

Male genitalia with apical process of gnathos rather large; terminal margin of vinculum bluntly angulate. Female genitalia with signum a thin short line of minute spines; bursa copulatrix smooth except toward ductus bursae, where it is finely scobinate; ductus bursae of moderate length, swollen toward and gradually expanding into bursa.

TYPE LOCALITIES: San Diego, Calif. (*fuscomaculella*, in W. S. Wright Collection); Los Angeles, Calif. (*heliophila*, in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: *California*, San Diego (May, June, Aug.), Los Angeles (July), Pasadena (Aug.).

533. Ozamia fuscomaculella clarefacta Dyar

FIGURES 67, 559, 1040

Ozamia clarefacta, Dyar, Ins. Insc. Menstr., vol. 7, p. 55, 1919—McDunnough, Check list, No. 6292, 1939.

Ozamia odiosella Heinrich (not Hulst), Proc. U. S. Nat. Mus., vol. 86, p. 389, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, pp. 39, 60, 84, 1940.

The variety (or race) is apparently limited to southeastern Texas and eastern México. It is distinguished by the presence of a greenish tint over the area bordering the inner margin of forewing. According to Dodd this green shade is quite distinct on live or freshly killed moths, but is not observable on most pinned examples. There is also a slight difference in the female signum. In *clarefacta* it consists of a narrow, minutely spined plate. Otherwise *clarefacta* has nothing to distinguish it from typical *fuscomaculella*.

TYPE LOCALITY: Orizaba, México (type in USNM).

FOOD PLANTS: *Opuntia* (*Platypuntia*) spp.

DISTRIBUTION: UNITED STATES: *Texas*, Brownsville, Victoria (May), Burnet County (Oct.), Uvalde (June, July), Kerrville (May, June), San Benito (Aug.). MÉXICO: Orizaba (Apr.), Jalapa.

In my 1939 paper I misidentified this variety with Hulst's *odiosella* on the basis of a female from Texas in the National Collection which Hulst had labeled "*Salebria odiosella* Hulst, Type" and which both Dyar and I had supposed was the true type of that species. It is not the actual type, which I had previously overlooked. This is in the Rutgers Collection. It is a male, superficially similar to the spurious "type" in the National Museum but structurally quite distinct; it has 8 veins in the hind wing and the maxillary palpus in the form of an aigrette (as in *Salebria* where Hulst placed it). The true *odiosella* is treated on page 114.

534. Ozamia thalassophila Dyar

FIGURE 1039

Ozamia thalassophila Dyar, Ins. Insc. Menstr., vol. 13, p. 15, 1925.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 391, 1939.—McDunnough, Check list, No. 6291, 1939.

Palpi, head, thorax, and forewing dark grayish fuscous, lightly sprinkled with white. Forewing with some white dusting on costal half and a slightly more brownish shade on inner half; antemedial and subterminal transverse lines whitish, bordered with black or blackish fuscous, the pattern as in *lucidalis* and *odiosella;* discal spot at end of cell curved, black; between this and subterminal lines one or two small, obscure, blackish dots; upper and lower veins of cell faintly outlined by white scales; a row of black dots along termen at or close to the vein ends; cilia pale ocherous fuscous. Hind wing white with a narrow fuscous shade along termen; cilia white, with a fuscous subbasal line. Alar expanse, 28 mm.

Female genitalia with signum a small cluster of two or three more or less fused and minute spines; bursa copulatrix partially wrinkled (in the region of the signum); ductus bursae of moderate length, finely scobinate toward bursa.

TYPE LOCALITY: Oceanside, Calif. (type in USNM).

FOOD PLANT: *Opuntia* (*Cylindropuntia*) sp.

Known only from the unique female type, reared (Aug. 1924) from larva in a *Cylindropuntia*, presumably feeding in the fruit.

535. Ozamia immorella (Dyar), new combination

FIGURE 1036

Euzophera immorella Dyar, Proc. U. S. Nat. Mus., vol. 44, p. 322, 1913.

Similar in color and markings to *thalassophila* except for a faint purplish red suffusion over the ground color of forewing (especially noticeable on freshly reared examples) and less white dusting on costal area of wing. Alar expanse, 25–31 mm.

Male genitalia with apical process of gnathos rather large (as in *fuscomaculella*); terminal margin of vinculum bluntly rounded. Female genitalia with signum a narrow, bluntly spined plate, the signum longer than any other in the genus; bursa copulatrix somewhat wrinkled in the neighborhood of signum, finely scobinate towards ductus bursae, the scobinations extending for a short distance into ductus.

TYPE LOCALITY: Tehuacán, México (type in USNM).

FOOD PLANT: *Opuntia* (*Platypuntia*) sp.

DISTRIBUTION: MÉXICO: Caxaxa, Tehuacán (July), Zacatecas (Dec.)

This species is very close to *thalassophila* but apparently distinct. I overlooked it when treating the cactus-feeding Phycitinae in 1939. Since that time a series (including one male) was reared on Dec. 10, 1946, by George Callaghan of the U. S. Bureau of Entomology and Plant Quarantine from larvae feeding in the fruits of prickly-pear at Zacatecas, México.

536. Ozamia stigmaferella Dyar

FIGURE 1038

Ozamia stigmaferella Dyar, Ins. Insc. Menstr., vol. 10, p. 17, 1922.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 391, 1939.

Palpi, head, and thorax dark grayish fuscous sparsely sprinkled with white, forewing dark grayish fuscous;

extreme base black; remainder of basal area and area between cell and costa and to the subterminal line white lightly dusted with black; antemedial line obsolete, indicated only by a large black spot on costa (corresponding to the black shade outwardly bordering the white antemedial line in the North American species of *Ozamia*); subterminal line whitish, dentate, bordered inwardly and outwardly by black; a short, dentate, black line from vein 8 to vein 2, midway between the end of cell and the subterminal line and parallel with the latter; a black curved mark at end of cell; a row of black dots along termen at or near the vein ends; a faint whitish color dusted with black in apical area. Hind wing white, semihyaline, with a fuscous shade at apex and for a short distance along termen; cilia whitish with a very faint fuscous subbasal line. Alar expanse, 26 mm.

Female genitalia with signum a small buttonlike thorn; bursa copulatrix wrinkled and finely scobinate; ductus bursae long, coarsely scobinate toward bursa.

TYPE LOCALITY: Catamarca, Argentina (type in USNM).

FOOD PLANT: *Cereus validus* Haworth.

This species is known only from the female type, reared Mar. 7, 1921, by W. B. Alexander from a larva that had excavated a hollow in a stem of *Cereus validus*.

O. stigmaferella and the two following species (*hemilutella* and *punicans*) are the South American representatives of the genus and differ from those from the United States, México, and the West Indies in having the ductus bursae of the female coarsely scobinate and the bursa copulatrix decidedly wrinkled.

537. Ozamia hemilutella Dyar

FIGURES 560, 1041

Ozamia hemilutella Dyar, Ins. Insc. Menstr., vol. 10, p. 17, 1922.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 392, 1939.

Palpi, head, and thorax brownish fuscous, finely and evenly sprinkled with white, making the general color (to the naked eye) pale gray; collar of thorax with a slight yellowish tint. Forewing with area between lower vein of cell, vein 2, and inner margin pale yellow without any markings; remainder of wing pale gray, concolorous with head and thorax; antemedial line obsolete; from costa just before middle to middle of lower vein of cell, a rather broad, transverse, brownish shade; a brown discal dot at end of cell and some brown shading just beyond; subterminal line faint, weakly dentate, parallel with termen, bordered inwardly and outwardly by thin faintly brownish lines; a row of minute black dots along termen at the vein ends; cilia pale gray. Hind wing white, semihyaline with a thin fuscous line along termen and some fuscous shading bordering the costa. Abdomen with one pair of strong tufts. Alar expanse, 27–30 mm.

Male genitalia with apical process of gnathos small; end of vinculum bluntly angulate. Female genitalia with signum a single, weak, irregular, thornlike patch; bursa copulatrix wrinkled and finely scobinate; ductus bursae coarsely scobinate toward bursa.

TYPE LOCALITY: La Rioja, Argentina (type in USNM).

FOOD PLANT: *Cereus validus* Haworth.

DISTRIBUTION: ARGENTINA: La Rioja, Santiago del Estro.

The moth is easily identified by the clear yellow inner area of the forewing. The larvae feed in the fruits and flower buds and, possibly, to some extent, in the stems of Cereus. Dodd states that they also attack fruits of Platypuntias.

538. Ozamia punicans Heinrich

FIGURES 558, 1037

Ozamia punicans Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 393, 1939.

Palpi fuscous sprinkled with white. Head and thorax fuscous heavily dusted with white and more or less shaded with pale rust color, especially on top of head and on collar of thorax. Forewing pale gray (fuscous heavily dusted with white) marked with darker gray and with large blotches of pale rust color; the rust shade filling about one-fourth of the basal area and nearly all the area between antemedial and subterminal lines, lower vein of cell, vein 2, and vein 1b; antemedial line obscure, indicated chiefly by a rather broad dark gray shade from costa to lower vein of cell and a thin dark gray line thence to inner margin; subterminal line faint, somewhat sinuate but not dentate, approximately parallel with termen, bordered inwardly and outwardly by obscure dark gray; apical mark at end of cell irregular, dark gray; between cell and subterminal line some faint rust shading in the interspaces between the veins; a row of black dots along termen between the vein ends; cilia pale rust red. Hind wing white, semihyaline, with a fuscous shade in costal area to top of cell and vein 8, some fuscous shading on the vein ends, and a fine fuscous line along termen to vein 1b; cilia shiny white. Abdominal tufts as in *hemilutella*. Alar expanse, 36–40 mm.

Male genitalia with apical process of gnathos moderately large; apex of harpe more rounded than in other species of *Ozamia;* end of vinculum more rounded than angulate and lateral margins excavate; penis bearing a number of coarse spines. Female genitalia larger than those of any other *Ozamia;* with signum a small granulose plate containing a stubby central thorn; bursa copulatrix wrinkled and finely scobinate; ductus bursae long, very coarsely scobinate toward bursa.

TYPE LOCALITY: Tapia, Tucumán, Argentina (type in USNM).

FOOD PLANT: *Cereus validus* Haworth.

According to Dodd, *punicans* differs from other species of *Ozamia* in that it is a stem borer and apparently does not attack the fruits or flower buds. It differs also in that the apex of the harpe is not definitely oblique, and the maxillary palpi are somewhat narrowly scaled. However, the latter are of the squamous rather than the filiform type, and from its general habitus the species is obviously closely related to

hemilutella. The moth can be easily identified by the rust-red cilia and blotches on the forewing. It, so far, is known only from the type series from Tucumán.

151. Genus Cactobrosis Dyar

Cactobrosis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 406, 1915; Proc. Ent. Soc. Washington, vol. 30, p. 135, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 394, 1939.

Tongue well developed. Antenna of male with a series of modified, papillalike setae on the inner sides of several basal segments of the shaft, bipectinate (*fernaldialis, longipennella*) or strongly serrate and pubescent (*maculifera, strigalis*); antenna of female simple and shortly pubescent. Labial palpus upturned in the male, oblique in the female. Maxillary palpus filiform. Hind wing with veins 7 and 8 anastomosing beyond the cell; 3 and 5 shortly stalked. Eighth abdominal segment bearing a pair of ventrolateral hair tufts (the tufts long and dense except in *strigalis*).

Male genitalia with apex of gnathos large, bifid; apex of harpe evenly rounded; vinculum long (moderately long in *strigalis*); anellus with base of plate narrowly sclerotized, arms long, slender, slightly twisted; aedeagus long, stout (shorter and less stout in *strigalis*); penis more or less densely pubescent (armed with short, hairlike spines).

Female genitalia without signum; ductus bursae long, finely scobinate only at genital opening or (in *strigalis* only) sparsely so at junction of bursa copulatrix and ductus bursae, with two small sclerotized dorsal plates and a single ventral plate at genital opening (the ventral plate absent in *strigalis*); bursa copulatrix large, smooth (except in *strigalis*, in which it has a few minute scobinations); ductus seminalis from near end of bursa.

Larvae bluish, not banded or conspicuously spotted; with two setae in group VII on abdominal segments 7 and 8; gregarious feeders in *Ferocactus, Echinocereus, Peniocereus*, and, probably, *Carnegiea*.

Eggs laid singly.

The genus as here defined is distinguished from all other genera of the cactus-feeding group by its filiform maxillary palpi. *Zophodia*, which it resembles in most structural characters, is not a cactus-feeding genus, has the male antenna unserrate, the labial palpus of female porrect, and a small signum in the bursa copulatrix.

Five species are recognized as belonging to the genus. They are fairly easy to distinguish but subject to much individual variation in wing markings.

The known distribution is the southwestern part of the United States and México.

539. Cactobrosis fernaldialis (Hulst)

FIGURES 73, 524, 1049

Megaphycis fernaldialis Hulst, Trans. Amer. Ent. Soc., vol. 13, p. 163, 1886.

Euzophera gigantella Ragonot, Nouv. Gen., p. 32, 1888; Monograph, pt. 2, p. 51, 1901.—Dyar, Proc. Ent. Soc. Washington, p. 158, 1904.

Melitara fernaldialis (Hulst), Phycitidae of N. Amer., p. 172, 1890; U. S. Nat. Mus. Bull. 52, p. 429, 1903.—Schwarz, Psyche, vol. 8, p. 15, 1901.—Hunter, Pratt, and Mitchell, U. S. Dept. Agr. Bur. Ent. Bull. 113, p. 29, 1912.

Honora cinerella Hulst, Journ. New York Ent. Soc., vol. 8, p. 223, 1901; U. S. Nat. Mus. Bull. 52, p. 433, 1903.

Melitara fernaldalis Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 36, 1905 (misspelling for *fernaldialis* Hulst).

Cactobrosis fernaldalis (Dyar), Proc. U. S. Nat. Mus., vol. 47, p. 407, 1914; Ins. Insc. Menstr., vol. 13, p. 223, 1925 (in part); Proc. Ent. Soc. Washington, vol. 30, p. 135, 1928 (in part).

Cactobrosis fernaldialis (Hulst) Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 396, 1939.—McDunnough, Check list, No. 6283, 1939.—Dodd, Biological campaign against prickly-pear, Brisbane, Australia, p. 40, 1940.

MALE: Antenna bipectinate. Palpi, head, and thorax grayish fuscous dusted with white. Forewing grayish fuscous dusted with white and more or less blotched with black; some specimens with a faint ocherous-fuscous tint in the middle of the cell and on the area between vein 1b and the cell; normally with antemedial and subterminal transverse markings indistinct, but indicated by whitish angulate and dentate bands shaded inwardly and outwardly by black; a blackish shade at end of cell, often extending to costa; below it on inner margin a similar dark spot; veins 2 to 8 faintly lined with black and in many specimens the fold to a little beyond its middle. Hind wing white, semihyaline, shaded in costal area above vein 6 and cell with pale fuscous, with some fuscous scaling on the veins and a fine fuscous line along termen; anal margin and adjoining cilia faintly ocherous; cilia otherwise white, with a narrow, fuscous subbasal line. Alar expanse, 36–47 mm.

Male genitalia essentially like those of *longipennella* but somewhat larger, in size and habitus like those of *maculifera*.

FEMALE: In color and markings like the male except that there is never any black streak on the fold of the forewing; some specimens are heavily dusted with black over the entire base of the forewing as far as the antemedial line; others have the transverse lines and contrasted dark spots almost obliterated and the wing of a pale slate color with only the faintest remnants of the normal markings. Alar expanse, 34–50 mm.

Female genitalia with the sclerotized ventral plate in ductus bursae at opening smaller than those in *longipennella, insignatella*, and *maculifera*.

TYPE LOCALITIES: Arizona (*fernaldialis*, in AMNH, ex Rutgers; *gigantella*, in Paris Mus.); Santa Rita Mts., Ariz. (*cinerella*, in USNM).

FOOD PLANTS: *Ferocactus wislizeni* (Engelmann) and probably other species of *Ferocactus*; *Peniocereus greggii* (Engelmann); *Carnegiea gigantea* (Englemann); *Homalocephala texensis* (Hopffer).

DISTRIBUTION: *Arizona*, Catalina Springs (Apr.), Oracle (July), Tuscon (June), Baboquivari Mts. (Apr., May, June, July, Aug., Oct., Nov.), Christmas, Redington, Pinal Mts., Santa Rita Mts. (May, June), Huachuca Mts. (Aug.), Douglas (Apr., May), Mohave County (May), Sells Post Office (Indian Oasis, Apr.), Dewey (June), Maricopa County (July), "en route from

Dewey to Salome" (Apr., May); *California*, San Diego (May, Oct.); *Texas*, Brownsville (Jan., U. S. Dep. Agr. rearing).

540. Cactobrosis longipennella (Hampson)

FIGURES 523, 1050

Euzophera longipennella Hampson, *in* Ragonot, Monograph, pt. 2, p. 52, 1901.
Moodna elongatella Hampson, *in* Ragonot, Monograph, pt. 2, p. 269, 1901.
Cactobrosis longipennella (Hampson) Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 407, 1914.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 397, 1939.
Cactobrosis elongatella (Hampson) Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 407, 1914.
Cactobrosis fernaldialis Dyar (part), Ins. Insc. Menstr., vol. 13, p. 223, 1925; Proc. Ent. Soc. Washington, vol. 30, p. 135, 1928.

MALE: Like that of *fernaldialis* except that pectinations of antenna are about half the length of those on *fernaldialis;* transverse pale markings on forewing obsolete in some specimens. Alar expanse, 34–40 mm.

Male genitalia similar to those of *fernaldialis* except smaller; harpe not so markedly creased.

FEMALE: Similar in color and markings to the female of *fernaldialis*. Alar expanse, 33–43 mm.

Female genitalia with sclerotized ventral plate in ductus bursae at genitalic opening larger and the opposing small plates on the dorsal wall of the ductus narrower than those of *fernaldialis*.

TYPE LOCALITIES: Tres Marías Isl., México (*longipennella*, in BM); Orizaba, México (*elongatella*, in USNM).

FOOD PLANT: Unknown, probably *Ferocactus*.

DISTRIBUTION: MÉXICO: Orizaba, Oaxaca, Tehuacán (June), Cuernavaca (June, July), Zacualpán (Mar., Oct.).

I have seen no examples from the type locality of *longipennella*.

541. Cactobrosis maculifera Dyar

FIGURES 525, 1051

Cactobrosis maculifera Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 407, 1914; Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 398, 1939.

MALE: Antenna strongly serrate and fasciculate. Palpi, head, and thorax pale clay color ("luteous"). Forewing luteous gray shaded and spotted with dark grayish fuscous, the luteous tint pronounced on basal third of costa and over the submedian area of the wing; transverse antemedial and subterminal lines obsolete; a fuscous shade from costa before middle to cell, another from costa at middle, and, below these, corresponding streaks or spots on lower vein of cell and on vein 1b; a thin blackish line on the fold from its base to near its middle; a similar dark streak on vein 1b at outer third; short, broken, dark streaks on the veins at or near the cell; a clouded fuscous spot at end of cell; outer half of costa shaded with fuscous; a row of dark spots along termen at or very close to the vein ends. Hind wing white, semihyaline with only the faintest indication of a fuscous line on termen toward apex. Alar expanse, 32–45 mm.

Male genitalia agreeing in size and nearly all details with those of *longipennella* except that the arms of the anellus are a trifle longer in *maculifera*.

FEMALE: In color and pattern like the male except that there is some gray shading on the head and thorax and considerably more gray on the forewing (the single specimen before me is in much better condition than the males, which may account for some of the differences); basal third of wing clouded with dark fuscous; terminal area more faintly clouded; subterminal line faintly indicated, sharply angulate at middle, broken below; the luteous shade more contrasted than in the male, but restricted to middle of cell and the area between veins 1b and the fold. Hind wing white, semihyaline with a narrow fuscous shade along termen and on the veins near their apices. Alar expanse, 37 mm.

Female genitalia similar to those of *insignatella* but with sclerotized ventral plate in ductus bursae at genital opening smaller.

TYPE LOCALITY: Oaxaca, México (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Oaxaca, Salina Cruz (Sept.).

This species may be distinguished from other species of *Cactobrosis* by the strong luteous (pale clay) shade on the forewing and the serrate-fasciculate male antenna.

542. Cactobrosis insignatella Dyar

FIGURE 1052

Cactobrosis insignatella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 407, 1914; Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 399, 1939.

MALE: Unknown.

FEMALE: Palpi, head, thorax, and forewing of a soft, nearly uniform grayish fuscous (with a more brownish than slate-gray tint). Forewing without discal spot or transverse dark markings; costa at base very slightly paler than ground color of wing, concolorous with collar of thorax; an obscure pale shade on midcosta and the faintest indication of a pale subterminal line, the latter broadly angulate at middle; some faint dark shading on the veins from cell to termen and a row of small, dark dots along termen near the vein ends. Hind wing white, semihyaline, with a pale fuscous line along termen; cilia white with a narrow, pale fuscous, subbasal line. Alar expanse, 37–40 mm.

Genitalia with the dorsal plates in ductus bursae at genital opening strongly sclerotized; ventral plate at opening slightly larger than in any of the other species.

TYPE LOCALITY: Oaxaca, México (type in USNM).

FOOD PLANT: Unknown.

Known only from the female type and paratype from the type locality. These specimens resemble suffused specimens of *fernaldialis* and *longipennella* except that the latter are more slate colored. The slight genitalic

differences seem to indicate that *insignatella* is a good species and not a mere color form.

543. Cactobrosis strigalis (Barnes and McDunnough)

FIGURES 526, 1053

Euzophera strigalis Barnes and McDunnough, Canadian Ent., vol. 44, p. 127, 1912; Contributions, vol. 1, No. 4, pl. 1, fig. 14, 1912.

Cactobrosis strigalis (Barnes and McDunnough), Check list of the Lepidoptera of Boreal America, No. 5697, 1917.—Dyar, Ins. Insc. Menstr., vol. 13, p. 224, 1925; Proc. Ent. Soc. Washington, vol. 30, p. 136, 1928.—Heinrich, Proc. U. S. Nat. Mus., vol. 86, p. 400, 1939.—McDunnough, Check list, No. 6287, 1939.

MALE: Antenna strongly serrate. Palpi, head, thorax, and forewing grayish fuscous sprinkled with whitish (the ends of the scales white) making the ground color a pale slate-gray. Forewing with the veins outlined in black, the strongest black line being that along upper vein of cell and vein 6; transverse lines and discal mark absent; no dots along termen. Hind wing white, semihyaline, with a faint fuscous shade bordering costa, and a fine fuscous line along termen for a short distance from apex. Tufts on eighth abdominal segment weak. Alar expanse, 30–43 mm.

Male genitalia with vinculum moderately long, but considerably shorter than in other species of *Cactobrosis;* aedeagus also shorter.

FEMALE: Similar to the male in color and markings except that hind wing is more or less suffused with smoky fuscous beyond the base, especially along the veins and termen. Alar expanse, 33–44 mm.

Female genitalia with sclerotized plates on dorsal wall of ductus bursae behind the genital opening well developed, but with opposing ventral sclerotized plate absent, replaced by minute scobinations; ductus bursae shorter than in other *Cactobrosis* species; bursa copulatrix not entirely smooth, having a few weak scobinations toward ductus.

TYPE LOCALITY: Eureka, Utah (type in USNM).

FOOD PLANT: *Echinocereus rigidissimus* (Engelmann), *E. pectinatus* (Scheidweiler), and probably a number of other species of *Echinocereus.*

DISTRIBUTION: UNITED STATES: *Utah,* Eureka (Aug., Sept.). Dividend (Sept.); *California,* San Gorgonio Pass (July); *Arizona,* Tucson (Apr., July); *Texas,* Brewster County (July, Aug.), Alpine (Apr.). MEXICO: *Distrito Federal,* México (National University, male reared from *E. pectinatus,* June 3, 1931).

In a number of respects (its shorter vinculum and ductus bursae, its weak abdominal tufts, and its partially scobinate bursa copulatrix) this species fits badly into *Cactobrosis.* Eventually it may need a separate generic designation, but this had better be postponed until the life histories of the other species of *Cactobrosis* are more fully known.

The forewing markings of *strigalis* resemble those of *Euremberga leuconips* (Dyar). The latter, however, is easily distinguished by its squamous maxillary palpi.

Genus 152: *Drescomopsis*

[Venational division A. Forewing with 11 veins: 4 and 5 approximate or connate. Hind wing with vein 2 from the lower outer angle of cell; discocellular vein curved. Male genitalia with transtilla complete; harpe with base of sacculus produced and bearing stout hair tuft. Labial palpus upturned.]

152. Genus Drescomopsis Dyar

Drescomopsis Dyar, Ins. Insc. Menstr., vol. 7, p. 61, 1919. (Type of genus: *Drescomopsis subelisa* Dyar.)

Tongue well developed. Antenna pubescent; shaft of male slightly swollen at base, otherwise simple. Labial palpus upcurved, broadly scaled; reaching a little above vertex. Maxillary palpus squamous, appressed to face. Forewing smooth except for a projecting tuft of rough scales from base of costa in male; 11 veins; vein 2 from very close to lower outer angle of cell; 3 from the angle, shortly separated from 4; 4 and 5 connate or very closely approximate at bases; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from the cell, approximate to the stalk of 8–9 for some distance; male without costal fold. Hind wing with vein 2 from lower outer angle of cell; 3 and 5 shortly stalked; 7 and 8 approximate (or contiguous) for a short distance (less than half their lengths) beyond cell; cell about one-third the length of wing, shorter in male than female; on under side of male wing, between cell and vein 1c, an elongate pocket enclosing hair tuft and a mass of modified scales; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts and sternite produced as a sclerotized pocket (projecting into abdomen).

Male genitalia with apical process of gnathos a slender, elongate, flattened hook. Uncus rounded, hooklike. Transtillas complete, thrust anteriorally from costal margins of harpes. Harpe broad, apex broadly and evenly rounded; clasper appressed to harpe; base of sacculus produced and bearing a stout hair tuft. Anellus a slightly curved, elongate plate. Aedeagus slender, smooth, moderately long, sharply bent beyond one-third from base; penis without cornuti or other appreciable armature. Vinculum long, narrow, strongly arched dorsally, strongly sclerotized only on lateral and terminal margins; constricted laterally and flaring to a broad lateral margin.

Female genitalia with signum consisting of a depressed, tear-shaped patch of short scobinations with a sparser scattering of weaker scobinations in surrounding area (signa shown in frontal and lateral views in figs. 761 and 762); bursa otherwise simple; ductus bursae shorter than bursa, simple; genital opening simple; ductus seminalis from bursa near its junction with ductus bursae.

The genus is very closely related to and apparently derived from *Drescoma* in group I, agreeing with it on most important genitalic characters, differing chiefly in the absence of vein 4 of hind wing.

Contains but one tropical American species.

544. Drescomopsis soraella (Drúce)

FIGURES 16, 284, 761, 762

Homoeosoma soraella Druce, Biologia Centrali-Americana, Lepidoptera Heterocera, vol. 2, p. 565, 1899.

Drescoma soraella (Druce) Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 328, 1914.

Drescoma drucella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 328, 1914 (new synonymy).

Drescomopsis subelisa Dyar, Ins. Inst. Menstr., vol. 7, p. 62, 1919 (new synonymy).

Forewing with costal area above middle of cell and from just beyond base to subterminal line white; remainder of wing a dull purplish fuscous; a rather broad glossy dark brown oblique antemedial band dividing the white area and extending half way across wing; extreme base of wing on costal half similarly colored; a narrowly lunulate brown patch on midcosta and a similar shade extending from apex transversely toward cell, broken toward costa by faint indication of a subterminal pale line; discal dots small but distinct; under magnification the dark brown markings show an admixture of reddish scales. Hind wings dark smoky fuscous, the veins and terminal margin slightly darker. Alar expanse, 14–16 mm.

Male genitalia with apical process of gnathos sharply pointed; clasper a short, sharp spine; transtilla a narrow, short, arched band with lateral ends produced, pointed, and directed anteriorally. Female genitalia as given for the genus. There is considerable individual variation in the size of the bursa, but as this is an expansible organ (when unsclerotized) its size and shape mean little or nothing.

TYPE LOCALITIES: Jalapa, México (*soraella*, in BM); Porto Bello, Panamá (*drucella*, in USNM); Cayuga, Guatemala (*subelisa*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: MÉXICO: Córdoba (May), Jalapa. GUATEMALA: Cayuga (Apr., June). COSTA RICA: Juan Viñas (June, Nov.), Sitio. PANAMÁ: Paraíso (May), Porto Bello (Mar., Oct.), Río Trinidad (Mar.). ECUADOR: Zaruma. BRAZIL: *Santa Catarina*, Santa Catarina Isl. (June).

Dyar evidently did not look very carefully at his male type of *drucella* or the specimens from Costa Rica he had as *soraella* or he never would have put them into a genus with eight veins in hind wing, nor associated with his males of *drucella* some small females of *Drescoma cyrdipsa*. The true females of his *drucella* he later described as *Drescomopsis subelisa*.

Genera 153 and 154: *Illatila* and *Lascelina*

[Venational division A. Forewing with 11 veins; 4 and 5 stalked. Hind wing with vein 2 close to or from lower outer angle of cell; discocellular vein curved. Male genitalia with transtilla absent; apical process of gnathos considerably reduced. Labial palpus upturned.]

153. Genus Illatila Dyar

Illatila Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 334, 1914. (Type of genus: *Illatila gurbyris* Dyar.)

Tongue well developed. Antenna pubescent, simple. Labial palpus upturned, slender; reaching a little above vertex; third segment acuminate, more than half as long as second. Maxillary palpus filiform, appressed to face. Forewing smooth; 11 veins; vein 2 from before the lower outer angle of cell, well separated from 3; 3 from the angle; 4 and 5 short stalked, the stalk separate from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from the cell, closely approximate to 8–9 for a short distance from cell; male without costal fold. Hind wing with vein 2 from lower outer angle of cell; 3 and 5 stalked for less than half their lengths; 7 and 8 anastomosed beyond cell for a trifle less than half their lengths; cell short, less than one-third the length of wing; discocellular vein curved; on male the inner margin thickened and folded with a fringe of hairs enclosed within the fold. Eighth abdominal segment of male with sternite produced as a sclerotized pocket, projecting into abdomen.

Male genitalia with apical process of gnathos weak, straight, very slender (needlelike). Uncus subtriangulate. Transtilla absent (elements not distinguishable). Harpe rather narrow, apex evenly rounded; sacculus produced at extremity into a short spine; base of sacculus hairy, but not produced. Anellus a curved plate. Adeagus short, moderately stout; cornuti present, consisting of rather short stout spines in clusters. Vinculum stout, triangulate; terminal margin rounded.

Female genitalia with strong signa, developed as a small cluster of blunt, stout, thornlike spines; ductus bursae sclerotized throughout, tubular, stout; genital opening simple; ductus seminalis from bursa between signa and ductus bursae.

This genus is quite distinct in genitalic characters from anything else in group II. Its nearest affinities seem to be with *Difundella* and related genera in group I. It contains but one tropical American species.

545. Illatila gurbyris Dyar

FIGURES 60, 561, 1054

Illatila gurbyris Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 334, 1914.

Dyar's original description is accurate and adequate except that the ground color is a rusty brown rather than "brownish gray," discocellular vein of forewing outlined by blackish scaling with a broader pale outer border (Dyar's "discal spot"). Alar expanse, 12–13 mm.

Male genitalia with gnathos weakly attached to tegumen at base of uncus, its lateral arms produced anteriorly (in relation to head of insect) into widely spaced ribbonlike bands. Apex or uncus broadly rounded. Cornuti consisting of three spine clusters, two of them of stout and one (apical) of slender spines. Vinculum a trifle longer than broad (foreshortened in fig. 561); tapering; terminal margin narrowly rounded. Tegumen with lateral margin at base produced into a rounded projection with serrate edge.

Female genitalia with bursa finely scobinate over most of its inner surface; ductus bursae bulging and

heavily rugose near junction with bursa, nearly as long as bursa.

TYPE LOCALITY: Taboga Isl., Panamá (Feb.; type in USNM).

FOOD PLANT: Unknown.

Represented only by the original type series. Easily distinguished from anything else in the family by its unique male and female genitalia.

154. Lascelina, new genus

TYPE OF GENUS: *Lascelina canens*, new species.

Tongue well developed. Antenna pubescent; shaft of male with sinus and strong scale tuft at base; of female simple. Labial palpus upturned, reaching vertex in male, well above vertex in female; slender; rough scaled; third segment slightly shorter than second, bluntly pointed. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before, but near, lower outer angle of cell; 3 from the angle; 4–5 shortly stalked, the stalk separate from 3 at base; 6 from below upper angle of cell, straight; 8–9 stalked; 10 from the cell, approximate to stalk of 8–9 for some distance from cell; male without costal fold. Hind wing with vein 2 from very close to lower outer angle of cell; 3 and 5 stalked for half their lengths; 7 and 8 anastomosed for half their lengths; cell slightly less than half the wing length; discocellular vein curved. Eighth abdominal segment with sternite produced as a sclerotized pocket projecting into abdomen.

Male genitalia with gnathos and its apical process greatly reduced, latter fused with subanal plate. Uncus triangulate. Transtilla absent (elements not distinguishable). Harpe broad, evenly curved; clasper present as a short erect lobe; a pair of strong, detached hair tufts adjacent to bases of sacculi. Anellus a triangulate, slightly curved plate. Aedeagus short, stout; penis armed with minute spines and fine scobinations. Vinculum long (longer than combined tegumen and uncus); U-shaped; slightly tapering to rounded terminal margin.

Female genitalia with bursa copulatrix elongate; signum present, consisting of a single long stout curved spine; ductus bursae very short, sclerotized near junction with bursa, the sclerotizations extending into the neck of bursa; genital opening simple.

A distinct genus of uncertain affinities, easily distinguished by its male and female genitalia. Represented only by its type species.

546. Lascelina canens, new species

FIGURES 562, 1055

Forewing grayish white (the ground color that of wood ashes); antemedial and subterminal lines faint, indicated chiefly by the dark markings bordering them; antemedial line bordered inwardly by a thin broken blackish line and terminating at costa in a small reddish brown patch; a similar, smaller, reddish brown patch on midcosta; subterminal line bordered on both sides towards costa by blackish fuscous; discal spots at end of cell, small, distinct, blackish; along termen a confluent row of blackish dots. Some reddish brown and blackish scaling on the labial palpi and a strong admixture of blackish scales in the antennal tuft of the male. Hind wing smoky white, with a dark line along termen. Alar expanse, 11–16 mm.

Male genitalia with uncus very narrowly rounded at apex; costa of harpe broadly sclerotized; terminal margin oblique, straight; anellus with lateral margins slightly produced; aedeagus bulged before apex. Female genitalia as given for the genus.

TYPE LOCALITY: Brownsville, Tex. (type in USNM, 61380; paratypes in BM, Paris Mus., and Cornell, Canadian National, and Janse Collections).

FOOD PLANT: *Maytenus phyllanthoides*.

Described from male type and 24 male and 17 female paratypes from the type locality (40 of these reared Apr. 29, Aug. 4, and Dec. 7, 1938, and June 16, 1943, by members of the Foreign Plant Quarantine Division of the U. S. Department of Agriculture at Brownsville, Tex., from larvae feeding on the leaves of *Maytenus*); 1 male and 41 female paratypes from San Benito, Tex. (Mar., Apr., May, Aug., Sept.); 1 female paratype from Redington, Ariz., and 1 female paratype from Prescott, Ariz. (July). In addition to the foregoing I have also seen a male from Los Mochis, Sinaloa, México, intercepted in quarantine at Nogales, Ariz. (Feb. 27, 1941).

Genus 155: *Metephestia*

[Venational division D. Forewing with 10 veins; 4 absent; 10 from the cell; hind wing with 3–5 approximate at base; discocellular vein straight, vertical. Male genitalia with uncus bifurcate.]

155. Genus Metephestia Ragonot

Metephestia Ragonot, Monograph, pt. 2, p. viii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 87, 1901. (Type of genus: *Ephestia simplicula* Zeller.)

Tongue well developed. Antenna very shortly pubescent; shaft of male with a shallow sinus and small scale tuft at base; shaft of female simple. Labial palpus upturned, slender, reaching to vertex; third segment acuminate, about half as long as second. Maxillary palpus filiform. Forewing smooth; 10 veins; vein 2 from before but near lower outer angle of cell; 3 from the angle; 4 absent (united with 5); 5 separated slightly from 3 at base; 6 from below upper angle of cell, very slightly curved (nearly straight); 8 and 9 stalked; 10 from the cell, separate from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, approximate at base; 7 and 8 anastomosed for less than half their lengths beyond cell; cell very short, about one-fifth the length of wing; discocellular vein straight, vertical. Abdomen of male with a strong pair of ventrolateral hair tufts.

Male genitalia with apical projection of gnathos produced into a long, slender hook with notched apex.

Uncus bifurcate. Transtilla absent. Harpe simple except for short, bluntly rounded clasper; slender; sacculus reduced; costa not appreciably sclerotized; apex rounded. Anellus a narrow curved band with long lateral lobes and long, slender, sclerotized lateral attachments to tegumen. Aedeagus long, stout, partially sclerotized; penis armed with a single, stout cornutus. Vinculum elongate, narrowing abruptly beyond base.

Female genitalia without signum; bursa copulatrix with some fine sclerotized wrinklings and a small lobe of thickened membrane near ductus bursae; ductus bursae much shorter than bursa, expanding abruptly to enlarged genital opening; a pair of weakly sclerotized plates on membrane behind genital opening; ductus and genital opening otherwise simple; ductus seminalis from bursa near thickened lobe.

A distinct genus of uncertain affinities, with male genitalia unlike anything else in group II. Contains but one described species.

547. Metephestia simplicula (Zeller)

FIGURES 100, 563, 1056

Ephestia simplicula Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 246, 1881.

Metephestia simplicula (Zeller) Hampson, *in* Ragonot, Monograph, pt. 2, p. 87, 1901.

Forewing unicolorous light gray brown to dark gray (reared examples much darker than flown specimens); transverse lines obsolete; in fresh specimens faint traces of dark terminal and discal dots, otherwise unmarked. Hind wing semihyaline white with a faint ocherous tint towards apex and termen. Alar expanse, 11–16 mm.

Genitalia as given for the genus; apex of harpe narrowly rounded; vinculum longitudinally grooved and with notched apex.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANTS: *Indigofera tinctoria* and *I. verbasifolium*.

DISTRIBUTION: UNITED STATES: *Florida*, Key West (Mar., Apr.). PUERTO RICO: Cataño (Apr., July), Coamo Springs (Apr.), Dovado (May), Río Piedras (Aug.), San Germán (Apr.); Puerto Real (Vieques Isl., Apr.). COLOMBIA: Honda (Apr.). Also reported by Hampson from St. Vincent Isl., British West Indies.

The above food-plant records are from a series of moths reared by the Special Survey of the Division of Foreign Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine from larvae webbing the leaves of *Indigofera*. This is the first record we have of the species from the United States or of its host plant.

Genera 156–159: *Selga* to *Rioja*

[Venational division A. Forewing with 11 veins; 4 and 5 stalked. Hind wing with 2 from before lower outer angle of cell; 3 and 5 stalked or connate (*Entmemacornis*); discocellular vein curved. Male genitalia with apical process of gnathos bifid; transtilla complete (except in *Selga*). Labial palpi oblique (*Selga*) or upturned.]

156. Selga, new genus

TYPE OF GENUS: *Heterographis arizonella* Hulst.

Tongue well developed. Antenna pubescent; shaft of male simple. Labial palpus oblique, reaching height of vertex; slender; third segment nearly as long as second, apex bluntly pointed. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before but near lower, outer angle of cell; 3 from the angle; 4 and 5 shortly stalked (for less than half their lengths), stalk separated at base from 3; 6 from below upper angle of cell, straight; 8 and 9 stalked; 10 from the cell, separate and divergent from the stalk of 8–9; male with a narrow costal fold, extending for over one-fourth of costa from base. Hind wing with vein 2 from before lower outer angle of cell; 3 and 5 from the angle, shortly stalked (for less than half their lengths); 7 and 8 strongly anastomosed for most of their lengths beyond cell; cell one-half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos U-shaped (consisting of a pair of widely spaced, short, blunt arms). Uncus stout, broadly rounded. Transtilla incomplete. Harpe simple, apex rounded; costa sclerotized throughout and projecting slightly at apex. Anellus a broad, curved plate. Aedeagus short, stout; penis with sclerotized wrinklings, otherwise unarmed. Vinculum stout, rather short (broader than long); terminal margin broadly rounded.

Female genitalia with bursa copulatrix elongate, minutely scobinate; signum present, consisting of a small coarsely and bluntly spined plate. Ductus bursae unsclerotized, shorter than bursa; with a pair of narrow elongate dorsal plates and minute scobinations at genital opening, otherwise simple. Ductus seminalis from bursa about half-way between signum and junction of ductus bursae.

A distinct genus easily distinguished on male genitalia from anything else in group II with 11 veins in forewing. Its male genitalia are strikingly similar to those of *Myelopsis coniella* in group I to which it apparently is closely related. It contains one North American species.

548. Selga arizonella (Hulst), new combination

FIGURES 564, 1057

Heterographis arizonella Hulst, Journ. New York Ent. Soc., vol. 8, p. 222, 1900.—McDunnough, Check list, No. 6340, 1939.

Forewing white, finely and evenly peppered with blackish scales giving the wing a pale ashy gray color; antemedial line white, slightly notched in cell and more deeply notched at lower fold, outwardly margined by a blackish line and inwardly margined by a broader blackish shade; subterminal line parallel with and rather near to terminal margin, indented slightly at vein 6 and lower fold, white bordered inwardly and outwardly by blackish lines; blackish discal dots at end of cell small, more or less confluent, in more strongly marked specimens a fine blackish line extends from them to middle of inner margin; a row of small blackish

dots along terminal margin. Hind wing glistening white with some faint fuscous shading on the veins and along terminal and costal margins. Alar expanse, 14–19 mm.

Genitalia as given for the genus; aedeagus sharply constricted towards apex; apical margin of anellus broadly notched; elements of transtilla long, slender.

TYPE LOCALITY: Catalina Springs, Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Catalina Springs (Apr.), Redington, "Southern Arizona" (May), Tempe (June).

157. Genus Entmemacornis Dyar

Entmemacornis Dyar, Ins. Insc. Menstr., vol. 7, p. 57, 1919. (Type of genus: *Entmemacornis proselytes* Dyar.)

Tongue well developed. Antenna pubescent; of male (fig. 566f) with basal segment broadened and shaft with notch at base; of female simple. Labial palpus upturned, reaching to vertex, slender; third segment nearly as long as second, acuminate. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from well before lower, outer angle of cell; 3 from the angle; 4 and 5 shortly stalked (for less than half their lengths), the stalk separated from 3 at base; 6 from below upper angle of cell, slightly curved towards base; 8 and 9 long stalked; 10 from the cell but approximate to the stalk of 8–9 for some distance; male with a narrow costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 connate from the angle; 7 and 8 anastomosed almost to costa (free element of 8 very short); cell less than half the length of the wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalia with apical process of gnathos bifid, consisting of a pair of short blunt arms (similar to but not so widely separated as those of *Selga*). Uncus semispoon-shaped (of the *Diatomocera* type). Transtilla complete but weakly sclerotized, a broad, finely scobinate plate, weakly attached to harpes. Harpe simple; terminal margin evenly rounded; costa sclerotized throughout but not produced; on outer surface bordering lower margin a row of modified, flattened setae. Anellus a curved plate with short lateral lobes. Aedeagus stout, straight, moderately long; penis with a few sclerotized wrinklings and several minute spines (the latter distinguishable only under high magnification), otherwise unarmed. Vinculum stout, elongate, constricted towards angulate terminal margin.

Female genitalia with bursa copulatrix long, minutely but sparsely scobinate, the scobinations extending into ductus bursae; signa present, consisting of small sclerotized disks; ductus bursae long, slender, unsclerotized; genital opening simple; ductus seminalis from bursa near its anterior end.

On nearly all characters except hind-wing venation this genus agrees with *Diatomocera* in group I. Were it not for the fact that the four specimens of the type series of *Entmemacornis proselytes* are consistent in venation, I should be inclined to discount the absence of vein 4 in hind wing as an individual aberration and unite the two genera; but apparently the same relationship prevails here as that between *Drescoma* and *Drescomopsis*. *Entmemacornis* is closely related to and obviously derived from *Diatomocera* but is apparently distinct.

549. Entmemacornis proselytes Dyar

FIGURES 81, 566, 1058

Entmemacornis proselytes Dyar, Ins. Insc. Menstr., vol. 7, p. 58, 1919.

Thorax gray brown; tegulae tips black. Forewing gray-brown dusted with dull white and reddish scales (the latter only distinguishable under magnification); antemedial line slanting, notched at lower fold, whitish and concolorous with the general color of the basal area, defined inwardly by a narrow, faint, dark border and outwardly by a diffused dark shade; from base of wing a median longitudinal black streak extending to but not cutting the antemedial pale line; subterminal line faint, parallel and rather close to termen, outcurved between veins 6 and lower fold, formed by whitish scaling on the veins and bordered by narrow inner and outer dark lines more or less interrupted between the veins; distal and terminal dots, small, faint, blackish; between cell and subterminal line black streaks on veins 5 and 6; costal fold of male about one-third the length of costa. Hind wing pale, glossy, brownish gray; the veins and terminal margin darker. Alar expanse, 15–17 mm.

Male genitalia with terminal margin of uncus convex; apex of harpe narrowly rounded; arms of bifid apical process of gnathos slightly convergent toward their apices; plate of anellus narrow. Female genitalia with bursa bent sharply at middle, its terminal margin straight.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

Known only from the type series, two males and two females from the type locality.

550. Entmemacornis pulla, new species

FIGURE 567

Forewing blackish gray; antemedial line slanting, notched at lower fold, dull white with a very faint, narrow, blackish outer border; subterminal line somewhat irregular, slanting sharply inwardly from costa to vein 8, then outwardly convex to lower fold, thence straight to inner margin, dull white with some blackish streaks on the veins bordering it on both sides; discal and terminal dots small, faint, blackish; basal area of wing before antemedial line and between cell and inner margin dull reddish ocherous; a dusting of similar color along the fold beyond antemedial line; from base of wing a median longitudinal black streak extends to antemedial line; bordering termen a narrow faint dusting of whitish scales; costal fold of male less than one-fourth the length of costa. Hind wing very pale

brownish gray; veins and terminal margin but little darker. Alar expanse, 19.5 mm.

Male genitalia with terminal margin of uncus slightly concave; apex of harpe rather broadly rounded; arms of bifid apical process of gnathos divergent toward their apices; plate of anellus broad.

TYPE LOCALITY: Santa Catarina, Brazil (type in USNM, 61381).

FOOD PLANT: Unknown.

Described from unique male type collected by Fritz Hoffmann Sept. 27, 1934.

The species is easily separated from *proselytes* by its darker (blackish gray) ground color, more strongly contrasted transverse pale lines, shorter costal fold, and different genitalia. The tegulae are black tipped like those of *proselytes*, but their blackness is less contrasted against the dull reddish ocherous of the remainder of the thorax.

158. Genus Cayennia Hampson

Cayennia Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 62, 1930. (Type of genus: *Cayennia rufitinctalis* Hampson.)

Tongue well developed. Antenna pubescent (ciliations less than the width of shaft). Labial palpus upturned, reaching to vertex, slender, third segment nearly as long as second. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4–5 stalked for nearly half their lengths, approximate at base to 3; 6 from below upper angle of cell, very slightly curved; 8 and 9 long stalked; 10 from the stalk of 8–9; 11 from well out on cell, running close to stalk of 8–9 for a short distance; male without costal fold. Hind wing with vein 2 from before lower outer angle of cell; 3 and 5 from the angle, stalked (for approximately one-half); 7 and 8 anastomosed for most of their lengths beyond cell (free element of 8 a very short spur); cell nearly one-half the length of the wing; discocellular vein curved. Eighth abdominal segment of male with a pair of ventrolateral hair tufts.

Male genitalic characters same as those for *Entmemacornis* except penis with only sclerotized wrinklings.

A distinct genus close to *Entmemacornis* and agreeing with it in all male genitalic characters, differing only in having simple antennae and different venation (vein 10 of forewing stalked with 8–9, and 3–5 of hind wing stalked) and in lacking costal fold on male forewing.

551. Cayennia rufitinctalis Hampson

FIGURES 72, 568

Cayennia rufitinctalis Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 62, 1930.

Forewing pale ashy gray peppered with fuscous, the basal half of inner area and tornal half of terminal area tinged with rufous; antemedial line near middle of wing, narrow, slanting outwardly from costa to middle of cell thence inwardly to lower fold and thence outwardly to inner margin, whitish with blackish lines before and beyond it on the veins; subterminal line inwardly oblique and slightly concave from apex to inner margin before tornus, whitish, margined inwardly by short blackish dashes on the veins; discal dots small, blackish, below them on an inwardly slanting line blackish dots on veins 3 and 2b; a row of small blackish dots along termen. Hind wing semihyaline white with veins, terminal and costal margins shaded with pale brown. Alar expanse, 17.5 mm.

Male genitalia with apical portion of uncus narrow (considerably reduced as compared with that of *Entmemacornis proselytes*); transtilla triangulate; vinculum tapering, but slightly constricted before narrow, angulate terminal margin.

TYPE LOCALITY: Cayenne, French Guiana (type in BM).

FOOD PLANT: Unknown.

The female is unknown. Hampson mentions only the male type in his description; but in the U. S. National Museum there is a male "cotype" so labeled by Hampson from the type locality. The species is easily identified by its genitalia and the medial position of the antemedial line of forewing.

159. Rioja, new genus

TYPE OF GENUS: *Rioja nexa*, new species.

Tongue well developed. Antenna pubescent. Labial palpus upturned, reaching vertex, slender; third segment almost as long as second. Maxillary palpus minute, filiform. Forewing smooth, 11 veins; veins 2 and 3 connate from lower outer angle of cell; 4 and 5 short stalked (for decidedly less than half their lengths), approximate at base to 3; 6 from below upper angle of cell, straight; 8 and 9 long stalked; 10 from cell, approximate to stalk of 8–9 at base; male without costal fold. Hind wing with 2 from before lower outer angle of cell; 3 and 5 stalked for less than half their lengths; 7 and 8 anastomosed beyond cell for half their lengths; cell a trifle less than half as long as wing; discocellular vein curved. Eighth abdominal segment of male without hair tufts; sternite developed as a triangulate, sclerotized pocket.

Male genitalia with apical process of gnathos bifid. Uncus semispoon-shaped, constricted before apical end. Transtilla a complete arched bridge. Harpe simple; cucullus broad and with terminal margin evenly rounded; costa sclerotized but not produced. Anellus a narrow curved band with long lateral arms partially encircling the aedeagus. Aedeagus stout, moderately long; penis minutely scobinate, otherwise simple. Vinculum stout, longer than broad, slightly tapering.

This genus forms a link between the two preceding genera and *Moerbes* Dyar. I should hesitate to describe it upon a single male if it were not obvious that the specimen is not a freak, and if it did not have characters that prevented its inclusion in *Entmemacornis*, *Cayennia*, or *Moerbes*.

Its uncus and gnathos are of the *Entmemacornis* type, its eighth-segment pocket similar to that of *Moerbes;* but its venation is unique. The connate con-

dition of veins 2 and 3 (from the angle of the cell) at once distinguishes it from all near relations.

552. Rioja nexa, new species

FIGURES 70, 569

Forewing blackish with basal area to antemedial area dusted with whitish scaling and contrastingly paler than remainder of wing; also some whitish dusting forming a pale transverse shade across wing at end of cell; antemedial line outwardly slanting from costa to inner margin with a slight notch at lower fold, white, outwardly bordered by a narrow black line; subterminal line faint, irregularly dentate, pale (whitish gray), bordered inwardly by a broad blackish suffusion; discal dots confluent, forming a blackish line along discocellular vein; a row of faint blackish dots along termen. Hind wing hyaline white with a faint fuscous shade on costa and on termen towards apex. Alar expanse, 17 mm.

Male genitalia with arms of bifid apical process of gnathos divergent toward their pointed apices; aedeagus bulging and slightly bent before its broad, truncate apex.

TYPE LOCALITY: La Rioja, Argentina (type in USNM, 61382).

FOOD PLANT: Unknown

Described from a single male collected by Schaus. The specimen is undated.

Genera 160–162: *Moerbes* to *Edulica*

[Venational division A. Forewing with 11 veins; 4 and 5 stalked. Hind wing with 2 from before lower outer angle of cell; 3 and 5 connate or stalked (*Edulica*); discocellular vein curved. Male genitalia with apical process of gnathos a stout hook with forked apex; transtilla complete or, if incomplete (*Moerbes*), elements well developed and their apices approximate. Labial palpi oblique or upturned (*Edulica*).]

160. Genus Moerbes Dyar

Moerbes Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914. (Type of genus: *Zophodia dryopella* Schaus.)

Tongue well developed. Antenna shortly ciliate on male (cilia as long as width of shaft). Labial palpus oblique, broadly scaled, reaching to level of vertex; third segment short (one-fourth the length of second), acuminate. Maxillary palpus moderately large, somewhat rough scaled. Forewing smooth; 11 veins; vein 2 from well before lower, outer angle of cell; 3 from the angle; 4 and 5 stalked (for a trifle less than half their lengths), the stalk shortly separated from 3 at base; 6 from below upper angle of cell, slightly curved; 8 and 9 stalked for about two-thirds their lengths; 10 stalked with 8–9; male with a short, narrow costal fold. Hind wing with vein 2 from well before lower, outer angle of cell; 3 and 5 from the angle, connate; 7 and 8 anastomosed for most of their lengths (free element of 8 very short); cell approximately one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male without hair tufts, but with sternite developed as a shallow, triangulate, sclerotized pocket.

Male genitalia with apical process of gnathos developed as an elongate, stout, flattened hook with forked apex. Uncus subtriangulate with broad terminal margin. Transtilla incomplete, its elements elongate-angulate and well developed. Harpe simple with terminal margin evenly rounded; costa sclerotized for four-fifths of its length, but not produced. Anellus a narrow, curved band with minute lateral lobes. Aedeagus moderately stout, nearly straight; penis simple. Vinculum stout, longer than broad, slightly tapering to blunt terminal margin.

A distinct genus showing strong affinities in general habitus (wing markings and color) and male genitalic structure to *Pseudodivona* of group I. However, the venational difference (the absence or presence of vein 4) is consistent in both genera and the association of *Moerbes* with the genus following (*Moodnopsis*) seems a natural and proper one. It contains three tropical American species represented in the National Museum by eight males. I have seen no females.

553. Moerbes dryopella (Schaus)

FIGURES 82, 570

Zophodia dryopella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 249, 1913.

Moerbes dryopella (Schaus) Dyar (part), Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914; Ins. Insc. Menstr., vol. 7, p. 54, 1919.

Forewing white with a broad, dull, ocherous brown shade along inner margin, and a sparse peppering of black scales in the white areas; antemedial line rather broad, defined chiefly by thin inner and outer bordering black lines, and conspicuous as a white spot on inner margin, outwardly slanting from costa, inwardly angled at lower part of cell and thence incurved to inner margin; subterminal line faint, defined by two black dashes before and beyond it on costa and thin, broken, blackish bordering lines, inwardly angled at vein 6, thence parallel to termen; costa from base to antemedial line black, and a fine black transverse subbasal line; lower discal spot at end of cell present, black; below it a similar black spot or dash merging into the brown shade bordering inner margin; discal spot at upper outer angle of cell obsolete; terminal blackish dots faint. Hind wing very pale smoky fuscous, veins and terminal margin darker. Alar expanse, 23 mm.

Male genitalia with apex of apical projection of gnathos considerably broadened and rather deeply bifurcate. Apices of transtilla elements well separated. Aedeagus smooth, stout. Terminal margin of vinculum angulate.

TYPE LOCALITY: Juan Viñas, Costa Rica (Apr.; type in USNM).

FOOD PLANT: Unknown.

Represented only by the unique male type. The specimens from Panamá referred by Dyar to Schaus' species (Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914) are congeneric but not conspecific. I am describing them in this paper as *Moerbes emendata*.

554. Moerbes alveolella (Ragonot), new combination

FIGURE 571

Zophodia alveolella Ragonot, Nouv. Gen., p. 31, 1888; Monograph, pt. 2, p. 25, 1901.

The type in Paris is a female according to Ragonot. I have not seen it; but have before me two males from Santa Catarina, Brazil (Sept. 2, and Oct. 26, 1934, collected by Fritz Hoffman), which are a perfect match for Ragonot's excellent figure (Monograph, pl. 25, fig. 7). They are identical in color and maculation with the type of *dryopella* but markedly different in structure: 8 and 9 of forewing longer stalked (over two-thirds); apical process of gnathos longer, its apex narrow and shallowly bifurcate; apices of transtilla elements touching (but not fused) and forming a high arch over aedeagus; aedeagus more slender; terminal margin of vinculum bluntly rounded (almost straight). Alar expanse, 21–23 mm.

TYPE LOCALITY: Rio de Janeiro, Brazil (type in Paris Mus.).

FOOD PLANT: Unknown.

555. Moerbes emendata, new species

FIGURE 572

Moerbes dryopella Dyar (not Schaus), Proc. U. S. Nat. Mus., vol. 47, p. 337, 1914.

Similar in markings and color to the two preceding species except that the ground color of forewing is a more soiled white (less contrasted, except for the white spot on inner margin formed by the base of the antemedial line), and both upper and lower discal spots are present and distinct. The male genitalia are also markedly different: Uncus appreciably narrower than that of *alveolella* or *dryopella;* aedeagus with a thornlike projection from undersurface before apex; vinculum sharply tapering from middle to angulate terminal margin. Alar expanse, 16–20 mm.

TYPE LOCALITY: Cabima, Panamá (type in USNM, 61383).

FOOD PLANT: Unknown.

Described from male type from the type locality (May); one male paratype from La Chorrera, Panamá; one male paratype from Porto Bello, Panamá (Mar.); one male from Lino, Panamá (from the Janse Collection); one male from 6 miles up the Maroni River, French Guiana (Schaus, collector), and one male without locality label, collected by Schaus and presumably also from French Guiana. The Panamá specimens, except for the one from Lino, were collected by Busck and are those referred by Dyar to *dryopella* Schaus. The Porto Bello specimen is abnormal in that veins 8 and 9 are united on both forewings; but this is a freak. Otherwise the specimen is normal and on the other specimens the venation is normal. The species can be distinguished at once by the thornlike projection from its aedeagus.

161. Genus Moodnopsis Dyar

Moodnopsis Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 408, 1914. (Type of genus: *Moodnopsis decipiens* Dyar.)

Campyloplesis Dyar, Ins. Insc. Menstr., vol. 7, p. 61, 1919. (Type of genus: *Campyloplesis inveterella* Dyar. New synonymy.)

Tongue well developed. Antenna of male shortly ciliate (cilia no longer than width of shaft); of female pubescent. Labial palpus of male obliquely ascending, cylindrical, reaching nearly to vertex, third segment less than half as long as second; of female porrect, laterally somewhat flattened, second segment oblique, long, extending to the level of vertex, third segment deflected forward, about half the length of second. Maxillary palpus filiform. Forewing smooth; 11 veins; vein 2 from well before lower outer angle of cell; 3 from the angle; 4 and 5 stalked, the stalk approximate at base (and in some specimens for a short distance from base) with 3; 6 from below upper angle, slightly curved towards base; 8 and 9 long stalked; 10 from the cell, more or less approximate (rarely connate) to the stalk of 8–9 at base; male with a long costal fold (extending for half or more than half the length of costa). Hind wing with vein 2 from well before lower, outer angle of cell; 3 and 5 connate from the angle; 7 and 8 anastomosed beyond cell almost to apex (completely anastomosed in a couple of males); cell about one-third the length of the wing; discocellular vein curved. Eighth abdominal segment of male with a short pair of ventrolateral hair tufts and sternite developed as a triangulate sclerotized pocket.

Male genitalia with apical process of gnathos developed as a stout, flattened hook with forked apex. Transtilla complete, the apices of its elements enlarged and fused into a spreading, bulbous knob. Harpe with terminal margin evenly rounded; costa strongly sclerotized for four-fifths of its length, but not produced; on outer surface, bordering inner margin, a row of modified, flattened setae. Anellus a narrow, curved band with short lateral lobes. Aedeagus smooth, straight or slightly curved, tapering slightly from base to apex. Vinculum stout, longer than broad, tapering or abruptly constricted towards angulate terminal margin.

Female genitalia with bursa copulatrix finely scobinate; signum present as an elongate narrow projecting plate with serrate edge; ductus bursae shorter than bursa, simple; genital opening simple; ductus seminalis from bursa towards (but not near) its junction with ductus bursae.

Dyar described *Moodnopsis* from two large dark female specimens and *Campyloplesis* from two small pale males. On the evidence of these alone the generic separation would seem valid enough; but the evidence of associated males and females of species other than the type of genus shows no consistent character for such separation. The palpal differences are purely sexual and the trifling venational differences are either individual or, at most, specific in character. *Moodnopsis* is a distinct genus easily identified by its male genitalia, and is somewhat more closely related to *Moerbes* than to

Moodna, from which Dyar distinguished it. His diagnosis of *Campyloplesis* is in error in two important particulars: The male labial palpi are not "porrect" but obliquely ascenting, almost upcurved; veins 3, 4, and 5 of forewing are not "stalked," 3 being only approximate to the stalk of 4–5 at base and for a very short distance beyond.

556. Moodnopsis decipiens Dyar

FIGURES 83, 1062

Moodnopsis decipiens Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 408, 1914.

The two females from which the species was described (and the only specimens available) are rubbed so that the forewing pattern cannot be clearly distinguished. The ground color is a brownish gray (rather dark) with a faint dusting of whitish scales along costa and (under magnification) a scattered peppering of reddish scales over most of the wing; antemedial line indicated only by a rather broad dark outer border, this broken; the subterminal pale line faintly indicated, defined chiefly by dark streaks on the veins before and beyond it, the inner streaks rather long; discal dots faint but distinguishable, blackish; dots along terminal margin very faint and more or less confluent. Hind wing pale fuscous; the veins and terminal margin darker. Alar expanse, 27–28 mm.

Female genitalia with signum large, the serrations along projecting edge bluntly and rather broadly rounded.

TYPE LOCALITY: Orizaba, México (type in USNM).

FOOD PLANT: Unknown.

In unrubbed specimens the dark streaking along the veins would be more emphasized. Such lining of the veins is characteristic of all the species in the genus; but *decipiens* stands out because of its greater size and darker ground color.

557. Moodnopsis perangusta (Dyar), new combination

FIGURE 573

Euzophera perangusta Dyar, Ins. Insc. Menstr., vol. 7, p. 57, 1919.

Ground color of forewing as in *decipiens* but transverse lines more distinct; the antemedial line deeply notched at lower fold; the subterminal irregularly dentate and parallel with termen; dark borders of the transverse pale lines narrower and dark lining of the veins much less pronounced than in *decipiens*; blackish discal spots confluent; veins 4 and 5 longer stalked (for more than half their lengths); 8 and 9 longer stalked and 10 closely approximate to the stalk of 8–9 for some distance beyond cell; costal fold extending to well beyond middle of costa. Hind wings translucent white, gray toward apex and along upper half of terminal margin. Alar expanse, 25 mm.

Male genitalia with bifurcation of apical process of gnathos deeper, aedeagus smaller and less tapering, vinculum broader at, and less constricted before, terminal margins than those of other species in the genus. The genitalic differences among the several species are better illustrated than described and can be readily distinguished in the drawings.

TYPE LOCALITY: Montserrat, Trinidad, British West Indies (type in USNM).

FOOD PLANT: Unknown.

Known only from the male type. It is possibly the male of *decipiens*. The size and coloration of forewing would suggest this. The white hind wings and venation, however, would seem to indicate a distinct species, though the differences noted may be only sexual. The length of the stalking of veins 4 and 5 of forewing is certainly unreliable, varying in individuals of species where we have more than two specimens.

558. Moodnopsis inornatella (Ragonot), new combination

FIGURES 574, 1061

Zophodia inornatella Ragonot, Nouv. Gen., p. 31, 1888; Monograph, pt. 2, p. 25, 1901.

The type of this species is a worn female from Costa Rica without abdomen. In his original description Ragonot gives the type locality as Brazil; but according to Clarke this could easily have been a misreading of a small pin label with "Druce" inscribed on it. The female in the British Museum is labeled "ty. original" in Ragonot's handwriting and bears the further information, "Irazu, 6–7,000 ft., H. Rogers." This must be the type, for Dr. Burgogne states that it is not in the Ragonot Collection at the Paris Museum.

A photograph of the type agrees well with a series of specimens in the National Museum (one male and three females) from Juan Viñas, Costa Rica.

The general color of the forewing is paler than that of either *decipiens* or *perangusta;* but the markings are similar, the dark lining of the veins, if anything, more distinct. Worn specimens show no trace of an antemedial line, but in one of the females before me (in better condition than the others) it is faintly outlined. The male costal fold is shorter than in *perangusta*, extending only to middle of costa. Hind wing of female very pale fuscous; of male soiled white; veins and edge of terminal margin darker. Alar expanse, 20–28 mm.

The distinguishing characters of the male genitalia are the shape of terminal projection of gnathos, the shape of apical lobe of transtilla, and the constricted vinculum. The female genitalia are similar to those of *decipiens* except that the signum is smaller and has weaker, less rounded serrations along its projecting edge, trifling differences of rather doubtful value.

TYPE LOCALITY: Irazú, Costa Rica (type in BM).

FOOD PLANT: Unknown.

In addition to the Costa Rican specimens I have before me a male from Santa Catarina, Brazil (July 22, 1935, Fritz Hoffmann, collector) which I take to be *inornatella* or a variety of it. The fore and hind wings are considerably paler (more whitish) and the antemedial and subterminal lines more clearly indicated. It is the same size as the male from Juan Viñas (20 mm.), has a costal fold of the same length, and agrees with it in every genitalic detail except that the forking

of the apical process of gnathos is a trifle shallower. It certainly is not conspecific with the males of the following species from the same locality and collection.

Upon superficial examination vein 3 of forewing seems to be connate with the stalk of 4–5 in *inornatella* and in most specimens of the other species, and is so described by Ragonot; but if the wings are partially denuded on underside at outer end of cell, more or less of a separation shows between 3 and 4–5 at their bases.

559. Moodnopsis parallela, new species

FIGURE 575

Forewing similar in color and markings to that of the females of *inornatella;* costal fold very long, extending for at least two-thirds the length of costa. Male genitalia with apical process of gnathos longer than that of other species of *Moodnopsis* except *inveterella* and its apical bifurcation U-shaped; aedeagus very stout, straight and evenly tapering; apical lobe of transtilla considerably enlarged; vinculum constricted before terminal margin, similar to that of *inornatella*. Alar expanse, 21–23 mm.

TYPE LOCALITY: Santa Catarina, Brazil (type in USNM, 61384).

FOOD PLANT: Unknown.

Described from male type and four male paratypes from the type locality (Oct. 2, 1934, July 7, 8, 12, 1935, Fritz Hoffmann, collector). In addition to these I have before me a somewhat larger male (26 mm.) with identical genitalia from Tinguri, Carabaya, Perú (Schaus, collector)

The female is unknown.

560. Moodnopsis inveterella (Dyar), new combination

FIGURES 86, 576

Campyloplesis inveterella Dyar, Ins. Insc. Menstr., vol. 7, p. 61, 1919.

Similar in color and maculation to *inornatella* Ragonot but much smaller and with quite different genitalia.

The venation of the type is figured (fig. 86) to show extent of variation in venation within the genus between it and the large female of *decipiens* (fig. 83). The complete fusion of veins 7 and 8 of hind wing in the type of *inveterella* is apparently an abnormality, a short spur of 8 showing in one of the hind wings of the paratype. The costal fold extends for half the length of costa. Alar expanse, 14.5 mm.

The distinguishing characters of the genitalia are: The stout, flat-faced apical process of gnathos (fig. 576b) with shallow V-shaped bifurcation at its apex; the narrow, looped knob at apex of transtilla (fig. 576c); and the very abruptly tapered vinculum with its narrow terminal margin. The aedeagus is moderately stout and tapering.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

Known only from the male type (June) and a male paratype (Apr.) from the type locality.

561. Moodnopsis portoricensis, new species

FIGURES 577, 1060

In size, color, and maculation similar to *inveterella* but with differently shaped uncus, apical process of gnathos, and transtilla. Alar expanse, 14.5–16 mm.

The female genitalia are distinguished only by a very narrow, short signum, with sharply serrate edge and set far towards the anterior end of the bursa. The position of the signum is a character of very doubtful value.

TYPE LOCALITY: Lares, Puerto Rico (type in Cornell Univ.; paratypes in USNM, 61385).

FOOD PLANT: Unknown.

Described from male type and one male and one female paratype from the type locality, collected by Francesco Sein, Jr., July, 1931.

162. Genus Edulica Ragonot

Edulica Ragonot, Monograph, pt. 2, p. ix, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 122, 1901. (Type of genus: *Euzophera compedella* Zeller.)

Tongue well developed. Antenna pubescent; basal joint enlarged on male. Labial palpus upturned; third segment approximately half as long as second, dorsally flattened. Maxillary palpus squamous, appressed to face. Forewing smooth; 11 veins; vein 2 from near lower outer angle of cell; 4 and 5 shortly stalked, from the angle; 3 connate or very shortly stalked with 4–5; 6 from upper angle of cell, curved; 8 and 9 stalked; 10 from the stalk of 8–9; male without costal fold. Hind wing with vein 2 from very close to lower outer angle of cell; 3 and 5 stalked for at least half their lengths; 7 and 8 anastomosed beyond cell for approximately half their lengths; cell one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male with sternite developed as a shallow, triangulate, sclerotized pocket, otherwise simple.

Male genitalia with apical process of gnathos developed as an elongate, stout, flattened hook, with very slightly notched apex. Uncus stout with broadly rounded terminal margin. Transtilla complete, developed as a strongly sclerotized arch with broad, flaring apical crossband. Harpe with a strong hair tuft from base of sacculus; constricted between sacculus and cucullus; terminal margin rounded; costa sclerotized for two-thirds its length, not produced; clasper short, appressed. Anellus a slightly curved, narrow band with well developed lateral lobes. Aedeagus short, stout; penis armed with many strongly sclerotized folds and a cluster of moderately stout, straight, elongate spines (cornuti) about one-fourth as long as aedeagus. Vinculum stout, as broad as long, triangulate; terminal end pointed.

Female genitalia with bursa copulatrix sclerotized towards junction with ductus bursae and with several sclerotized folds extending well into the ductus, finely scobinate over most of inner surface; signum present as a small, cupped, scobinate plate; ductus bursae much shorter than bursa; genital opening simple.

The genus is apparently close to but distinct from

Euzophera, easily distinguished from that genus by the close association of veins 3, 4 and 5 of forewing, and the short cell of hind wing. Contains one tropical American species. Hampson includes a species from Madagascar but this is probably improperly placed.

562. Edulica compedella (Zeller)

FIGURES 58, 585, 1071

Euzophera compedella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 224, 1881.

Edulica compedella (Zeller) Ragonot, Monograph, pt. 2, p. ix, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 122, 1901.

Ground color of forewing varying from somber brown to gray-brown; costal half of wing dusted with ashy grayish white; the discal spots blackish, confluent; some scattered blackish dots on several of the veins; antemedial line not defined; the subterminal one weakly so by its dark inner and outer bordering lines, irregularly dentate; terminal dots distinct, blackish. Hind wing of male whitish with dark brown shading on veins and along termen; of female smoky fuscous, darkening towards apex and termen. Alar expanse, 20–25 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Honda, Colombia (type in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Porto Bello (Apr., May). COLOMBIA: Honda. FRENCH GUIANA: St. Jean Maroni. BRAZIL: Amazonas, Ponte Nova (Rio Xingu).

Genera 163 and 164: *Euzophera* and *Exuperius*

[Venational division A. Forewing with 11 veins; 4 and 5 stalked. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 connate; cell long; discocellular vein curved. Male genitalia with apical process of gnathos a stout, elongate hook with pointed apex; transtilla complete. Labial palpi upturned.]

163. Genus Euzophera Zeller

Stenoptycha Heinemann (not Zeller), Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 190, 1866.

Melia Heinemann, Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 209, 1866 (new name, preoccupied, proposed for *Stenoptycha* Heinemann).

Euzophera Zeller, Trans. Ent. Soc. London, ser. 3, vol. 5, p. 456, 1867 (new name for *Stenoptycha* Heinemann); Stettiner Ent. Zeit., vol. 28, p. 377, 1867.—Hulst, Phycitidae of N. Amer., p. 174, 1890 (cites type as *Myelois cinerosella* Zeller).—Hampson, Moths, vol. 4, p. 72, 1896, *in* Blanford, Fauna of British India (cites type as *Ephestia biviella* Zeller); *in* Ragonot, Monograph, pt. 2, p. 36, 1901.—Ragonot, Monograph, pt. 2, p. vii, 1901 (cites type as *Phycis pinguis* Haworth).—Forbes, Cornell Mem. 68, p. 630, 1923.—Bisset, *in* Pierce and Metcalf, Genitalia of the British Pyrales, p. 59, 1938 (notes fixation of type by Hulst).—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 31, 1945. (Type of genus: *Myelois cinerosella* Zeller; figs. 77, 578, 1063.)

Tongue well developed. Antenna simple, shaft pubescent (ciliations very short). Labial palpus upturned, reaching to or almost to vertex; second segment rough scaled; third segment about half as long as second, acuminate. Maxillary palpus subsquamous (somewhat rough scaled), appressed to face. Forewing smooth; 11 veins; vein 2 from well before lower, outer angle of cell; 3 from the angle; 4 and 5 stalked (for less than half the lengths); 6 from below upper angle of cell, straight; 8 and 9 long stalked; 10 normally from the cell, separated from or approximate to (rarely connate with or from the stalk of) 8–9; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, connate, rarely (in individual specimens) very shortly stalked; 7 and 8 strongly anastomosed beyond cell (for more than half their lengths); cell long, slightly more than half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple except in *cinerosella* which has a pair of short ventrolateral hair tufts.

Male genitalia with apical process of gnathos developed as an elongate, stout, simple hook with pointed apex. Uncus stout, broadly triangulate. Transtilla complete, developed as a strongly sclerotized arch with prominent, caudally projecting, lateral lobes. Harpe of nearly equal width throughout; terminal margin rounded and with a short rounded projection from apex of costa; costa otherwise, for most of its length, strongly sclerotized; clasper not developed. Anellus a slightly curved U-shaped shield, the lateral lobes well developed and strongly sclerotized in the American species. Aedeagus moderately long, stout; penis armed with numerous, short, sharp spines. Vinculum stout, as long as (or very little longer than) broad; terminal margin rounded.

Female genitalia with numerous sclerotized or scobinate folds in bursa copulatrix adjacent to or at junction with ductus bursae (except in the European type, *cinerosella*), finely scobinate over most of inner surface; signum present as a small, cupped, scobinate plate; ductus bursae with genital opening simple; ductus seminalis from bursa near signum (in American species) or from terminal end of bursa (in *cinerosella*). Dorsal sclerotized area of eighth segment collar a narrow band with central tonguelike projection.

Euzophera, like *Zophodia*, has served as the receptacle for a heterogeneous lot of species, most of which must be referred to various other genera. As here defined the genus contains only three described American species that can be referred to it with any certainty. These form a compact group with constant genitalic characters and similar forewing pattern: antemedian line far out on wing, subterminal line well back from the terminal margin, the space between the lines correspondingly reduced, and a white spot on discocellular vein. On venation, palpi, and male genitalia they agree with the European type of genus, *cinerosella*, but differ from it in wing pattern and two details of structure, *cinerosella* having hair tufts on the eighth abdominal segment of the male, and the ductus seminalis from the anterior end of the female bursa (figs. 578b, 1063). Eventually it may be possible to give our American species a separate generic designation; but upon present knowledge they must be retained in *Euzophera*.

Venation in *Euzophera* is subject to considerable individual variation especially as regards the relation of vein 10 of forewing to 8–9. In our American species and the European *cinerosella* (fig. 77) vein 10 is from the cell and normally distinctly separated from the stalk of 8–9, though in individual specimens of any American species it may be either connate with or approximate, for some distance, to the stalk. In the European *pinguis* Haworth, it may be from the middle of the stalk, short stalked, or connate with it, or (rarely) from the cell and distinctly separate.

563. Euzophera semifuneralis (Walker)

FIGURES 579, 1064

Nephopteryx semifuneralis Walker, List, pt. 27, p. 57, 1863.
Euzophera aglaeella Ragonot, N. Amer. Phycitidae, p. 14, 1887; Monograph, pt. 2, p. 65, 1901.—Hulst, Phycitidae of N. Amer., p. 177, 1890.—Essig, Insects of western North America, p. 710, 1929.—McDunnough, Check list, No. 6316, 1939.
Stenoptycha pallulella Hulst, Ent. Amer., vol. 3, p. 137, 1887.
Euzophera semifuneralis (Walker) Ragonot, Ent. Amer., vol. 5, p. 116, 1889.—Forbes, S. A., Psyche, vol. 5, p. 295, 1890.—Hulst, Phycitidae of N. Amer., p. 175, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 66, 1901.—Blakeslee, U. S. Dep. Agr. Bull. 261, 13 pp., 1915.—Forbes, W. T. M., Cornel Mem. 68, p. 631, 1923.—Essig, Insects of western North America, p. 710, 1929.—Keifer, Monthly Bull. Dep. Agr. California, vol. 20, p. 618, 1931.—McDunnough, Check list, No. 6317, 1939.

Forewing with basal and terminal areas dark to pale reddish brown more or less dusted with white along costa and (in very pale specimens) in apical-terminal area; area between the transverse lines densely dusted with blackish scales; antemedial line more or less vertical to lower margin of cell, inwardly angled at lower fold, white bordered outwardly by a black line; subterminal line somewhat irregular, usually out-angled evenly at middle, white, bordered inwardly by a black line; discal black dots more or less obscured in the black dusting of median area, usually a white mark on discocellular vein; a line of black dots along terminal margin, confluent in some specimens, distinctly separated in others. Hind wing white to smoky fuscous, more or less darkened along terminal margin, at apex, and along some of the veins. Alar expanse, 16.5–28 mm. (Hampson gives extreme expanse as 34 mm.).

Male genitalia with lateral, projecting lobes of transtilla and lateral lobes of anellus more slender than those of other American species; cucullus of harpe narrower and more elongate; vinculum somewhat longer than broad; uncus evenly tapering. Female genitalia with bursa rather small and wrinkled over most of its surface.

TYPE LOCALITIES: "North America" (*semifuneralis*, in BM); Sonora, México (*aglaeella*, in Paris Mus.); Colorado (*pallulella*, in AMNH, ex Rutgers).

FOOD PLANTS: Various deciduous trees (apple, apricot, pear, peach, plum, persimmon, cherry, mulberry, walnut, pecan, olive, linden, poplar, *Liquidambar*, *Ginkgo*, mountain ash). Larva a bark borer. Also stems of cotton and corn.

DISTRIBUTION: UNITED STATES: *New Hampshire*, Hampton; *Connecticut*, East River (July, Sept.); *New York* (no exact locality); *New Jersey*, Hackensack (Nov.), Montclair (May, Aug.), Morristown (June); *Maryland*, Plummers Isl. (May); *District of Columbia*, Washington (May, Sept.); *Virginia*, Cape Henry (July), Vienna (May); *North Carolina*, Southern Pines (Mar., Apr.), Tryon (May); *South Carolina*, Anderson (Oct.); *Georgia*, Fort Valley; *Michigan*, Monroe; *Indiana*, Bedford (Apr.); *Illinois*, Decatur (Apr.); *Kansas*, Lawrence (May), Onaga; *Missouri*, St. Louis (June); *Mississippi*, Jackson (Feb.), Tishomingo (Nov.); *Texas*, Blanco County, Brownsville, Brownwood (Oct.), Justine (June), Kerrville (Apr.), Paris, Plano (Sept.), San Benito (July), San Diego (May), Shovel Mountain, Snyder (Mar., Apr.), Victoria (Apr.), Zavalla County (Apr.); *New Mexico*, Mesilla, Roswell (Apr.); *Arizona*, Baboquivari Mts. (Apr., May), Chiricahua Mts., Garces, Huachuca Mts., Palmerlee, Scotsdale (May), Yavapai County; *Colorado*, Denver (June); *Utah*, Bellevue (May); *California*, Corningi (Jan.), Inyo County (June, July), Loma Linda (Sept.), Piru (Ventura County, July), Placerville (Jan., May), Putah Canyon (Yolo County, Nov.). CANADA: *British Columbia*, Alberni (July), Duncans (Vancouver Isl., Aug.). MÉXICO: Sonora.

The species is variable in color but is easily distinguished by the reddish basal and terminal areas of forewing and the narrowed, black-dusted area between the transverse lines. The name *aglaeella* represents a color form, with paler red-brown areas and more strongly contrasted, blackish median dustings and markings. It is commoner in the Western and Southwestern States and México than elsewhere but cannot be maintained as a race; for it also occurs in the East and there are intergrades between it and the typical dark form, common to the Eastern and Central States, but occurring throughout the range of the insect. The species is of some importance as an orchard insect, the larvae often doing considerable damage as a bark borer in plum, olive, and walnut trees. It is known in economic literature as the "American plum borer."

564. Euzophera ostricolorella Hulst

FIGURES 580, 1065

Euzophera ostricolorella Hulst, Phycitidae of N. Amer. p. 175, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 67, 1901.—Heinrich, Proc. U. S. Nat. Mus., vol. 57, p. 87, 1920 (life history, larva and pupa).—Forbes, Cornell Mem. 68, p. 631, 1923.—McDunnough, Check list, No. 6319, 1939.

Forewing purplish brown, dark grayish fuscous along costa and with some grayish dusting in apical area; transverse lines whitish, not darkly bordered; antemedial line vertical to lower margin of cell, deeply angled below, at fold; subterminal line sinuate; a whitish line along discocellular vein at end of cell; along termen a row of obscure, blackish dots; in some specimens a suffusion of dark red brown in basal area and above inner margins beyond base, especially on the folds. Hind wing rather pale smoky fuscous with a fine dark line along terminal margin. Alar expanse, 29–40 mm.

Male genitalia with lateral, projecting lobes of transtilla broader than those of *semifuneralis*; anellus very

broad, its lateral lobes wide and widely spaced, their apices narrowly rounded; harpe with cucullus broadening toward apex; vinculum about as broad as long; uncus abruptly narrowed beyond base, thence tapering.

Female genitalia with bursa large, densely spined and wrinkled towards junction with ductus bursae; ductus bursae very short, deeply wrinkled.

TYPE LOCALITY: New York (in AMNH, ex Rutgers).

FOOD PLANT: *Liriodendron tulipifera.*

DISTRIBUTION: *New York*, Long Island; *District of Columbia*, Washington (June); *Maryland*, Oxon Hill, Plummers Isl. (Oct.); *Virginia*, Leesburg; *South Carolina*, Greenville (June), Hendersonville (June), Paris Mountain (June), Rockhill (June), Yorkville (June); *Georgia*, Atlanta (Oct.).

Probably distributed throughout the range of its host.

This distinct species apparently has only one host, the "tulip tree." The larva bores in the bark on the damp side near the base of the tree.

565. Euzophera nigricantella Ragonot

FIGURES 581, 1066

Euzophera nigricantella Ragonot, N. Amer. Phycitidae. p. 14, 1887.—Hulst, Phycitidae of N. Amer., p. 177, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 63, 1901.—McDunnough, Check list, No. 6315, 1939.

Euzophera griselda Dyar, Proc. U. S. Nat. Mus. vol. 44, p. 322, 1913 (new synonymy).

Forewing gray evenly dusted with blackish; transverse pale lines paler, but obscure, shaped as in the preceding species; antemedial line with an obscure narrow blackish outer border; subterminal with faint dark borders on inner and outer sides; a whitish spot on discocellular vein; terminal dots, faint, blackish. Hind wings white with some dark shading on the veins and along terminal margin. Alar expanse, 21–27 mm.

Male genitalia with lateral projecting lobes of transtilla largest of any known American *Euzophera;* anellus longer than broad, the lateral lobes untapering, narrowly spaced, and with outer margins at apices inwardly hooked; harpe with cucullus stubby, its lower margin slightly concave; vinculum as broad as long; uncus as in *ostricolorella.* Female genitalia with a wrinkled sclerotized collar about ductus bursae at its junction with bursa copulatrix.

TYPE LOCALITIES: Arizona (*nigricantella;* in Paris Mus.); Tehuacán, México (*griselda*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Arizona*, Baboquivari Mts. (Apr., June, July, Aug., Sept., Oct.), Redington, Tempe (Mar.), Yavapai County; *New Mexico*, Albuquerque (July); *Texas*, San Benito (May). MÉXICO: *Sonora;* Tehuacán (May, Sept.), San Jose de Guaymas (Apr.).

Dyar's *griselda* was described from females which match specimens of *nigricantella* from Arizona in every detail of maculation, color, and genitalia. At the time he described *griselda* Dyar had not recognized Ragonot's species.

164. Exuperius, new genus

TYPE OF GENUS: *Exuperius negator*, new species.

Tongue well developed. Antenna simple, pubescent. Labial palpus upturned, barely reaching to vertex; first segment broadly scaled; third segment nearly as long as second, acuminate. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before lower outer angle of cell; 3 from the angle; 4 and 5 stalked (for less than half their lengths), separate from 3 at base: 6 slightly bent, from below, but near upper angle of cell; 8 and 9 rather long stalked (for two-thirds their lengths); 10 from the cell, approximate to the stalk of 8–9 for some distance; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 connate, from the angle; 7 and 8 anastomosed beyond cell for most of their lengths (free segment of 8 short); cell long, slightly over half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos developed as an elongate, stout, simple hook with pointed apex. Uncus narrow, constricted towards base, shaped like a narrow, bluntly pointed arrowhead. Transtilla complete, but median portion a narrow, rather weakly sclerotized band. Harpe with broadened, evenly rounded cucullus; spoon-shaped; costa broadly sclerotized but not produced; clasper present, short, knobbed at apex; from near base of cucullus a strong, long, semidetached hair tuft. Anellus a broadly U-shaped narrow band with long, flattened, lateral projections. Aedeagus long, stout; penis armed with a dense mass of minute granulations. Vinculum considerably shorter than broad, terminal margin broadly and evenly rounded.

Female unknown.

This genus is close to *Euzophera* and agrees with it in characters of venation, labial palpi, and gnathos; but its peculiar genitalia (aside from the apical projection of gnathos) differ in every detail from those of typical *Euzophera* and suggest a separate generic designation. They resemble those of no other American group that I know. The partial forking of vein 1b of forewing at base (shown in fig. 76) is present on both forewings but may be an individual abnormality. It is most unusual for a phycetine.

566. Exuperius negator, new species

FIGURES 76, 584

Forewing brown, dusted with grayish white over basal area and for a short distance beyond antemedial line near costa and inner margin; some blackish dusting in cell beyond its middle and a black spot on costa on each side of the subterminal line; antemedial line indicated by a blackish band slanting slightly inward from slightly beyond basal third of costa to inner margin, straight; subterminal line somewhat wavy, obscure except on costal half where it is distinctly white; a small but conspicuous white spot above the stalk of veins 4–5 at end of cell; terminal dots blackish, more or less confluent.

Hind wing hyaline white shaded with blackish fuscous, broadly along costa and narrowly along terminal margin; veins faintly outlined by dark shading. Alar expanse, 22 mm.

Male genitalia as given for the genus; aedeagus broadened at base, sharply constricted just beyond.

TYPE LOCALITY: La Chorerra, Patamayo District, Perú (type in Cornell Univ.).

FOOD PLANT: Unknown.

Described from unique male type collected on the Cornell University Expedition (Apr. 1920) under lot No. 607.

The white discal spot on forewing and the genitalia should easily identify the species. The former is also common to our American species of *Euzophera* but in that genus the transverse lines are much closer together than in *negator*.

Genus 165: *Eulogia*

[Venational division A. Forewing with 11 veins; 4–5 approximate, connate or very shortly stalked. Hind wing with 3 and 5 connate; cell long; discocellular vein curved. Male genitalia with apical process of gnathos a short, flat, furcate plate; transtilla incomplete. Labial palpus upturned.]

165. Eulogia, new genus

TYPE OF GENUS: *Ephestia ochrifrontella* Zeller.

Characters of *Euzophera* except: Labial palpus with third segment as long or nearly as long as second. Forewing of male with a narrow, elongate costal fold; veins 4 and 5 approximate, connate or very shortly stalked. Male genitalia with apical process of gnathos a short, flat plate, furcate at apex; transtilla incomplete; aedeagus slender; penis armed with a single curved cornutus. Female genitalia with bursa copulatrix smooth except for a very few scobinations surrounding signum; signum a cluster of small, short, thornlike spines (not on a plate); ductus bursae strongly sclerotized at and just before genital opening, the sclerotized part of ductus tubular.

On venation, wing maculation, and palpal characters the type species (*ochrifrontella*) could go well enough in *Euzophera*, where it has been placed; but the genitalia rule it out. All the really congeneric species of Europe and North America placed in *Euzophera* have similarly constructed, complete transtillae, the same type of hooked projection from gnathos, similar multiple cornuti on the penis, and similar wide-mouthed, unsclerotized genital openings in the female. On all of these characters *ochrifrontella* is ruled out.

567. Eulogia ochrifrontella (Zeller), new combination

FIGURES 78, 79, 583, 1069

Ephestia ochrifrontella Zeller, Verh. zool.-bot. Ges. Wien, vol. 25, p. 337, 1876.

Euzophera ferruginella Ragonot, N. Amer. Phycitidae, p. 14, 1887.

Euzophera ochrifrontella (Zeller) Hulst, Phycitidae of N. Amer., p. 177, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 67, 1901.—Ely, Proc. Ent. Soc. Washington, vol. 12, p. 203, 1910.—Forbes, Cornell Mem. 68, p. 631, 1920.—McDunnough, Check list, No. 6318, 1939.

Forewing copper colored, with the area between the transverse lines heavily dusted with black; antemedial line far out (slightly beyond middle) on wing, pale ocherous, angulate; subterminal line, parallel with termen, slightly indented at vein 6 and lower fold; an obscure pale ocherous line along discocellular vein; in some specimens the blackish dusting extends beyond the transverse lines over most of the basal and terminal areas of the wing, but this is not a normal condition. Hind wing pale smoky fuscous; veins and terminal margin slightly darker. Alar expanse, 11–15 mm.

Genitalia as given for the genus. In the female the ductus bursae has a slightly sclerotized band near its junction with bursa.

TYPE LOCALITIES: Texas (*ochrifrontella*, in MCZ); North Carolina (*ferruginella*, in Paris Mus.).

FOOD PLANTS: Pecan, oak, apple.

DISTRIBUTION: UNITED STATES: *Massachusetts*, Cohasset (July), Framingham (Sept., Oct.), Martha's Vineyard (July, Aug.); *Connecticut*, East River (July, Aug., Sept., Oct.), Stamford (July); *New Jersey*, Elizabeth (Aug.); *Pennsylvania*, Adams County (June), Arendtsville (Aug.), Hazleton (July), New Brighton (June, July); *Maryland*, Plummers Isl. (May, June, July); *North Carolina; Florida*, Orlando (Mar.); *Texas; Illinois*, Decatur (May, June); *Kansas*, Onaga. CANADA: *Manitoba*, Rounthwaite (July), Winnipeg; *British Columbia*, Duncans (Vancouver Isl., June), Kaslo (July).

The foregoing food-plant records are from specimens in the National Museum. Nothing, as far as I know, has been published on the life history.

The venation is variable in different specimens and sometimes on opposing wings of the same insect. On forewing vein 10 may be separate from, approximate to, or connate with the stalk of 8 and 9; 4 and 5 may be approximate or connate or, sometimes, very shortly stalked. On the hind wing the anastomisis of 7 and 8 varies, but is normally short. There is no appreciable individual variation in genitalia.

Genus 166: *Prosoeuzophera*

[Venational division D. Forewing with 10 veins; 4 absent; 3 and 5 connate. Hind wing with veins 3 and 5 connate or shortly stalked. Male genitalia with apical process of gnathos a stout, elongate hook with pointed apex; transtilla complete. Labial palpi upturned.]

166. Prosoeuzophera, new genus

TYPE OF GENUS: *Euzophera impletella* Zeller.

Characters of *Euzophera* except: Forewing with 10 veins; vein 4 absent; 3 and 5 connate from lower outer angle of cell.

A direct derivative of *Euzophera* but with advanced venation, replacing *Euzophera* in tropical America.

568. Prosoeuzophera impletella (Zeller), new combination

FIGURES 107, 582, 1067

Euzophera impletella Zeller, Horae Soc. Ent. Rossicae, Vol. 16, p. 234, 1881.

In color and maculation like small, pale examples of *Euzophera semifuneralis* with which it was synonymized by Hampson (Ragonot, Monograph, pt. 2, p. 66, 1901). He either overlooked or ignored the distinct venational difference between *impletella* and the North American species of *Euzophera*. The genitalia of *impletella* (♂ and ♀) exhibit differences of only a specific character from the *Euzophera*, quite distinct specifically from *semifuneralis*, as our figures show; but the absence of vein 4 and the connate condition of veins 3 and 5 of forewing are constant. Alar expanse, 15–16.5 mm.

TYPE LOCALITY: Honda, Colombia (in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: COLOMBIA: Honda, Maraquita. JAMAICA (♀, in USNM). PUERTO RICO: Villa Margarita (Catano, Apr.)

Genera 167–169: *Farnobia* to *Micromescinia*

[Venational division B. Forewing with 10 or 11 veins; 2 and 3 stalked or united. Cell open or incomplete in fore or hind wings. Male genitalia with transtilla complete.]

167. Farnobia, new genus

TYPE OF GENUS: *Euzophera quadripuncta* Zeller.

Tongue well developed. Antenna of male with basal segment narrowly elongate, bearing a short spur from inner side near apex; shaft deeply curved toward base, pubescent; of female simple. Labial palpus upturned, scarcely reaching vertex; third segment shorter than second. Maxillary palpus minute, rather broadly and flatly scaled, appressed to face. Forewing smooth; 10 veins; veins 2 and 3 united; 4 and 5 short stalked; 6 curved and connate with the stalk of 8–9–10; 8 and 9 stalked; 10 from the stalk of 8–9; cell open (discocellular vein absent); in male costa enlarged, lobed and sinuate, and outer margin concave between veins 7 and 5; an elongate discal fovea in male between veins 6 and the stalk of 3–5. Sternite of eighth abdominal segment of male developed as a broadly triangulate sclerotized pocket.

Male genitalia with apical process of gnathos a short, stout, blunt hook. Uncus triangulate. Transtilla complete, a heavy arched bridge with enlarged lateral lobes. Harpe with incurvation between sacculus and cucullus; cucullus narrow and narrowly rounded at apex; costa sclerotized for most of its length, but not produced. Anellus a narrow curved band with broad, curved, bandlike lateral projections (clasping the sides of aedeagus). Aedeagus stout, somewhat bent; penis armed with numerous sclerotized folds and two or three stout, very short, thornlike spine clusters. Vinculum stout, as broad as long, bluntly triangulate; terminal margin reinforced and broadly rounded.

Female genitalia with bursa copulatrix large and elongate, finely scobinate over surface of anterior half, thickened and partially sclerotized at junction with ductus bursae; signum present as a sclerotized cup evenly covered with short, stout, blunt spines; ductus bursae very short, a mere neck between genital opening and bursa; genital opening with a curled-over, strongly sclerotized and centrally emarginate lower margin; ductus seminalis from a lobe of bursa near its junction with ductus bursae.

In genitalia this genus resembles the *Hemiptiolocera–Crocidomera* complex of group I with which it is apparently related. It is even more nearly related to the genus following (*Gennadius*) which also has the cell of forewing open and (except for specific differences) similar male genitalia. However, *Farnobia* is so different in venational characters that it need not be confused with anything else in the Phycitidae. The forewing venation might be interpreted differently from what I indicate (i. e., vein 4 rather than 3 absent and 3 and 5 short stalked); but in view of the outward position of 2 and the close association of *Farnobia* with *Gennadius* (which has 2 and 3 distinctly stalked) the correct interpretation appears to be 2 and 3 united.

569. Farnobia quadripuncta (Zeller), new combination

FIGURES 98, 99, 586, 1070

Euzophera quadripuncta Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 226.

Dannemora quadripuncta (Zeller) Hampson, *in* Ragonot, Monograph, pt. 2, p. 209, 1901.

Forewing brown with a purplish tint; the costal area dusted with ocherous gray, this pale shading extending into the cell at middle; antemedial line obscure, blackish, dentate and outwardly oblique from costa to inner margin; subterminal line better defined, blackish, sharply dentate at the veins; three rather conspicuous blackish dots forming an angle near extremity of cell and, in some specimens, traces of a fourth dot on costa marking beginning of antemedial line. Hind wings whitish, semihyaline, with a narrow dark line along termen and dark shading on some of the veins. On the underside of the male hind wing the costal area is filled with coarse ocherous scaling terminating in a blackish fuscous patch at the outer angle of the lobe. Alar expanse, 21–24 mm.

Genitalia as given for the genus.

TYPE LOCALITY: Honda, Colombia (type in B. M).

FOOD PLANT: Unknown.

DISTRIBUTION: COSTA RICA: Esperanza (May). PANAMÁ: La Chorrera (May), Cabima (May). FRENCH GUIANA: St. Laurent du Maroni. COLOMBIA: Honda. Also recorded by Hampson from Brazil.

When Hampson placed *quadripuncta* in *Dannemora* he had only females of Zeller's species and no authentic examples of the type of Hulst's genus. The two species have very little in common, structurally or otherwise.

168. Gennadius, new genus

TYPE OF GENUS: *Gennadius junctor*, new species.

Tongue well developed. Antenna of male with basal segment narrowly elongate, bearing a short spur from middle of inner side; shaft with a short spur from basal joint, deeply curved for several segments beyond, pubescent. Labial palpus oblique, slender, dorsoventrally flattened, reaching above vertex; third segment about as long as second. Maxillary palpus moderately sized, flatly scaled and appressed to face. Forewing with a subbasal clump of raised scales (possibly a male or specific character); 11 veins; veins 2 and 3 stalked; 4 and 5 stalked (for about half their lengths); 6 curved, and connate with the stalk of 8–9–10; 8 and 9 stalked; 10 from the stalk of 8–9; cell open (discocellular vein absent); male without costal fold. Hind wing of male with vein 2 from very close to angle of cell; 3 and 5 stalked; 7 and 8 united; in male costa triangularly produced and outer margin concave between veins 7 and 5; cell closed, very short (less than one-fourth the length of wing in male); discocellular vein curved. Sternite of eighth abdominal segment of male developed as a triangulate, sclerotized pocket.

Male genitalia as in *Farnobia* except: Apical hook of gnathos slightly furcate at apex; lateral lobes of transtilla bluntly pointed rather than rounded; lateral arms of anellus shorter, narrower and tapering; harpe not incurvate between succulus and cucullus. Most of these differences are probably specific rather than generic in character.

Female unknown.

The genus is very close to *Farnobia* as indicated by the antennal and genitalic structures and the open cell of forewing, but is easily separated by the stalking rather than fusion of veins 2 and 3 of forewing and by the closed cell and the absence of vein 8 in hind wing.

570. Gennadius junctor, new species

FIGURES 97, 587

Forewing brown with a purplish tint; the costal area dusted with ocherous gray; some blackish streaking on upper vein of cell and along median fold and a few blackish spots indicating the broken margins of the transverse lines; a conspicuous white patch along inner margin between antemedial and subterminal lines and extending from inner margin to cell; transverse lines obscure. Hind wing very pale brown; terminal margin and veins little if any darker; in the male rather coarsely scaled over most of undersurface and with a border of coarse, thick, ocherous scaling along costa. Alar expanse, 22.5 mm.

Male genitalia as given for the genus; figure 587b shows the penis extruded to display the cornuti.

TYPE LOCALITY: St. Jean Maroni, French Guiana (type in USNM, 61386).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality (Schaus, collector, no date given).

The species is easily identified by its structural characters and the elongate white patch on inner margin of forewing.

169. Genus Micromescinia Dyar

Micromescinia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 347, 1914. (Type of genus: *Micromescinia pygmaea* Dyar.)

Tongue well developed. Antenna simple. Labial palpus oblique, reaching to or a trifle above vertex; slender; third segment nearly as long as second, acuminate. Maxillary palpus minute, filiform. Forewing smooth; 10 veins; veins 2 and 3 stalked; 4 and 5 long stalked; 6 from below upper angle of cell, very slightly curved; 8 and 9 united (9 absent); male with a short costal fold enclosing a hair tuft. Hind wing with 2 from before (but near) lower outer angle of cell; 3 and 5 stalked, from the angle; 7 and 8 completely fused beyond cell; cell partially open (only a rudiment of discocellular vein), long, a trifle more than half as long as wing. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos developed as a stout, curved, bluntly pointed hook. Uncus stout, hoodlike, scarcely tapering and with broadly rounded terminal margin. Transtilla complete, a bridge with central furcate projection, not appreciably arched. Harpe with costa produced and angulate at middle. Anellus a U-shaped plate with rather short lateral arms. Aedeagus rather slender, simple, slightly curved; penis armed with a thin elongate sclerotized band. Vinculum moderately stout, about as broad as long, triangulate.

Female genitalia with bursa copulatrix weakly and sparsely scobinate; signa present as a cluster of (3 or 4) small, weakly sclerotized discs. Ductus bursae sclerotized, granulate and flattened for two-thirds of its length from genital opening and with a produced, angulate, sclerotized shield behind genital opening. Ductus seminalis from bursa near signa (near anterior end of bursa).

A distinct genus showing affinities, especially in female genitalia, to *Ephestiodes* and several of the following genera. Contains one tropical American species.

571. Micromescinia pygmaea Dyar

FIGURES 96, 595, 1083

Micromescinia pygmaea Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 347, 1914.

Forewing pale ocherous with a narrow purplish red shade along costa and a similarly colored broad suffusion along termen. Hind wing pale smoky fuscous, paler towards base. Alar expanse, 9–10 mm.

Genitalia as given for the genus; cucullus of harpe angulate, apex bluntly pointed.

TYPE LOCALITY: Porto Bello, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Porto Bello (Mar.), Tabernilla, Taboga Isl. (Feb.).

Known only from the original type series (two males and one female) in the National Collection.

Genera 170–177: *Ephestiodes* to *Moodnella*

[Venational division C. Forewing with 10 veins; 8 and 9 united (except in aberrant individuals); male with costal fold. Labial palpi oblique. Male abdomen with compound dorsal tufts on eighth segment or simple. Transtilla complete or incomplete; if complete, an angulate bridge; if incomplete, its elements well developed. Ductus bursae sclerotized for at least part of its length from genital opening and with projecting sclerotized shield behind genital opening.]

170. Genus Ephestiodes Ragonot

Ephestiodes Ragonot, N. Amer. Phycitidae, p. 16, 1887; Monograph, pt. 2, pp. xiii, 264, 1901.—Hulst, Phycitidae of N. Amer., p. 194, 1890.—Forbes, Cornell Mem. 68, p. 635, 1923. (Type of genus: *Ephestiodes gilvescentella* Ragonot.)

Tongue well developed. Antenna simple, pubescent. Labial palpus oblique, reaching to vertex, somewhat rough scaled; segment 3 about as long as 2. Maxillary palpus filiform. Forewing smooth; 10 veins; vein 2 from very near to lower outer angle of cell; 3 from the angle; 4 and 5 stalked, the stalk approximate to or connate with 3 at base; 6 from below upper angle of cell, straight or very slightly curved; 8 and 9 united (9 absent); 10 from the cell, separated from 8; male with a short costal fold. Hind wing with vein 2 from before (but near) lower outer angle of cell; 3 and 5 long stalked; 7 and 8 anastomosed almost to costa (8 a mere vestige); cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound dorsal scale tufts (except in *noniella*).

Male genitalia with apical projection of gnathos forked, U- or V-shaped. Uncus broad and with apical margin broadly rounded. Transtilla incomplete (except in *stictella* and *noniella*) but with the elements strongly developed, their apices approximate and broadly flared. Harpe normally (except in *lucidibasella*, *stictella*, and *noniella*) with a transverse sclerotized ridge across base of cucullus; costa strongly sclerotized but not produced. Anellus a narrow, semicircular band with flanged base. Aedeagus straight, moderately long; penis armed (except in *noniella*) with a weak, thin, flat bladelike cornutus or a pair of similar cornuti. Vinculum stout, triangulate.

Female genitalia with signum developed as a short comb of from two to six blunt, short, thornlike teeth, or as a flat plate with a row of such teeth along one edge (*plorella*); bursa copulatrix otherwise simple except for a few weak scobinations surrounding signum or at junction of ductus bursae. Ductus bursae longer than bursa (except in *stictella*), sclerotized, granulate and flattened for at least half (normally for most) of its length from genital opening, with a produced, strongly sclerotized shield behind genital opening and usually with a sclerotized band or shield below the opening; ductus seminalis from bursa close to signum.

The North American species of the genus form a compact group agreeing on all structural characters. In tropical America, however, there is considerable variation from type and two of the species (*stictella* and *noniella*) are distinctly aberrant on male characters. Eventually it may be possible to give them separate generic designations, but at present there are no characters to be found (apart from male genitalia) to permit such separation. The species divide into three groups as follows:

Transtilla incomplete, but strongly developed, with apices flared and approximate. Harpe normally with a transverse sclerotized ridge at base of cucullus. Eighth abdominal segment of male with tufts. (Comprising all the typical *Ephestiodes*.)

Transtilla complete, with greatly produced, asymmetrical, caudal projections. Harpe with apex of sacculus produced into a free arm. Eighth abdominal segment of male with tufts. (Tropical only.)

Transtilla complete, a narrow band with central loop. Harpe simple. Eighth abdominal segment of male simple. (Tropical only.)

While adult specimens seem to be abundant and are often taken in numbers, little if anything is known of life histories within the genus and none of the species has, so far, proven to be of any economic importance. Most of the species are similar in color and maculation, but each shows some distinguishing difference in male genitalia. These are not easy to describe, but can be seen readily enough in the drawings. The female genitalia of the North American species are remarkably uniform in general structure, exhibiting more variation within than between species. In all of them the dorsal sclerotized area of the eighth-segment collar is reduced to a narrow band, the sclerotized shield behind genital opening has a central angulate projection from its posterior margin, and the sclerotized band below the opening is narrow.

Genus *Ephestiodes*, Species 572–580: *E. gilvescentella* to *E. plorella*

[Transtilla incomplete but strongly developed, with apices flared and approximate. Harpe normally with a transverse sclerotized ridge at base of cucullus. Eighth abdominal segment of male with tufts.]

572. Ephestiodes gilvescentella Ragonot

FIGURES 108, 589, 1072, 1073

Ephestiodes gilvescentella Ragonot, N. Amer. Phycitidae, p. 16, 1887; (Ragonot and Hampson), Monograph, pt. 2, p. 264, 1901.—Hulst, Phycitidae of N. Amer., p. 194, 1890.—McDunnough, Check list, No. 6379, 1939.

Ephestiodes nigrella Hulst, Journ. New York Ent. Soc., vol. 8, p. 224, 1900.—Donohoe and Barnes, Journ. Econ. Ent., vol. 27, p. 1071, 1934.—McDunnough, Check list, No. 6382, 1939. (New synonymy.)

Forewing pale gray, the median area (between the transverse lines) dark gray; antemedial line outwardly angled at middle and with a very slight notch at lower fold, white with a narrow blackish outer border; subterminal line fainter, slightly sinuate and parallel with termen, whitish with a narrow blackish inner border; discal dots at end of cell, separate, distinct, blackish; terminal dots obscure, more or less confluent. Hind wing white to pale smoky fuscous; the veins but faintly darkened. Alar expanse, 12–16 mm.

Male genitalia with apical process of gnathos V-shaped, the prongs narrowly triangulate. Harpe with strong transverse sclerotized ridge at base of cucullus and projecting slightly beyond lower margin of harpe; costa smooth; apex angled. Transtilla with flaring apices of its elements divergent. Aedeagus moderately stout.

Female genitalia show some individual variation in the number of teeth in the signum (4 to 6). The shape of the shield behind genital opening is also variable (compare figs. 1072 and 1073).

TYPE LOCALITIES: California (*gilvescentella*, in Paris Mus.); Los Angeles, Calif. (*nigrella*, in USNM).

FOOD PLANTS: Raisins, cotton, *Gaura parviflora*. These food-plant records from reared specimens in the National Collection. Moths have been frequently seen about stored unprocessed raisins in California and have been reared from larvae feeding on the raisins, but apparently doing only minor injury. The life history has not been worked out. The habits of the larvae are presumably similar to those of *Vitula* and *Ephestia*.

DISTRIBUTION: UNITED STATES: *Colorado*, Denver; *Utah*, Eureka (July, Aug.), Provo (June, July, Aug., Sept.), Stockton (July), Vineyard (June); *New Mexico*, Mesilla (Apr., July); *Arizona*, Fish Creek Station (Sept.), Tempe (Apr.); *California*, Blythe (Sept.), Claremont, Fresno (July), Laguna Beach, Loma Linda (July), Los Angeles (Mar., Apr., July), Pasadena (June), Riverside (Apr., June, July), Sacramento (Mar.), San Diego (Mar., May, June), San Gabriel (July); *Washington*, Almota (Apr.), Bellingham (Aug.), Pullman (June, July, Aug., Sept.), Snake River (June), Wenatchee (Aug.). CANADA: *British Columbia*, Keremeos (Aug.), Seton Lake (Aug.), Victoria, Wellington. MÉXICO: *Baja California*, Ensenada (Apr.)

The name *nigrella* applies only to a suffused color form in which the dark dusting on the central area of forewing extends into the terminal area. In series from any given locality intergrades occur between it and typical *gilvescentella*. The species appears to be confined to the North American region from the Rocky Mountains westward.

573. Ephestiodes infimella Ragonot

FIGURE 590

Ephestiodes infimella Ragonot, N. Amer. Phycitidae, p. 16, 1887; (Ragonot and Hampson), Monograph, pt. 2, pp. 264, 265, 1901.—Hulst, Phycitidae of N. Amer., p. 194, 1900.—Forbes, Cornell Mem. 68, p. 635, 1923.—McDunnough, Check list, No. 6380, 1939.

Forewing similar in pattern and color to the more suffused specimens of *gilvescentella* but averaging smaller. In many specimens, especially those where the basal area is pale and contrasted against the rest of the wing, there is more or less shading of reddish luteous; color as variable as in *gilvescentella*. Hind wing pale to dark smoky fuscous. It is the common species in eastern and central United States. Alar expanse, 10–15 mm.

Male genitalia with the prongs of apical process of gnathos slender, cylindrical, and widely spaced at base. Harpe with the transverse, sclerotized ridge at base of costa not projecting beyond lower margin of harpe; costa irregularly serrate at middle (a variable and not too reliable character, costa however never entirely smooth under high magnification); apex rounded. Transtilla with apices of its elements divergent at their apices but less flaring than those of *gilvescentella*. Aedeagus moderately stout. Female genitalia not essentially different from those of *gilvescentella*.

TYPE LOCALITY: North Carolina (type in Paris Mus.).

FOOD PLANTS: Wild cherry, seeds of *Ambrosia* (Forbes). The wild cherry record is from a specimen reared from larvae collected by A. Busck at Cape Henry, Va.

DISTRIBUTION: UNITED STATES: *Massachusetts*, Martha's Vineyard (Aug.); *Connecticut*, East River; *New Jersey*, Anglesea (June), Montclair (Aug.); *Pennsylvania*, Hazleton (July), Oak Station (July); *Maryland*, Hyattsville (Aug.), Plummers Isl. (May, July); *District of Columbia*, Washington (Aug.); *Virginia*, Cape Henry (July); *North Carolina*, Tryon (Aug.); *Kentucky* (Aug.); *Illinois*, Chicago (June), Putnam County (May, Sept.); *Iowa; Missouri*, St. Louis (June); *Arkansas*, Washington County (July); *Texas*, Burnet County. Also recorded by Hampson from Colombia; but this record is undoubtedly based on a misidentification. From all available evidence the species is limited in its distribution to North America.

574. Ephestiodes erythrella Ragonot

FIGURES 591, 1074

Ephestiodes erythrella Ragonot, N. Amer. Phycitidae, p. 16, 1887; (Ragonot and Hampson), Monograph, pt. 2, pp. 264, 266, 1901.—Hulst, Phycitidae of N. Amer., p. 195, 1900.—McDunnough, Check list, No. 6384, 1939.

Eurythmia coloradella Hulst, Canadian Ent., vol. 32, p. 175, 1900.—McDunnough, Check list, No. 6390, 1939. (New synonymy.)

Ephestiodes benjaminella Dyar, Proc. U. S. Nat. Mus., vol. 27, p. 922, 1905.—McDunnough, Check list, No. 6383, 1939. (New synonymy.)

Forewing vinous red, dusted with whitish gray in the basal area and with some faint blackish dusting along costa and on the veins; in the dry areas of Colorado and Utah the ground color somewhat paler, with considerable whitish gray dusting in the area between the transverse lines and little or no appreciable blackish dusting on costa and veins; transverse lines whitish, somewhat more distinct than in *gilvescentella* and similarly shaped and dark margined (in some specimens they appear curved, in others straight, due to the extent of the blackish shade bordering them, but in reality slightly angled as in the other North American species); discal dots obscure. Hind wings pale to moderately dark smoky fuscous. Alar expanse, 13–17 mm.

Male genitalia similar to those of *infimella* except apex of harpe angulate. Female genitalia showing no distinctive specific characters.

TYPE LOCALITIES: California (*erythrella*, in Paris Mus.); Colorado (*Coloradella*, in AMNH, ex Rutgers); Kaslo, British Columbia (*benjaminella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: UNITED STATES: *Colorado; Wyoming*, Jackson Hole (June); *Utah*, Eureka (May), Provo (June, July); *California*, Alfa (Placer County, July), Baxter (Placer County, July), Camp Baldy (San Bernardino Mts., July), Makehlumne Hill (June); *Washington*, Pullman (June, July, Aug.). CANADA: *British Columbia*, Goldstream (Sept.), Kaslo (June, July, Aug.), Wellington. A long series in the National Collection from Utah.

Like *gilvescentella* and *infimella*, *erythrella* is variable in coloration and intensity of markings and in the shape of the terminal margin of the sclerotized shield behind genital opening of the female. Extremes of individual variation in the shield are shown in figures 1074a, b. The same amount of variation occurs in *gilvescentella*. It has much the same range as the latter, but need not be confused with it, for in dark or light specimens it can be readily identified by its distinctly reddish ground color. Occasional specimens of *infimella* are also reddish but that species does not occur in the same areas as *erythrella*. I am unable to find any character of specific value to distinguish either *coloradella* or *benjaminella* from California examples of *erythrella*, so I am sinking the names in synonymy.

575. Ephestiodes mignonella Dyar

FIGURES 592, 1075

Ephestiodes mignonella Dyar, Proc. Ent. Soc. Washington, vol. 10, p. 113, 1908.—McDunnough, Check list, No. 6381, 1939.

Forewing very pale grayish white; a blackish streak on costa at base and, in many specimens, a subbasal black streak on median vein; transverse lines as in preceding species, white, the antemedial with a strongly contrasted, outer black band and the subterminal with a narrower inner black band, especially pronounced on costal half of wing (sometimes the black borders partially obscured on lower half of wing by pale putty-colored scaling); discal dots fused, black; terminal dots fainter, confluent. Hind wings whitish, with a smoky tinge at apex, along termen, and faintly on the veins, especially on the females. Alar expanse, 12–14 mm.

Male genitalia similar to those of *infimella* except: Harpe with apex angled; enlarged apices of elements of transtilla parallel and facing each other. Female genitalia showing no distinctive specific characters.

TYPE LOCALITY: Kerrville, Tex. (type in USNM).

FOOD PLANT: Unknown.

Represented by 13 specimens from the type locality in the National Collection (Apr.).

The species is easily distinguished by the very pale ground color and strongly contrasted black markings of forewing.

576. Ephestiodes erasa, new species

FIGURES 588, 1077

Forewing very pale gray with some pale putty-colored scaling on lower half, especially towards base; transverse lines faint, distinguishable only under low-powered magnification; their dark borders nearly obliterated; discal dots very faint, obsolescent in some specimens. Hind wings smoky white, little paler than forewing. Alar expanse, 11–13 mm.

Male genitalia with transverse ridge projecting beyond lower margin of harpe (more so than in *gilvescentella*); lower margin of cucullus incurved just beyond transverse ridge; cucullus somewhat reduced. Female genitalia exhibiting no distinguishing specific characters.

TYPE LOCALITY: Lake Alfred, Fla. (type in USNM, 61387).

FOOD PLANT: Unknown.

Described from male type and six female paratypes from the type locality, May 6 and July 2, 1929, L. J. Bottimer, collector. In addition to the type series I have before me a female from Gainesville, Fla. (Apr.), D. M. Bates, and one other female from Winter Park, Fla. (July 23, 1939), H. Fernald. All the foregoing were collected at light.

The species is at once distinguished by its pale, almost unmarked forewings.

577. Ephestiodes lucidibasella Ragonot

FIGURES 593, 1081

Ephestiodaes lucidibasella Ragonot, Nouv. Gen., p. 35, 1888; Monograph, pt. 2, pp. 264, 265, 1901.

Forewing rosy gray, the median and terminal areas heavily and evenly dusted with blackish; the transverse lines decidedly oblique, widely spaced on costa. Ragonot's figure (Monograph, pl. 34, fig. 6) shows a species with an extension of the pale ground color along the lower fold, and according to Clarke's notes the figure is a good representation of the type. Hind wings semitransparent, whitish with a slight smoky tint. Alar expanse, 16 mm.

Gnathos of male genitalia with prongs of apical process somewhat longer than those of the North American species, slender, widely spaced at base and curving apart slightly toward their apices. Harpe without trace of asclerotized, transverse ridge at base of cucullus; edge of costa minutely and irregularly serrate; apex evenly rounded. Transtilla with the enlarged apices of its elements concave, parallel, and facing each other. Female genitalia distinguished by the shape of the sclerotized shield from ductus bursae behind genital opening.

TYPE LOCALITY: Quillota, Chile (type in Paris Mus.).

FOOD PLANT: Unknown.

All known specimens are from Chile. In the Paris Museum, according to Clarke's notes, are three males from the type locality and one male from Valparaiso. A female paratype is in the British Museum. There are no examples in the U. S. National Museum.

578. Ephestiodes productella Ragonot

FIGURE 1078

Ephestiodes productella Ragonot, Nouv. Gen., p. 36, 1888; Monograph, pt. 2, pp. 264, 265, 1901.

This species is known only from the female type in Paris. According to Clarke's note it answers very well to Ragonot's description but not to his figure in the Monograph (pl. 35, fig. 1).

The genitalia are characteristic and should easily identify the species when other females are discovered. The shield behind genital opening has an angulate projection from posterior margin as in North American species, but is appreciably larger and the sclerotized band below genital opening is much stouter and broader. Alar expanse, 15 mm.

TYPE LOCALITY: Given by Ragonot as "Am. Mér." in original description, and as Chiriqui, Colombia, in Monograph (type in Paris Mus.). Nothing on type to indicate the exact locality, but undoubtedly from tropical America.

FOOD PLANT: Unknown.

579. Ephestiodes indentella Dyar

FIGURE 1076

Ephestiodes indentella Dyar, Ins. Insc. Menstr., vol. 3, p. 89, 1915.

Forewing pale gray, the median area shading with blackish scaling; the transverse lines widely spaced on costa, strongly contrasted (especially the antemedial), white; antemedial line decidedly oblique, notched at lower fold and with a black outer border; subterminal indented at vein 6 and slightly at lower fold, and with a narrow black inner border; discal dots separate; terminal dots confluent, not extending to either costa or tornus. Hind wing pale smoky fuscous; veins and terminal margin but slightly darkened. Alar expanse, 12.5–17 mm.

Female genitalia with a wide, deep notch in posterior margin of shield behind genital opening; sclerotized band below genital opening narrow, sinuous; eighth-segment collar broadly and deeply sclerotized on dorsum, its anterior margin produced and rounded.

Male unknown.

TYPE LOCALITY: Bermuda (type in USNM).

FOOD PLANT: Unknown.

Known only from Bermuda. In addition to the type series (Apr.) I have before me 6 females from the British Museum (Mar., Apr.). The species is readily identified by its genitalia. It and *plorella* are tentatively assigned to the first *Ephestiodes* species group, but accurate placement of them will have to wait upon discovery of males.

580. Ephestiodes plorella Dyar

FIGURES 109, 1080

Ephestiodes plorella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 344, 1914.

Eurythmia vestilla Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914 (new synonymy).

Forewing rather pale brownish gray, uniformly colored except for a somewhat paler basal area and a rather broad brownish outer band along the antemedial line; antemedial band but slightly oblique; subterminal line obscure, whitish with only faint trace of a dark inner border; discal dots obscure, when distinguishable, more or less confluent; terminal dots faint, confluent. Hind wing whitish, some of the veins and terminal area very faintly darkened. Alar expanse, 11–14 mm.

Female genitalia with signum developed as a flat plate with serrate edge, the ductus seminalis arising from a hole in the plate; bursa with a few scobinations at junction with ductus bursae; ductus bursae sclerotized for only half its length; no sclerotized band below genital opening; posterior margin of large sclerotized shield behind genital opening evenly rounded except for a very slight narrow central notch; collar of eighth segment narrow but deeply sclerotized on dorsum, its produced anterior margin concave and with a small shallow central notch.

Male unknown.

TYPE LOCALITY: Corazal, Canal Zone, Panamá (*plorella* and *vestilla*, in USNM).

FOOD PLANT: Unknown.

A rather suffused, poorly marked species without much to distinguish it superficially from faded examples of our North American *gilvescentella* or *infimella*. The female genitalia, however, are markedly different from those of any other species in the genus. The absence of a sclerotized band below genital opening, the shapes of the dorsal genital plate and eighth-segment collar, and the peculiar signum at once distinguish them. The venation also differs in that vein 3 of forewing is very closely approximate to, connate, or short stalked with 4–5, and the latter are very long stalked. Dyar's *vestilla* was placed by him in *Eurythmia* on the belief that veins 4 and 5 of forewing were united as they appear to be on superficial examination; but denuded wings (fig. 109) show them long stalked. The female genitalia of his type of *vestella* are identical with those of his *plorella*.

Genus *Ephestiodes*, Species 581: *E. stictella*

[Transtilla complete, with greatly produced, asymmetrical, caudal projections. Harpe with apex of sacculus produced into a free arm. Eighth abdominal segment of male with tufts.]

581. Ephestiodes stictella (Hampson), new combination

FIGURE 596, 1082

Unadilla stictella Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 255, 1901.

Ephestiodes uniformella Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 256, 1901 (new synonymy).

Ephestiodes granulella Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 256, 1901 (new synonymy).

The type of *stictella* is a female. A photograph of its genitalia definitely fixes the species to what I here identify in long series from the Cornell Collection from Puerto Rico and St. Croix. The type of *uniformella* is a male without abdomen and according to Clarke a stained specimen. A photograph shows it to be a dark specimen but no darker than many examples of the St. Croix series.

The type of *granulella* is a male and a photograph of its genitalia fixed it. I have before me other specimens of *stictella* from the Bahamas and of *granulella* from Jamaica that agree in all characters. Hampson's reference of *stictella* to *Unadilla* ignored the diagnostic venational character of that genus, the vertical discocellular vein of hind wing. In *stictella* the discocellular vein is obviously curved. The species is variable in color, ranging from very dark to whitish gray, the ground color (dark or light) being rather uniform over the forewing, the basal area no darker or lighter than the median and terminal areas. Antemedial band rather broad, whitish, oblique and nearly straight, outwardly bordered on costal half by a narrow blackish line; subterminal line narrow, parallel and near to termen, slightly irregular, whitish bordered inwardly towards costa by a thin, faint, blackish line; discocellular spots more or less obsolescent, when distinct, separate and blackish. Hind wing whitish to pale smoky fuscous, shaded with smoky fuscous towards apex and termen. Alar expanse, 10–12 mm.

Male genitalia with transtilla elements fusing at a point and thence developed into two extended, curving, asymmetrical arms; harpe with sacculus produced at extremity into a clasperlike free arm; costa smooth; apex of harpe bluntly pointed; vinculum triangulate, shorter than broad; aedeagus rather slender. Female genitalia with ductus bursae shorter than bursa, sclerotized throughout its length; a narrow flaring sclerotized plate below genital opening; eighth-segment collar divided, its apophyses separated from the dorsal part and firmly attached to the broad shield behind genital opening (fig. 1082b); dorsal portion of collar (fig. 1082a) produced anteriorly into an elongate tongue and laterally into curved, projecting arms.

TYPE LOCALITY: Nassau, Bahamas (*stictella*, *uniformella*, and *granulella*, in BM).

FOOD PLANT: Unknown.

DISTRIBUTION: BAHAMAS: Nassau. JAMAICA, Runaway Bay (Mar.). PUERTO RICO: Coamo Springs (Apr.), Palmas Abajas (June, July), San Germán (Apr., July), Puerto Real (Vieques Isl., Apr.). VIRGIN ISLANDS: Kingshill (St. Croix; May, Oct., Nov., Dec.).

This species on characters of the genitalia seems to deserve a separate generic designation; but until the males of the other tropical species (described from females) are known it seems best to retain it in *Ephestiodes*, with which it agrees on all other than genitalic characters.

Genus *Ephestiodes*, Species 582: *E. noniella*

[Transtilla complete, a narrow band with central loop. Harpe simple. Eighth abdominal segment of male simple.]

582. Ephestiodes noniella Dyar

FIGURES 597, 1079

Ephestiodes noniella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 345, 1914.

Forewing (to the naked eye) gray, the basal area with an olivaceous tint; under magnification the remainder of the wing shows a strong dusting of rosy scaling; antemedial line faint, oblique, narrow, whitish, and faintly bordered outwardly near costa by a narrow dark line; subterminal line almost obliterated; discal dots not distinguishable. Hind wing pale smoky fuscous; the veins and terminal margin but slightly darkened. Eighth abdominal segment of male simple. Alar expanse, 9.5–10 mm.

Male genitalia with the prongs of apical process of gnathos well separated but somewhat reduced. Transtilla complete, a narrow band with a central loop. Harpe simple; costa smooth; apex narrowly rounded. Aedeagus short; penis without armature. Female genitalia like those of typical *Ephestiodes* except: Shield behind genital opening smaller; sclerotized band below genital opening developed as a half oval, caudally projecting shield.

TYPE LOCALITY: La Chorrera, Panamá (type in USNM).

FOOD PLANT: Unknown.

Known only from the type series, two females from the type locality (May) and one male from Río Trinidad, Panamá (Sept.).

The species is an abnormal *Ephestiodes* on male characters (the complete, thin, looped transtilla, lack of cornutus on penis, and absence of tufts on eighth segment), but separate generic designation does not seem warranted at this time.

171. Genus Azaera Schaus

Azaera Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 250, 1913. (Type of genus: *Azaera muciella* Schaus.)

Calamophleps Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 342, 1914. (Type of genus: *Calamophleps squalidella* Dyar.)

Characters of typical *Ephestiodes* except vein 3 of forewing from the stalk of 4–5.

This genus is of doubtful status. There are nothing but differences of specific value in the genitalia to separate it from the type of *Ephestiodes* and, in the latter genus, occasional specimens of *gilvescentella* have vein 3 of forewing connate or even very shortly stalked with 4–5. However, none that I have seen (and I have examined long series of *Ephestiodes*) shows such short stalking on both forewings and none exhibits the considerable stalking of *Azaera* (see fig. 110). As a definite stalking of 3 with 4 and 5 is a rare character in New World Phycitinae, we had better retain the generic separation for the present.

Dyar was in error in assuming that *Azaera* Schaus was a homonym of *Azara* D'Orbigny, so Schaus' name must take precedence over *Calamophleps*.

583. Azaera muciella Schaus

FIGURES 110, 594, 1084

Azaera muciella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 250, 1913.

Calamophleps squalidella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 342, 1914.

Forewing color and markings similar to those of *Ephestiodes plorella* Dyar except that subterminal line

is always distinguishable. The species can be identified satisfactorily only by its venation and genitalia. Hind wing pale smoky fuscous; veins and terminal margin darker. Alar expanse, 11–13 mm.

Male genitalia with prongs of apical process of gnathos rather stout and curved towards each other at their apices. Apices of elements of transtilla greatly developed, widely flaring. Harpe with transverse ridge at base of cucullus projecting beyond lower margin of harpe; lower margin of cucullus with a slight notch at apex. Female genitalia with sclerotized band below genital opening forming a rather broad oval shield; ductus bursae much longer than bursa, sclerotized for no more than half its length; dorsal sclerotized portion of eighth-segment collar a rather broad band.

TYPE LOCALITIES: Juan Viñas, Costa Rica (*muciella*, in USNM), Porto Bello, Panamá (*squalidella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: COSTA RICA: Juan Viñas (Feb.). GUATEMALA: Cayuga (May). PANAMÁ: Corozal (Mar. Apr., May), La Chorrera (May), Porto Bello (May, Dec.).

Dyar acknowledged the synonymy of *muciella* and *squalidella* in his description of the latter. It is borne out by their genitalia. Both types are females.

584. Azaera nodoses (Dyar), new combination

FIGURE 1085

Calamophleps nodoses Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 343, 1914.

Smaller and paler than *muciella*, with the dark borders indicating the transverse lines fragmentary and obscure; but chiefly distinguished by its genitalia. Alar expanse, 10 mm.

Female genitalia with ductus bursae short (no longer than bursa) and sclerotized for its entire length; dorsal sclerotized portion of eighth-segment collar a narrow band.

TYPE LOCALITY: Corozal, Panamá (Apr., type in USNM).

FOOD PLANT: Unknown.

Known only from the unique female type.

585. Azaera lophophora (Dyar), new combination

Calamophleps lophophora Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 343, 1914.

Similar to *muciella* but darker, smoky gray; the transverse lines and their dark borders more distinct. May be only a dark form of *muciella;* but this cannot be determined until more specimens are available, as the two females of the type series (the only specimens known) lack abdomens. Alar expanse, 11–12 mm.

TYPE LOCALITY: Porto Bello, Panamá (May, type in USNM).

FOOD PLANT: Unknown.

The female paratype is from La Chorrera, Panamá (May).

172. Genus Moodna Hulst

Moodna Hulst, Phycitidae of N. Amer., p. 193, 1890.—Ragonot, Monograph, pt. 2, p. xiii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 267, 1901.—Forbes, Cornell Mem. 68, p. 636, 1923. (Type of genus: *Moodna pelviculella* Hulst.)

Tongue well developed. Antenna pubescent; shaft of male with a short, shallow sinus towards base. Labial palpus oblique, subcylindrical, reaching vertex, somewhat rough scaled; third segment nearly as long as second. Maxillary palpus filiform, short. Forewing smooth; 10 veins; vein 2 from before, but rather near, lower outer angle of cell; 3 from the angle; 4 and 5 stalked (for at least half their lengths), the stalk shortly separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 united (9 absent); 10 from the cell, separated from 8 at base; male with a strong costal fold enclosing hair tuft. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, connate, rarely (in individual specimens) very shortly stalked; 7 and 8 anastomosed to or almost to costa (8 absent or a mere vestige at costa); cell less than half (but more than a third) the length of the wing; discocellular vein curved. Eighth abdominal segment of male with compound, dorsal tufts.

Male genitalia with apical projection of gnathos a broad, short, pointed hook. Uncus broad; terminal margin broad, straight or but slightly rounded. Transtilla incomplete. Harpe with apex broadly rounded; two strongly sclerotized subbasal projections from costa. Anellus a narrow semicircular sclerotized band. Aedeagus long, straight, not appreciably tapering, simple; penis bearing one or two elongate, thin, weakly sclerotized plates and a few sclerotized wrinklings, otherwise unarmed. Vinculum long, triagulate.

Female genitalia with signum a small cluster of rounded, short, projecting discs; bursa copulatrix small, wrinkled, the wrinklings weakly sclerotized; ductus bursae long (much longer than bursa), sclerotized for a short distance from genital openings; ductus seminalis from bursa close to signum; an extended ventral lobe from membranous area between ovipositor and eighth-segment collar (figs. 1086a and 1087a).

The species of the *Moodna-Vitula* complex offer a difficult problem in generic placement. Typical species of either genus are obviously different in characters of venation, genitalia, and male antennae; but there are a number of aberrant species that possess characters of both *Moodna* and *Vitula* and will fit in neither genus. If we should attempt to unite all under one genus, we should have a group that could not be defined. I have therefore divided the complex into small units, resurrecting Hulst's *Manhatta* and erecting separate genera for some new species and the aberrant tropical species that have been referred to *Moodna*, or misplaced elsewhere. One name that appears under *Moodna* in our lists (*Ephestia nigrella* Hulst) has veins 4 and 5 of forewing united and is treated elsewhere in this paper as *Caudellia nigrella* (p. 293). It has the habitus of *Moodna*, similar male antennae, is similar in color and maculation to its type, and is apparently derived from

Moodna; but is structurally an advanced development. As here defined, *Moodna* is limited to two species from the United States and México (*ostrinella* Clemens and *bisinuella* Hampson). The genus is easily distinguished from other genera in venational group C by the following combination of characters: Male antenna with a shallow sinus in shaft; eighth abdominal segment of male with tuft; hind wing with vein 2 from well before angle of cell and veins 3–5 connate or very shortly stalked; gnathos terminating in a short, simple hook; transtilla incomplete.

Two species (*Moodna olivella* Hampson and *Hornigia clitellatella* Ragonot) that Hampson (Ragonot Monograph, pt. 2, pp. 268, 269) includes in the genus are unknown to me, and I am unable to place them generically. They are treated briefly at the end of this paper.

On the strength of the supposed synonymy of *Manhatta* Hulst (=*Hornigia* Ragonot, 1887), Hampson cites the European *biviella* Zeller as the type of *Moodna*. This, of course, is inadmissible, for not only was *biviella* not among the species originally included in *Moodna*, but in describing his genus Hulst designated *pelviculella* as its type.

586. Moodna ostrinella (Clemens)

FIGURES 114, 599, 1086

Ephestia ostrinella Clemens, Proc. Acad. Nat. Sci. Philadelphia, 1860, p. 206.—Hulst, Phycitidae of N. Amer., p. 220, 1890.

Horginia obtusangulella Ragonot, N. Amer. Phycitidae, p. 16, 1887.

Moodna pelviculella Hulst, Phycitidae of N. Amer., p. 194, 1890.

Manhatta obtusangulella (Ragonot) Hulst, Phycitidae of N. Amer., p. 197, 1890.

Moodna obtusangulella (Ragonot) Hampson, *in* Ragonot, Monograph, pt. 2, p. 269, 1901.

Manhatta ostrinella (Clemens), Hulst, U. S. Nat. Mus., Bull. 52, p. 436, 1903.

Moodna ostrinella (Clemens) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5795, 1917.—Forbes, Cornell Mem. 68, p. 636, 1923.—McDunnough, Check list, No. 6396, 1939.—Darlington, Trans. Amer. Ent. Soc., vol. 73, p. 91, 1947.

Forewing blackish fuscous; basal area strongly shaded with a deep violet red; terminal area also more or less shaded with the same reddish color; antemedial line distinct, rather wide, nearly straight, white; subterminal line obscure, parallel to termen, slightly and irregularly denticulate; discal spots distinct, more or less confluent and usually set off by some surrounding whitish dusting which extends, in well marked specimens, to costa. Hind wing smoky white to pale fuscous; veins darkly outlined and a narrow dark shade along terminal margin. Alar expanse, 11–17 mm.

Male genitalia with inner costal projection from harpe long, slender, tapering, vertical from costa; outer projection curved outwardly, the two projections pointed away from each other. Uncus with sides nearly parallel. Vinculum evenly tapering. Female genitalia with ductus bursae weakly sclerotized toward genital opening.

TYPE LOCALITIES: Pennsylvania [?] (*ostrinella*, type lost); Texas (*obtusangulella*, in Paris Mus.); Newburgh, N. Y. (*pelviculella*, in AMNH, ex Rutgers).

FOOD PLANTS: *Betula*, *Rhus*, *Quercus*, rose, pear, peach, apple, loquat, iris, cotton, *Pinus*. The larva is more or less a scavenger, feeding on dried seeds and mummied fruits, on dry rose buds, and in galls on roses, in acorns and old cotton bolls. Its favorite food in the neighborhood of Washington, D. C., seems to be the racemes of *Rhus*. It has much the habits of an *Ephestia* except that it is an outdoor insect and does not attack stored products to any extent.

DISTRIBUTION: UNITED STATES: *Maine; Vermont*, Highgate (June); *Massachusetts*, Cohasset (July); *Connecticut*, East River (Aug.); *New York*, East Aurora (Aug.), Ilion (Aug.), Newburgh (July), Rochester (Aug.); *New Jersey*, Dayton (July), Greenwood Lake (June), Pine Brook; *Pennsylvania*, Oak Station (Aug.), West Chester (July); *Maryland*, Hyattsville; *District of Columbia*, Washington (Mar., Apr., July); *Virginia*, Arlington County (Aug.), Blacksburg (June), Cape Henry (Aug.), Great Falls (Mar., Apr., May); *North Carolina*, Southern Pines; *Florida*, Camp Pinchot (Dec.), Hastings (Mar.), Lake Alfred (Aug.), Miami (July, Aug.), Monticello (Mar.), "Southern Florida" (June); *Texas*, Houston (July), Kountze (Apr.), Victoria (Mar., May); *Ohio*, New Richmond (Apr.); *Illinois*, Oconee (Aug.); *Iowa*, Ames (Aug. Sept.). CANADA: *Quebec*, Chelsea (Apr.), Meach Lake; *Ontario*, Trenton (July). Distribution apparently limited to United States and Canada east of the Rockies.

587. Moodna bisinuella Hampson

FIGURES 600, 1087

Moodna bisinuella Hampson, *in* Ragonot, Monograph, pt. 2, p. 268, 1901.

Forewing blackish fuscous with transverse lines obscure; on fresh specimens some reddish scaling in basal area and along the folds (visible only under magnification); antemedial line as in *ostrinella* but very faint; discal spots usually distinguishable and more or less confluent. Hind wing whitish with apical area somewhat smoky; the veins and a line along terminal margin considerably darker. Alar expanse, 17–22 mm.

Male genitalia with inner costal projection from harpe curved outwardly; outer projection curved inwardly, the two projections pointed toward each other. Uncus with sides strongly convex. Vinculum sharply angled at anterior end. Aedeagus considerably stouter than that of *ostrinella*. Female genitalia with ductus bursae strongly sclerotized and striated towards genital opening.

TYPE LOCALITY: Orizaba, México (type in USNM; paratypes in BM).

FOOD PLANT: Corn.

DISTRIBUTION: MÉXICO: Matamoros (July, Aug.), Orizaba, Tehuacán (Sept., Oct.). UNITED STATES: *Texas*, Crystal Springs (Oct.), Weslaco (June).

Larvae of *bisinuella* have been frequently intercepted in ears of green corn from México at border ports by the Division of Foreign Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine.

The species has apparently invaded the United States from México and has become established in a few Texas localities. A larva indistinguishable from *bisinuella* has also been intercepted in green corn from British Honduras but no adults from that locality have been reared to verify the identification.

Hampson's description of the male antenna is misleading. He states that it has "deux sinus profonds à la base de la tige." The shaft is slightly swollen from the second to the seventh segments and beyond the seventh segment has a single short shallow sinus. His male type and several reared males are before me and each of them shows an antennal sinus like that of *ostrinella*.

173. Genus Vitula Ragonot

Vitula Ragonot, N. Amer. Phycitidae, p. 14, 1887; Monograph, pt. 2, p. 81, 1901.—Hulst, Phycitidae of N. Amer., p. 178, 1890.—Forbes, Cornell Mem. 68, p. 631, 1923. (Type of genus: *Vitula dentosella* Ragonot).

Eccopsia Hulst, U. S. Nat. Mus. Bull. 52, p. 430, 1903.—Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 158, 1904. (Type of genus: *Vitula serratilineella* Ragonot.)

Tongue well developed. Antenna simple. Labial palpus upturned in male, more oblique in female, reaching a little above vertex; subcylindrical, somewhat rough scaled; third segment slightly shorter than second. Maxillary palpus filiform, short. Forewing smooth; 10 veins; vein 2 from before, but rather near lower outer angle of cell; 3 from the angle; 4 and 5 stalked for half their lengths, the stalk separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 united (a vestige of 9 present occasionally on one side or another of individual specimens); 10 from the cell, approximate at base to 8; male with a strong costal fold enclosing hair tuft. Hind wing with vein 2 from well before lower outer angle of cell: 3 and 5 from the angle, approximate at base; 7 and 8 anastomosed for all or most of their lengths beyond cell (if present, 8 a mere vestige at costa); cell about one-third the length of the wing (with veins 2, 3, and 5 appreciably long); discocellular vein curved. Eighth abdominal segment of male with compound dorsal tufts.

Male genitalia with apical process of gnathos a short, bluntly pointed hook. Uncus broad; terminal margin broadly rounded. Transtilla complete, an angulate bridge. Harpe with apex rounded; costa slightly humped near middle but without projections. Anellus a narrow, semicircular, sclerotized band with very short lateral lobes. Aedeagus long, straight, not tapering; penis bearing a single elongate, thin, weakly sclerotized plate, otherwise unarmed. Vinculum stout, slightly longer than broad, not appreciably tapering; terminal margin broad.

Female genitalia with signum a small cuplike disc or a cluster of two or more such discs; bursa copulatrix small, more or less scobinate, the scobinations (except in *laura*) prominent as a partial girdle near signum; ductus bursae appreciably longer than bursa, strongly sclerotized for a short distance from genital opening and with a projecting, angulate, sclerotized plate behind genital opening; ductus seminalis from bursa close to signum; ventral membrane between eighth-segment collar and ovipositor not extruded.

As here defined *Vitula* is distinguished from *Moodna* by its simple male antenna, complete transtilla, simple harpe (without costal projection) and the approximate, rather than connate, condition of veins 3 and 5 of hind wing. On the strength of the synonymy of *dentosella* and *edmandsii* Hulst cites *edmandsii* as type of the genus and is followed in this by Ragonot in his Monograph. This is not admissible nomenclatorially, as only *dentosella* was included under the original description of the genus and was definitely named at that time as type by Ragonot.

588. Vitula edmandsae (Packard)

FIGURES 115, 605

Nephopteryx edmandsii Packard, Proc. Essex Inst., vol. 4, p. 120, 1864; Guide to the study of insects, p. 331, 1869.

Vitula dentosella Ragonot, N. Amer. Phycitidae, p. 14, 1887.

Vitula edmandsii (Packard) Hulst, Ent. Amer., vol. 5, p. 156, 1889; Phycitidae of N. Amer., p. 178, 1890.—Ragonot, Monograph, p. 2, p. 82, 1901.—Forbes, Cornell Mem. 68, p. 631, 1923.—Frison, Ann. Ent. Soc. Amer. vol. 19, p. 226, 1926.—McDunnough, Check list, No. 6323, 1939.—Corbet and Tams, Proc. Zool. Soc. London, vol. 113 (B), p. 64, 1943.

Forewing gray more or less dusted with blackish fuscous, especially in the median area (between the transverse lines); on some specimens a reddish ocherous shade along lower fold and inner margin; pale antemedial line obscure, defined chiefly by its contrasted, blackish outer border, the latter from costa near middle, outwardly angled at cell and usually with a slight notch at lower fold; subterminal line parallel to and well in from terminal margin, rather deeply notched at vein 6, and slightly so at lower fold, bordered inwardly by a thin black line; discal dots black, rarely separated, usually fused into a line along discocellular vein. Hind wing pale smoky fuscous, veins darker, a narrow dark line along terminal margin. Alar expanse, 15–22 mm.

Genitalia as given for the genus. The female bursa shows more or less minute scaling near to and at junction of bursa and ductus bursae.

TYPE LOCALITIES: Bridport, Vt. (*edmandsae*, in MCZ); North Carolina (*dentosella*, in Paris Mus.).

FOOD: Honeycomb of bees (larvae feeding on wax, pollen, and comb).

DISTRIBUTION: UNITED STATES: *Vermont*, Bridport; *Massachusetts*, Boston (May), Framingham (Sept.); *Connecticut*, East River (July); *New Jersey*, New Lisbon (Sept.); *Pennsylvania*, Oak Station (Sept.), New Brighton (June, Aug., Sept., Oct.); *District of Columbia*, Washington (June, July, Aug.); *Maryland*, Plummers Isl. (June, July, Aug.); *North Carolina*, Black Mountain (June), Tryon (June, Aug., Sept.); *Kentucky*, Lexington (Mar.); *Missouri*, St. Louis (June); *Illinois*, Lacon (Aug.), Oconee (July); *Arkansas*, Washington County (July); *Florida*, Archer (Mar.). CANADA: *Ontario*, Trenton (Aug., Sept.); *Quebec*, St. Hilaire (June, Sept.).

Occasionally examples of *edmandsae* and its variety *serratilineella* show a vestige of vein 9 on forewing; but in normal specimens the fusion of 8 and 9 beyond the cell is complete, and the species obviously belongs in the group with vein 9 absent. Large pale examples are quite similar in habitus to *Anagasta kühniella* and have been confused with that species in some collections. The mistake is very easy to make if one does not examine the venation of all specimens before him. In his original description Packard stated that he was naming the species after Miss A. M. Edmands of Cambridge. I am therefore emending his name to give it the feminine ending required by the International Code.

589. Vitula edmandsae serratilineella Ragonot, new status

FIGURE 1088

Vitula serratilineella Ragonot, N. Amer. Phycitidae, p. 15, 1887.—Hulst, Phycitidae of N. Amer., p. 179, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 83, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 5, p. 104, 1903 (describes egg and larva); Proc. Ent. Soc. Washington, vol. 6, p. 158, 1904.—Hamlin and Reed, Journ. Econ. Ent., vol. 20, p. 840, 1927.—Essig, Insects of western North America, p. 710, 1929.—Simmons, Reed, and McGregor, U. S. Dep. Agr. circ. 157, p. 38, 1931.—McDunnough, Check list, No. 6324, 1939.

Eccopisa serratilineella (Ragonot), Monograph, pt. 2, p. 33, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 560, 1901.

Eccopsia serratilineella (Ragonot) Hulst, U. S. Nat. Mus. Bull. 52, p. 430, 1903.

Not structurally different from typical *edmandsae* and superficially distinguishable only by its somewhat paler (more whitish) hind wings. I am keeping the name to designate a western race which is of some importance as a minor pest of dried stored fruits in California; but it is probably not entitled even to this distinction. It also attacks the honeycombs of bees in the West, but, as in the Eastern States, does not seem to do any serious damage to thriving bee colonies. In the literature of economic entomology it is known as the "dried fruit moth." Alar expanse, 14–25 mm.

TYPE LOCALITY: North America (probably Southern California; type in Paris Mus.).

FOOD: Honeycombs of bees, dried fruits (apples, figs, raisins, prunes).

DISTRIBUTION: UNITED STATES: *California*, Alameda County (Apr.), Claremont, El Segundo (sand dunes, Mar.), Fresno (May, June, July, Dec.), Humboldt, Los Angeles (Apr.), Mount View (Apr.), San Diego (Apr., June, July), Santa Clara County (Apr.), Santa Cruz County (Feb., June); *Oregon* (no definite locality); *Washington*, Pullman (Feb., Mar., May, July), Wenatchee (Aug., Sept.); *Wyoming*, Cody (July); *Nevada*, Verdi (June); *Utah*, Stockton (Sept.); *Colorado*, Fort Collins; *New Mexico*, Pecos (June), Raton (Oct.); *Arizona*, Baboquivari Mts. (July). CANADA: *British Columbia*, Kaslo (Aug., Sept.), Victoria (June, July), Wellington (July).

590. Vitula lugubrella (Ragonot), new combination

FIGURE 607

Hornigia lugubrella Ragonot, N. Amer. Phycitidae, p. 17, 1887.
Manhatta lugubrella (Ragonot) Hulst, Phycitidae of N. Amer., p. 197, 1890.
Moodna lugubrella (Ragonot) Hampson, *in* Ragonot, Monograph, pt. 2, p. 270, 1901.—McDunnough, Check list, No. 6395, 1939.

I have seen no California specimens that match Ragonot's description or figure. Evidently the forewing shows some appreciable dusting of reddish scales and has the antemedial line straight and approximately vertical (more or less oblique from costa to inner margin). The genitalia of one of Ragonot's male paratypes (from an abdomen loaned by the Paris Museum) are similar to those of *edmandsae* except that the vinculum is longer (like that of *pinei*) and the harpe tapering from middle to a more narrowly rounded apex, as shown in figure 607.

TYPE LOCALITY: California (type in Paris Mus.).

FOOD PLANT: Unknown.

591. Vitula pinei, new species

FIGURES 606, 1090

Forewing white finely dusted with fuscous, giving the wing a pale gray ground color to the naked eye; transverse lines white bordered inwardly and outwardly by sharply contrasted blackish lines; antemedial line slightly angulate; subterminal line bent inward slightly for a short distance from costa, shortly and sharply angled out at middle and slightly notched at lower fold; discal dots fused into a black line along discocellular vein and extending (in fresh specimens) to the black inner border of subterminal line; terminal dots fused into a black line along termen; hair tuft enclosed by costal fold, white. Hind wing whitish, semihyaline with a smoky line along termen and some smoky shading on the veins. Alar expanse, 19–21 mm.

Genitalia differing in slight details from those of *edmandsae;* vinculum longer, its terminal margin more evenly rounded; hump of costa of harpe more angulate; aedeagus stouter; female genitalia considerably longer and sclerotization of ductus bursae somewhat more extended; comparative characters only.

TYPE LOCALITY: Eureka, Utah (type in USNM, 61388).

FOOD PLANT: Pine cones.

Described from male type and one male paratype from the type locality, July 14 and 17, 1911, collected by Tom Spalding; and one female paratype from Baker, Nev., reared by T. O. Thacher, May 28, 1940, from larva feeding in cone of *Pinus monophylla*. The larva was presumably feeding on the seeds or bracts.

The species is easily distinguished from *edmandsae* by the sharply contrasted black double borders of the antemedial and subterminal lines. Superficially it bears a rather striking resemblance to *Laetilia zamacrella* Dyar.

592. Vitula inanimella (Dyar), new combination

FIGURE 1089

Moodna inanimella Dyar, Proc. U. S. Nat. Mus., vol. 54, p. 372, 1918.

Euzophera ticitoa Dyar, Ins. Insc. Menstr., vol. 7, p. 56, 1919 (new synonymy).

A suffused gray-brown species with transverse lines faintly indicated by their very slightly darker borders; similar in maculation to *edmandsae*, but more uniformly colored. The genitalia are also similar, those of the males differing only in insignificant details, the differences no greater than those between individuals of *edmandsae*. Female genitalia have the bursae smooth except for the band of scobinations near signum and the signa themselves smaller. The type of *ticitoa* (fig. 1089a) has one signum, the female paratype of *inanimella* from Orizaba, México (fig. 1089) has two signa, a difference of not specific significance in this genus or the allied *Ephestia* groups. The type of *ticitoa* shows a vestige of vein 9 on one forewing which probably accounts for Dyar's placement of it in *Euzophera*. I am unable to find a valid character for separating Dyar's supposed species and am therefore sinking *ticitoa* into the synonymy of *inanimella*. Alar expanse, 20–21 mm.

TYPE LOCALITIES: Zacualpán, México (*inanimella*, in USNM); Volcán Santa María, Guatemala (*ticitoa*, in USNM).

FOOD PLANTS: Unknown.

DISTRIBUTION: MÉXICO: Orizaba, Zacualpán (May). GUATEMALA: Volcán Santa María (May).

Represented in the National Collection only by the original type series of two males and three females.

593. Vitula laura (Dyar), new combination

FIGURE 1091

Euzophera laura Dyar, Ins. Insc. Menstr., vol. 7, p. 56, 1919.

Forewing dark purplish gray, costal area white; antemedial line indicated by an oblique blackish band extending across the white area and obsolete below; subterminal line white, thin, parallel with and rather close to costa, evenly curved, bordered before and beyond by narrow bands of the dark ground color; some faint white dusting bordering termen; discal dots distinct, separate, black; a row of faint blackish dots along terminal margin. Hind wing a glossy smoky brown; veins and terminal margin darker. Alar expanse, 20 mm.

Female genitalia with bursa copulatrix finely, evenly, and sparsely scobinate; signum a cluster of a half-dozen small discs; ductus bursae with a sclerotized collar forward of the short sclerotized area from genital opening.

TYPE LOCALITY: Cayuga, Guatemala (July; type in USNM).

FOOD PLANT: Unknown.

Known only from the unique female type. It is obviously not a *Euzophera*, and in habitus and female genitalia is not too good a *Vitula*, in which genus it is placed only provisionally. A male will be necessary for definite placement. Vein 9 of forewing is absent and the venation otherwise and the female genitalia indicate that it belongs somewhere in the *Moodna–Vitula* complex.

174. Genus Manhatta Hulst

Hornigia Ragonot, N. Amer. Phycitidae, p. 16, 1887. (Type of genus: *Ephestia biviella* Zeller; Europe; figs. 113, 601, 1092.)

Manhatta Hulst, Phycitidae of N. Amer., p. 196, 1890 (new name for *Hornigia* Ragonot 1887, preoccupied by *Hornigia* Ragonot 1885 in *Galleriidae*).

Characters of *Vitula* except veins 3 and 5 of hind wing connate.

Hampson (*in* Ragonot, Monograph, pt. 2, p. 267, 1901) made *Manhatta* a synonym of *Moodna*, apparently on the connate condition of veins 3 and 5 of the hind wing of *biviella*. This synonymy cannot stand if we are to maintain any generic separation between *Moodna* and *Vitula;* for *Manhatta* has only the hind wing venation and somewhat longer hind wing cell of *Moodna*. In other characters (simple male antenna and complete transtilla) it agrees with *Vitula*, thus occupying an intermediate position between the two genera, but apparently more closely related to *Vitula* than to *Moodna*. In addition to its type (*biviella*), the only European representative of the *Moodna–Vitula* complex, it contains two North American species.

594. Manhatta setonella (McDunnough), new combination

FIGURES 602, 1093

Moodna setonella McDunnough, Canadian Ent., vol. 59, p. 270, 1927; Check list, No. 6398, 1939.

Forewing whitish gray, more or less dusted with blackish scales on lower half of wing, giving that area a somewhat smoky tint; black discal spots and borders of the transverse lines strongly contrasted, the transverse lines themselves not distinguishable from the ground color of wing and indicated only by their black borders; antemedial line bordered outwardly only, the black border normally straight and oblique, but in some specimens slightly angled; subterminal line bulging slightly at middle, bordered inwardly by a narrow black line and outwardly by a black dash at costa, continuing as a paler shade to inner margin; discal dots distinct, separate; a few obscure blackish dots on terminal margin, beginning below apex and ending above tornus. Hind wings semihyaline, whitish with veins and terminal margin pale smoky fuscous. Alar expanse, 14–16 mm.

Male genitalia with costa of harpe produced at apex into a short free spur. Female genitalia with ductus bursae sclerotized for half its length from genital opening, the sclerotized portion constricted at middle; a small sclerotized patch at junction of ductus and bursa; spining of bursa as in typical *Vitula*.

TYPE LOCALITY: Seton Lake, British Columbia (June; type in Canadian Nat. Coll.).

FOOD PLANT: Unknown.

In addition to female paratypes from the type locality there are in the U. S. National Collection two males from Eureka and Provo, Utah (June). The species is easily

recognized by its genitalia; the apically produced costa of harpe and the patch in the neck of the bursa at once distinguishing it from anything else in the *Moodna–Vitula* group. Superficially the moths resemble those of *Vitula pinei* but are smaller and lack the dark border on inner side of the antemedial line.

595. Manhatta broweri, new species

FIGURE 1094

Forewing pale brownish fuscous with a white-powdered area about the discal dots and extending to costa, and some white dusting at tornus; transverse lines white, narrow; at base below fold and extending beyond antemedial line along fold a faint reddish ocherous shade; dark ground color concentrated and intensified as rather diffused broad bands outwardly bordering the antemedial and inwardly bordering the subterminal lines; antemedial line slightly angulate; subterminal line irregularly dentate, parallel with termen; discal dots more or less confluent, brown. Hind wing pale fuscous, veins and terminal margin slightly darker. Alar expanse, 14–16 mm.

Genitalia (male and female) differing very little from those of *Vitula edmandsae* and exhibiting no distinguishing specific characters.

TYPE LOCALITY: Bar Harbor, Maine (type in USNM, 61389).

FOOD PLANT: Unknown.

Described from male type and one male and five female paratypes from the type locality, July 25–30, 1933, and one male paratype from Mount Desert Isl., Maine, July 17, 1934, all collected by Dr. E. A. Brower for whom the species is named. Paratypes deposited in Dr. Brower's collection.

The species is easily identified by its color and maculation. Its male genitalia (of the *edmandsae* type) distinguish it from the other two species of *Manhatta* and its hind wing venation from any species of *Vitula*. It is the only known species of *Manhatta* in the eastern United States.

175. Verina, new genus

TYPE OF GENUS: *Moodna supplicella* Dyar

Tongue well developed. Antenna pubescent (in male the cilia less that the width of shaft in length); shaft of male with a few rough scales at base, above, and just beyond, a slight, very shallow sinus. Labial palpus oblique, slender, reaching above vertex; third segment as long as second. Maxillary palpus filiform, short. Forewing smooth; 10 veins; vein 2 from before, but near, lower outer angle of cell; 3 from the angle; 4 and 5 long stalked; 6 from below upper angle of cell, straight; 8 and 9 united; 10 from the cell approximate to 8 at base; male with a strong costal fold enclosing hair tuft. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, closely approximate at base; 7 and 8 anastomosed for all or most of their lengths beyond cell; cell very short (about one-fourth the length of wing), a trifle longer in female than in male; discocellular vein slightly curved (nearly straight in male). Eighth abdominal segment of male with compound dorsal tufts.

Male genitalia with apical process of gnathos forked, U-shaped. Uncus broad, terminal margin broadly rounded. Transtilla incomplete. Harpe with a short blunt digitate projection from near middle of costa. Anellus a U-shaped sclerotized band. Aedeagus long, not appreciably tapering; penis bearing a couple of elongate, thin, weakly sclerotized plates, otherwise unarmed. Vinculum elongate-angulate, tapering.

Female genitalia with ductus bursae sclerotized for most of its length from genital opening; sclerotized portion slightly flattened; bursa copulatrix sparsely and finely scobinate; an extruded lobe from membranous area between eighth-segment collar and ovipositor (as in *Moodna*).

The genus is distinguished from the other genera in group C by the following combination of characters: Male antenna with slight sinus in shaft; eighth abdominal segment of male with tuft; veins 3 and 5 of hind wing approximate at base, cell very short and discocellular vein very slightly curved; gnathos terminating in a forked process; harpe with digitate projection from costa; transtilla incomplete.

It contains one tropical American species.

596. Verina supplicella (Dyar), new combination

FIGURES 116, 603, 1097

Moodna supplicella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 342, 1914.

Forewing dark vinous, dusted with black especially in area between the transverse lines; basal and tornal areas slightly paler; transverse lines white, slender, powdery and broken, the antemedial line far out and oblique, the subterminal parallel with and close to termen; discal and terminal dots not distinguishable. Hind wing translucent; whitish to pale fuscous; the veins and terminal margin darker. Head and thorax ocherous, more or less shaded with reddish or blackish scaling. Labial palpus ocherous with reddish scaling on terminal segment. Alar expanse, 13–16 mm.

Male genitalia with terminal margin of cucullus of harpe oblique and slightly concave, its lower angle produced, vinculum evenly tapering to abruptly pointed extremity; arms of forked process of gnathos approximate at their apices. Female genitalia with sclerotized portion of ductus bursae strongly striated at genital opening, finely granulate otherwise.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Dried leaves.

DISTRIBUTION: MEXICO: No specific locality (Aug., reared from leaf trash in banana cargo). GUATEMALA: No specific locality (Apr., reared from dried leaves intercepted at quarantine), Guatemala City (Mar.). PANAMÁ: Cabima (May), Porto Bello (Apr., May, Oct.), Río Trinidad (June). BRAZIL: Santa Catarina (July).

This species has been intercepted a number of times at our quarantine ports in banana trash. The larva is apparently a feeder on dry vegetable refuse. The moth is easily identified by its male genitalia and (in fresh specimens) by the broken powdery transverse lines and wine color of its forewings.

176. Vagobanta, new genus

TYPE OF GENUS: *Cryptoblabes divergens* Butler.

Characters of *Verina* except: Antenna of male simple; eighth abdominal segment of male simple; forewing with vein 2 shortly separated from, approximate to, or connate with 3 (more separated in females than in males); hind wing with veins 3 and 5 shortly stalked; cell long (one-half or a trifle over one-half the length of wing); discocellular vein decidedly curved.

Contains one tropical American species.

597. Vagobanta divergens (Butler), new combination

FIGURES 604, 1100

Cryptoblabes divergens Butler, Trans. Ent. Soc. London, p. 60, 1883.

Moodna divergens (Butler) Hampson, *in* Ragonot, Monograph, pt. 2, p. 269, 1901.

Forewing powder gray, the basal area distinctly paler; in fresh specimens an obscure shading of reddish scales on middle of lower fold; antemedial line distinct, decidedly oblique, white, bordered outwardly by a blackish band, nearly straight but in some specimens with a notch at lower fold; subterminal line obscure, sinuate, very faintly bordered by dark line on inner side. Hind wing translucent, white, with a pale brown line along termen and the veins slightly darkened. Alar expanse, 21–25 mm.

Male genitalia with arms of U-shaped apical projection of gnathos very short and widely spaced. Elements of divided transtilla long and stout. Harpe with digitate projection from about middle of costa; outer margin of cucullus rounded and turned up slightly at apex. Anellus V-shaped, with stout base. Aedeagus stout. Vinculum stout, but slightly tapering; terminal end broadly and abruptly angulate, reinforced by a sclerotized, pocketlike fold.

Female genitalia with bursa copulatrix large, finely and sparsely scobinate; signum weak; ductus bursae sclerotized for half its length, the sclerotized portion flattened and bent.

TYPE LOCALITY: Coquimbo, Chile (type in BM).

FOOD PLANT: *Puya alpestris*.

DISTRIBUTION: CHILE: Angol, Coquimbo.

A reared series of eight specimens from Angol, Chile, is in the National Collection, received from D. S. Bullock but undated.

177. Moodnella, new genus

TYPE OF GENUS: *Moodnella paula*, new species.

Tongue well developed. Antenna with slight sinus in shaft of male near base. Labial palpus oblique, slender, reaching a trifle above vertex, third segment shorter than second. Maxillary palpus filiform, rather long (as long as third segment of labial palpus and about twice the length of the maxillary palpi of the other genera in the *Moodna–Vitula* group). Wing venation as in *Vitula*. Forewing with strong costal fold enclosing scale tuft. Hind wing with cell one-third the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia as in *Vitula*.

Female genitalia with ductus bursae very weakly sclerotized for a very short distance from genital opening.

Differs from *Vitula* in having a sinus in the shaft of male antenna, no tufts on eighth abdominal segment of the male; from *Moodna* in its complete transtilla, simple harpe, simple eighth abdominal segment, approximate condition of veins 3 and 5 of hind wing; from *Verina* in its complete transtilla, small hooked, apical process of gnathos, simple harpe, simple eighth abdominal segment, longer cell and more distinctly curved discocellular vein of hind wing; and from all three of these genera by its longer maxillary palpi.

Contains one tropical American species.

598. Moodnella paula, new species

FIGURES 608, 1096

Forewing gray suffused with rufous and shaded with blackish, the blackish shade extending in a narrow band along costa and diffused irregularly in the median area; antemedial white line far out on wing, at or a trifle beyond middle, distinct on lower half, fading out towards costa, bordered outwardly by an irregularly diffused black band; subterminal line narrow, parallel with termen, nearly straight, slightly oblique from costa to vein 6, shortly out-angled just below, thence straight to inner margin, white, bordered inwardly by a narrow blackish band; the area between the transverse lines greatly restricted. Hind wings white to smoky fuscous; the veins faintly darkened and a dark line along termen. Head and thorax reddish ocherous with a scattered dusting of blackish scales. Alar expanse, 14–15 mm.

Male genitalia with uncus narrowly rounded at apex; vinculum long, stout, scarcely tapering, terminal margin broad but very slightly convex (nearly straight).

TYPE LOCALITY: Guatemala City, Guatemala (type in USNM, 61390).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality collected by C. N. Ainslie, Mar. 1932; one female paratype from Santa Catarina, Brazil, collected by Fritz Hoffmann, July 9, 1935; one female paratype from Tigre, Argentina, Aug. 1939, from the collection of Fernando Bourquin; and one female paratype from Viçosa, Minas Gerais, Brazil, E. J. Hambleton, collector, "12–1–34," from the Cornell Collection.

A pretty little species easily recognized by its reddish fuscous color, the narrow interspace between the transverse lines of forewing and the distinct whiteness of these lines on their lower halves.

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Genera 178 and 179: *Volatica* and *Vezina*

[Venational division A. Forewing with 11 veins; 8 and 9 long stalked (9 rather weak). Hind wing with veins 3 and 5 approximate and from lower angle of cell. Labial palpi porrect or oblique. Maxillary palpi minute. Transtilla complete and developed as an angulate bridge, or incomplete. Ductus bursae with projecting sclerotized shield behind genital opening.]

178. Volatica, new genus

TYPE OF GENUS: *Zophodia pachytaeniella* Ragonot.

Tongue well developed. Antenna pubescent, simple. Labial palpus porrect (second segment oblique, third deflected forward), extending twice the length of head beyond it, broadly scaled, third segment less than half the length of second. Maxillary palpus minute, filiform. Forewing smooth; 11 veins; vein 2 from before, but near, lower outer angle of cell; 3 from the angle; 4 and 5 stalked (for at least half their lengths), the stalk separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 long stalked (free element of 9 sometimes weak, but always present); 10 from the cell, separated from the stalk of 8–9 at base; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, approximate at base; 7 and 8 anastomosed beyond cell for at least half their lengths; cell about half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia of the *Vitula* type but larger and more robust.

Female genitalia with or without signa; bursa copulatrix more or less finely scobinate; ductus bursae shorter (in *pachytaeniella*) or very little longer than bursa (*trinitatis*), sclerotized for over half its length, the sclerotized portion flattened except just before genital opening and with a more or less rounded, projecting, sclerotized shield behind genital opening; ductus seminalis from bursa near signum.

The genitalia, male and female, show the close relationship of this genus to the *Vitula* group despite the forewing venation which is definitely that of venational division A. Vein 9 while sometimes weak is always present. In *Vitula* on the other hand vein 9 is normally absent, being present and weak only in occasional specimens. *Volatica* is distinguished from all the other genera of the *Moodna–Vitula* complex by its porrect, broadly scaled labial palpi.

599. Volatica pachytaeniella (Ragonot), new combination

FIGURES 610, 1098

Zophodia pachytaeniella Ragonot, Nouv. Gen., p. 31, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 23, 1901.

Forewing white lightly sprinkled with brownish fuscous scales giving the costal half of the wing a soiled ashy white appearance; lower half of wing smeared with a pale drab shade; on fresh specimens a pink streak along lower margin at base; antemedial line angulate, indicated chiefly by a rather broad blackish brown outer border; subterminal line more or less irregularly dentate, bordered inwardly by a narrow blackish fuscous line; discal spot at lower outer angle of cell distinct, upper discal spot occasionally distinct but often obscure or absent. Hind wing white; a broad fuscous shade along costa; some darkening of the veins and a distinct dark line along termen, broadening in most specimens. Alar expanse, 26–33 mm.

Male genitalia with vinculum slightly constricted before terminal margin; apical end of harpe somewhat spatulate. Female genitalia with bursa copulatrix elongate, much longer than ductus bursae; signum present, consisting of a short band of partially fused discs; ductus bursae sclerotized for its entire length.

TYPE LOCALITY: Rio de Janeiro, Brazil (type in Paris Mus.).

FOOD PLANT: Unknown.

DISTRIBUTION: BRAZIL: *Paraná*, Castro, Ypiranga; *Rio de Janeiro*, Petrópolis; *Santa Catarina* (no dates on any specimens before me).

A large, distinct species so far only known from Brazil, easily identified by maculation, color, and genitalic structure.

600. Volatica trinitatis, new species

FIGURES 609, 1099

Somewhat narrower winged than *pachytaeniella*, similarly colored, but with whitish area of forewing restricted to a narrower border along costa; transverse lines obscured, only the antemedial line indicated in male by a partial dark outer border, very faint in the males before me, absent in the female; the latter shows some dark scaling on the veins and has fuscous hind wings; hind wing of male white with little or no dark shading along costa or termen. Alar expanse, 24–26 mm.

Male genitalia with apical process of gnathos longer than in *pachytaeniella* (over twice as long as broad); terminal margin of harpe evenly rounded; vinculum not appreciably constricted towards terminal margin. Female genitalia with bursa copulatrix somewhat shorter than ductus bursae, without signum; ductus bursae sclerotized for not more than two-thirds of its length, bent slightly near membranous part of the ductus. There are also differences in the shape of the dorsal projecting shield at genital opening between *trinitatis* and *pachytaeniella*, but these differences may not be significant.

TYPE LOCALITY: Fyzabad, Trinidad (type in Cornell Univ. Coll.).

FOOD PLANT: Unknown.

Described from male type and one male and one female paratype from the type locality (Feb. 17, 19, 21, 1928) from the Cornell Collection, and one male paratype (USNM 61391) from Trinidad, without date or more exact locality, collected by A. Busck.

The species is very close to but apparently distinct

from *pachytaeniella*, easily distinguished by its genitalia, the more extended drab suffusion and less distinct transverse lines on forewing.

179. Vezina, new genus

TYPE OF GENUS: *Vezina parasitaria*, new species.

Tongue well developed. Antenna pubescent, simple. Labial palpus oblique; reaching as high as vertex; rather broadly and roughly scaled; third segment shorter than second. Maxillary palpus short, filiform. Forewing smooth; 11 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle; 4 and 5 stalked for half their lengths, separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 long stalked; 10 from the cell, separated from 8 at base; male with a strong costal fold enclosing hair tuft. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 from the angle, approximate at base; 7 and 8 anastomosed for most of their lengths beyond cell; cell about one-third the length of the wing in male, one-half in female; discocellular vein curved. Eighth abdominal segment of male with two pairs of dorsolateral hair tufts.

Male genitalia with apical process of gnathos a short, bluntly pointed hook. Uncus broad; terminal margin broadly rounded. Transtilla incomplete; its elements weakly sclerotized. Harpe with a short angulate projection from costa near middle and with apex of costa produced into a free hook at apex (as in *Anagasta kühniella*). Anellus a stout, broad, semicircular band with broad, deep, V-shaped ventral incision. Aedeagus long, stout; penis armed with a thin, narrow, sclerotized band and a stout, thornlike, broadly based spine. Vinculum stout; tapering slightly; terminal margin moderately broad.

Female genitalia with signum a small cuplike disc or discs; bursa minutely and sparsely granulate; ductus bursae granulate towards junction with bursa, with a strongly sclerotized collar surrounding a broad genital opening and with a broad, projecting, sclerotized shield behind genital opening; ductus seminalis from bursa close to signum.

This genus, like *Volatica*, is close to and obviously related to *Vitula* despite its forewing venation. It is distinguished by the following combination of characters: Vein 9 of forewing present; eighth abdominal segment of male with paired dorsal tufts; transtilla incomplete; penis armed with a stout, thornlike cornutus; anellus a broad, semicircular band with V-shaped ventral incision; ductus bursae with broad sclerotization surrounding broad genital opening.

601. Vezina parasitaria, new species

FIGURES 598, 1068

Forewing dark gray (grayish brown on worn and faded specimens); transverse lines white and strongly contrasted from inner margin to cell, thence to costa pale but more obscure, narrowly bordered inwardly and outwardly by black lines; these most obvious from lower margin of cell to costa; antemedial line at middle of wing and nearly vertical; subterminal line oblique and well back from termen; the interspace between the lines short; discal spots at end of cell, confluent and forming a thin black line along discocellular vein; terminal dots obscure. Hind wing shining white, with a fuscous shade along costa, some fuscous shading at apex and a narrow dark line along termen. Alar expanse, 17–25 mm.

Male genitalia with vinculum but slightly longer than broad; terminal margin angulate. Female genitalia with a short, thornlike pouch projecting from venter of ductus bursae near genital opening.

TYPE LOCALITY: José C. Paz, Province of Buenos Aires, Argentina (type in USNM, 61392; paratypes in Mus. Argentino Cienc. Nat., Buenos Aires, and BM).

FOOD: Larvae feeding in larval cases of *Oiketicus kirbyi* Guilding.

Described from male type and one male and one female paratype from the type locality; one male paratype from Juan B. Gonnet, Province of Buenos Aires; five female paratypes from Tigre, Argentina; and one female paratype from southeast Brazil, F. D. Jones, 1920, this last from the British Museum Collection. The Argentinian specimens were received from Dr. Everard E. Blanchard, Director and Señor José A. Pastrana, Ingeniero, of the Instituto de Sanidad Vegetal of the Ministerio de Agricultura in Argentina. They had been reared by Señor Pastrana and Dr. Pablo Köhler from small larvae in the larval cases of the psychid *Oiketicus kirbyi* Guilding. Dr. Köhler identified them as a new species to which he gave the manuscript name "*Canarsia parasitaria*" upon the assumption that the species was parasitic on the *Oiketicus*. With Dr. Köhler's permission I am adopting his manuscript specific name, but am in doubt as to the parasitic nature of the larva. According to Señor Pastrana the actual feeding habits have not been noted, and I am inclined to believe (from its close affinities to the *Moodna–Vitula* complex) that *parasitaria* is a scavenger rather than a parasite or predator upon the living *Oiketicus* larva or pupa. In a letter of Dec. 29, 1947, Dr. Blanchard states that, in the Province of José C. Paz, Señor N. Jauch has observed larvae of *parasitaria* on the remains of bagworms and a few days later all traces of bagworms had disappeared, suggesting that the larva are feeders upon the bagworms at least to the extent of eating the larval and pupal exuviae or the remains of the dead females of *Oiketicus*.

The species is a striking one easily recognized by its bright white transverse lines with narrow black borders contrasted against the otherwise dark gray ground color of the forewing. The female genitalia are different in the armature about genital opening from any other in the subfamily.

Genera 180–185: *Caudellia* to *Plodia*

[Venational division E. Forewing with 9 veins; 10 from the cell; 9 absent; 4 absent; 2 and 3 from the cell. Hind wing with discocellular vein curved. Male genitalia with transtilla complete or its elements greatly enlarged. Female genitalia with ductus bursae sclerotized for a considerable part of its length and usually flattened.]

180. Genus Caudellia Dyar

Caudellia Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 116, 1904.—Forbes, Cornell Mem. 68, p. 636, 1923. (Type of genus: *Caudellia apyrella* Dyar.)

Tongue well developed. Antenna pubescent; shaft of male with a short, shallow sinus near base (as in *Moodna*). Labial palpus oblique, reaching to or slightly above vertex, somewhat flattened laterally; third segment nearly as long as second (somewhat broadly scaled and deflected forward in *apyrella* and *albovittella*). Maxillary palpus minute, filiform. Forewing smooth; 9 veins; vein 2 from before but rather near lower outer angle of cell; 3 from the angle; 4 absent; 5 more or less approximate to 3 at base; 6 from below upper angle of cell, straight; 8 and 9 united (9 absent); 10 from the cell, separated from 8 at base; male with costal fold enclosing a scale tuft. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 connate, rarely very shortly stalked; 7 and 8 anastomosed for most or all of their lengths beyond cell (8 when present very short); cell one-half or slightly less than half the length of wing; discocellular vein curved. Eighth abdominal segment of male with compound dorsal tufts.

Male genitalia with transtilla complete (*declivella*) or its elements broadened and often fused with arms of gnathos. Aedeagus straight, smooth; penis with cornutus developed as a weakly sclerotized, narrow, flattened band, otherwise unarmed.

Female genitalia with ductus bursae sclerotized for a third or more of its length from genital opening; signa present as a cluster of small, bluntly rounded, projecting discs or spines more or less fused at their bases; ductus seminalis from bursa adjacent to signa (approximately at middle of bursa).

This genus and the following genera with sclerotized ductus bursae form a compact, strictly American group closely related to and evidently derived from the *Moodna–Vitula* complex. The moths of *Caudellia* also resemble *Moodna* in color and maculation and male antennal structures. The species differ markedly from each other in male genitalia. On labial palpi they divide into two groups:

Palpus somewhat broadly scaled and third segment deflected forward.
Palpus slender and third segment not deflected.

The deflection of the third segment in our two species from the Eastern United States is rather slight and does not give the palpus nearly so pronouncedly porrect an appearance as, for example, that of *Plodia*, and I do not believe justifies any generic separation of the two species groups.

Genus *Caudellia*, Species 602 and 603: *C. apyrella* and *C. albovittella*

[Labial palpus somewhat broadly scaled and third segment detected forward.]

602. Caudellia apyrella Dyar

FIGURES 122, 613

Caudellia apyrella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 116, 1904.—Forbes, Cornell Mem. 68, p. 636, 1923.—McDunnough, Check list, No. 6376, 1939.

Forewing vinous brown overlaid with blackish brown, the blackish shading most obvious at apex; a faint pale patch on outer third of costa; transverse lines and discal spots obscured, the antemedial line very faintly indicated, oblique, pale vinous brown. Hind wing whitish, faintly tinted with fuscous; veins not appreciably darkened. Alar expanse, 14–15 mm.

Male genitalia with gnathos terminating in a stubby, angulate projection; harpe simple.

TYPE LOCALITY: Plummers Island, Md. (type in USNM).

FOOD PLANT: Unknown.

Known only from the type (♂, July) and paratype (♂, June) from the type locality.

603. Caudellia albovittella Dyar

FIGURE 1103

Caudellia albovittella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 116, 1904.—Forbes, Cornell Mem. 68, p. 636, 1923.—McDunnough, Check list, No. 6377, 1939.

Forewing vinous brown shaded with blackish brown, the blackish shading less diffused than in *apyrella*, concentrated as a dark median streak at base, a dark blotch on outer side of antemedial line and a fainter shade at apex; antemedial line oblique, strongly contrasted, white, preceded by a short white dash on inner margin; subterminal line obscure, distinguishable on fresh specimens as a thin irregular pale line near termen; discal dots faint, blackish, separate; terminal dots confluent. Hind wing pale fuscous, veins very slightly darkened. Alar expanse, 13–21 mm.

Male genitalia not distinguishable from those of *apyrella*. Female genitalia with ductus bursae sclerotized for slightly less than half its length from genital opening; signa a double line of 6 to 8 short discs, close together and fusing at their bases.

TYPE LOCALITY: Plummers Island, Md.

FOOD PLANT: Unknown.

DISTRIBUTION: *Maryland*, Hyattsville (July), Plummers Isl. (June, July); *Missouri*, St. Louis (Aug.).

Probably not specifically distinct from *apyrella* which may be only a suffused color form or food-plant race; but as nothing is known of the biology and no females corresponding to the males of *apyrella* are available for genitalic comparison, the two will have to be kept as separate species for the time being.

Genus *Caudellia*, Species 604–607: *C. nigrella* to *C. clara*

[Labial palpus slender and third segment not deflected.]

604. Caudellia nigrella (Hulst), new combination

FIGURES 611, 1102

Ephestia nigrella Hulst, Phycitidae of N. Amer., p. 200, 1890.
Mescinia nigrella (Hulst) Ragonot, Monograph, pt. 2, p. 85, 1901.
Moodna nigrella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5796, 1917.—McDunnough, Check list, No. 6397, 1939.
Ephestia arizonella Walter, Proc, Ent. Soc. Washington, vol. 30, p. 141, 1928.—McDunnough, Check list, No. 6405, 1939. (New synonymy.)

In color and markings resembles *Moodna ostrinella*. Forewing blackish fuscous; basal area more or less shaded with red or reddish ocherous, especially on lower half, this reddish shade sometimes extending outward for a short distance along lower fold, reappearing in tornal area; antemedial line distinct, rather wide, nearly straight, and in many specimens apparently vertical but actually a trifle oblique; subterminal line obscure, parallel to termen, slightly and irregularly denticulate; discal dots sometimes obscured by the blackish dusting of median area but usually distinct, more or less confluent and set off by some surrounding pale dusting which extends in well marked specimens to costa. Hind wing white, smoky white or pale fuscous; veins darkly outlined, some dark shading and a narrow dark line along termen. Alar expanse, 14–20 mm.

Male genitalia with gnathos terminating in a short, bluntly pointed, straight spike; elements of transtilla thin, broad, lightly sclerotized, fusing with arms of gnathos and extending beyond them to subanal plate (fig. 611a); harpe with a very short digitate projection from basal third of costa, apex broadly rounded; vinculum long, its terminal margin sharply angled; aedeagus long and stout. Female genitalia with ductus bursae sclerotized for about half its length, the sclerotized portion longitudinally wrinkled for its entire length; signum a longitudinal series of four or five small discs.

TYPE LOCALITIES: Blanco County, Tex. (*nigrella*, in USNM); Tempe, Ariz. (*arizonella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Texas*, Blanco County (Aug.), Brownsville (Mar.), San Benito (Mar., June, July, Sept.); *Arizona*, Catalina Springs (May), Mohave County (Sept.), Redington, Tempe (Aug., Sept.), Yuma (June); *California*, Death Valley (Apr.), La Puerta Valley (July), Palm Springs (Mar.).

Like *Moodna ostrinella* a variable species in color. The name *arizonella* refers only to a color form with pale reddish ocherous shading on the basal area of forewing. Its genitalia (male and female) agree in every detail with those of typical *nigrella*. The latter name has been "kicked around" rather carelessly by later authors since its original placement by Hulst. He alone seems to have examined the venation, which would allow reference to *Ephestia* but not to *Moodna* and certainly not to *Mescinia*.

605. Caudellia declivella (Zeller), new combination

FIGURES 612, 1104

Ephestia declivella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 244, 1881.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 305, 1901.—Dyar, Proc. Ent. Soc. Washington, vol. 31, p. 17, 1929.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 175, 1932.
Ephestia animosella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 345, 1914.

Forewing red heavily dusted with black especially in the median area, the red shade more obvious in basal and terminal areas and along the fold; antemedial line strongly contrasted, white, narrow, straight, oblique; from antemedial line to base a subcostal streak of white scaling (only distinguishable in fresh specimens); subterminal line faint and very narrow, near to and parallel with termen; discal dots obscure, some white dusting in the area surrounding them. Hind wing pale translucent fuscous, darker on the veins and towards terminal margin. Alar expanse, 10–13 mm.

Male genitalia with transtilla complete, developed as a bridge with humped central projection; apical projection of gnathos a very short, blunt, knoblike hook; harpe simple; aedeagus rather slender.

Female genitalia with ductus bursae sclerotized for most of its length, some sclerotized ridges at the junction with bursa copulatrix; signa a cluster of minute, blunt discs.

TYPE LOCALITIES: Honda, Colombia (*declivella*, in BM); Porto Bello, Panamá (*animosella*, in USNM).

FOOD PLANT: Unknown. Larva probably a scavenger on dried vegetable matter.

DISTRIBUTION: PANAMÁ: La Chorrera (Apr.), Porto Bello, (May), Río Trinidad (Mar., May, June). COLOMBIA: Honda, Maraquita.

The species is easily recognized by its male genitalia which are similar to those of *Manhatta biviella* of Europe, but unlike anything else from the Americas.

606. Caudellia colorella (Dyar), new combination

FIGURES 614, 1101

Ephestia colorella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 345, 1914.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 192, 1932.

Superficially similar in every respect to *declivella* except that reddish areas of forewing are paler, ocherous red rather than dull red as in *declivella*. In the hind wing veins 3 and 5 are sometimes very shortly stalked. They are occasionally so in *declivella*, but in the latter normally are connate (not separate as Dyar states in his original description of *animosella*). Alar expanse, 11–14 mm.

Male genitalia with transtilla completely fused with gnathos and greatly broadened posteriorly. Harpe with short, blunt projections from costa at middle and apex; uncus broadly triangulate. Female genitalia with ductus bursae sclerotized for two-thirds its length from genital opening, not sclerotized at junction with bursa.

TYPE LOCALITY: Taboga Island, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Cabima (May), Corozal (Mar.), Porto Bello (May), Taboga Isl. (Feb.).

607. Caudellia clara, new species

FIGURE 615

Pattern and color of forewing much as in the two preceding species except the red shading more confined to streaks along the folds and rather inconspicuous; white antemedial line and the white extension from it along costa to base more strongly contrasted; general ground color purplish fuscous; discal dots rather well marked and set in a clear white field. Hind wing whitish; the veins and a narrow line along termen pale fuscous. Alar expanse, 13.5 mm.

Male genitalia with elements of transtilla very broad and completely fused with arms of transtilla; gnathos terminating in an elongate, stout, blunt hook; uncus broad throughout, its terminal margin straight; harpe with an enlarged flattened scooplike projection from base of costa; costa broadly sclerotized and slightly and bluntly projecting at apex. Female unknown.

TYPE LOCALITY: El Yunque, Luquillo Mts., Puerto Rico (type in Cornell Univ. Coll.; paratype in USNM, 61393).

FOOD PLANT: Unknown.

Described from male type and one male paratype from the type locality, 1,500 to 2,000 ft., Cornell lot No. 795, sub. 38, Apr. 22, 1930.

A distinct species, but in color and maculation hardly separable from *declivella*. However, the male genitalia are distinctive and easily identify the species.

181. Genus Microphestia Dyar

Microphestia Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 346, 1914. (Type of genus: *Microphestia animalcula* Dyar.)

Tongue short (but not completely enclosed by labial palpi). Antenna of female roughly scaled. Labial palpus oblique, slender, reaching nearly to vertex; third segment slightly shorter than second. Maxillar palpus minute, filiform. Forewing smooth; 9 veins; vein 2 from very near lower, outer angle of cell; 2, 3, and 5 slightly separated and approximately equidistant at base; 4 absent; 6 from below upper angle of cell, straight; 9 absent; 10 from cell, separated from 8 at base. Hind wing with 2 from well before lower angle of cell; 3 and 5 shortly stalked (not long stalked as stated by Dyar); 7 and 8 completely anastomosed beyond cell; cell one-half the length of wing; discocellular vein curved.

Female genitalia with ductus bursae sclerotized for most of its length from genital opening, the sclerotized area flattened; a triangulate, projecting, sclerotized shield behind genital opening.

The above diagnosis is incomplete, as the male is unknown. The genus is doubtfully distinct from *Caudellia*. It is distinguished from the latter chiefly by its reduced tongue and the small size of its type, 8 mm.

608. Microphestia animalcula Dyar

FIGURE 1114

Microphestia animalcula Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 346, 1914.

Forewing unicolorous, dark glossy brown; under magnification the faintest indication of a thin, pale, oblique antemedial line; no other markings. Hind wing pale fuscous. Alar expanse, 8 mm.

Female genitalia having bursa without signum; ductus bursae no longer than bursa; ductus seminalis from approximately middle of bursa.

TYPE LOCALITY: Río Trinidad, Panamá (Mar.; type in USNM).

FOOD PLANT: Unknown.

Known only from the unique female type.

182. Sosipatra, new genus

TYPE OF GENUS: *Ephestia rileyella* Ragonot

Characters of *Caudellia* except: Shaft of male antenna simple; labial palpus oblique or erect; apical process of gnathos enlarged (broadened), undivided, knobbed or looped; harpe with apex of costa produced as short spine at apex, or apex of costa and cucullus upturned; transtilla complete, an angulate bridge entirely free of gnathos; ductus seminalis from bursa copulatrix near its junction with ductus bursae; eighth abdominal segment of male with compound dorsal tufts or simple. In the hind wing, veins 3 and 5 are either connate or shortly stalked. Signum, when present, a single, blunt, thornlike disc, adjacent to ductus seminalis.

The new genus brings together a group of American species having a consistent female character in the position of ductus seminalis in relation to the bursa and a male character in the broadened apical process of gnathos. On the harpe and the eighth abdominal segment of the male it divides into two groups as follows:

Harpe with costa produced at apex into a short spine; eighth abdominal segment of male with compound tufts.

Harpe with apex of costa and cucullus upturned; eighth abdominal segment of male simple.

Genus *Sosipatra*, Species 609–612: *S. rileyella* to *S. thurberiae*

[Harpe with costa produced at apex into a short spine; eighth abdominal segment of male with compound tufts.]

609. Sosipatra rileyella (Ragonot), new combination

FIGURES 616, 1105

Ephestia rileyella Ragonot, N. Amer. Phycitidae, p. 17, 1887.—Hulst, Phycitidae of N. Amer., p. 198, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 294, 1901.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 182, 1932.—McDunnough, Check list, No. 6400, 1939.

Forewing cream white very sparsely sprinkled with black scales; costal edge for half the distance from base

to antemedial line black; antemedial line indicated by two black spots, one above the other, on median and lower folds, rarely with additional black dots above and below them; subterminal line indicated by an oblique series of black spots on the veins; discal spot on lower outer angle of cell conspicuous, black, the discal spot on upper angle of cell more or less obsolescent. Hind wings translucent, shining white; a fine brown line along termen; veins faintly, if at all, darkened. Alar expanse, 15–23 mm.

Male genitalia distinguished chiefly by the shapes of transtilla (fig. 616b) and apical process of gnathos (fig. 616a). Female genitalia with signum.

TYPE LOCALITY: Utah (type in Paris Mus.).

FOOD PLANTS: *Yucca, Nolina.*

DISTRIBUTION: UNITED STATES: *Utah*, Eureka (June), Penah (Feb.); *Colorado*, Grand Junction (July); *California*, Loma Linda (Mar.), Los Angeles County (June, July, Sept.), Mohave (May), Morongo (Apr.), Phelan (May), Pipes Canyon (San Bernardino Mts.; Mar., Apr., May), San Pasqual (Apr.); *Arizona*, Catalina Springs (May), Chiricahua Mts. (Apr., May), Mohave County (Sept., Oct.), Phoenix (Apr.), Pinal Mts. (May); *New Mexico*, Albuquerque (July), Valencia County; *Texas*, Brownsville. MÉXICO: Sonora.

A species easily recognized by its wing color and maculation and its close association with *Yucca*. The larva feeds upon the dry seeds in the pods of several species of that genus. There are also in the National Collection three specimens reared in 1939 by W. D. Pierce from larvae feeding in the seed pods of *Nolina parryi* at Pipes Canyon, San Bernardino Mts., Calif. *N. parryi* is a plant closely related to *Yucca* and by some botanists classified under the latter genus.

610. Sosipatra micaceella (Hampson), new combination

FIGURE 617

Ephestia micaceella Hampson, *in* Ragonot, Monograph, pt. 2, p. 298, 1901.

Forewing gray-brown powdered with black, the black dusting heaviest on the costal half of wing, under magnification some white scaling that gives the costal margin the bluish gray tint mentioned by Hampson; two black spots on costa near base; antemedian line faint but distinguishable, pale gray, well out towards middle of wing and nearly vertical, bordered outwardly by some black dashes, the latter most pronounced on upper margin and middle of cell and on lower fold, the two upper dashes more or less confluent and extended into the cell; subterminal line oblique, parallel to termen, inwardly angled at vein 6 and slightly so at lower fold, bordered inwardly by a black line (broken more or less into short dashes on the veins); discal spots confluent, forming a black line along discocellular vein; an obscure blackish line along termen. Hind wing translucent, white; the veins outlined by pale fuscous, a fuscous shade along costa and narrowly bordering the termen. Alar expanse, 18–19 mm.

Male genitalia similar to those of *rileyella* except for slight differences in the shapes of transtilla and apical process of gnathos.

The female is unknown.

TYPE LOCALITY: México (type in the collection of the Abbé Joannis).

FOOD PLANT: Unknown. The type was reared from a larva found in a cocoon of (*Attacus*) *Rothschildia orizaba* (Westwood) but the larval habits were not noted.

Known only from México. There are two males in the National Collection from the city of México (Nov.). One of these is badly rubbed; but the other is in fair condition, only the lower half of the forewing being somewhat rubbed, and it answers well to Hampson's description. Richards and Thomson in their paper on *Ephestia* (Trans. Ent. Soc. London, vol. 80, p. 183, 1932) give a description of *micaceella* from a male so determined by Hampson in the British Museum. They publish no figures, but describe the genitalia; and their description raises some doubt as to what they had, for they state that the "dorsal thickenings" of anellus (our transtilla) are "absent, replaced by broad ventral thickenings of the tegumen itself." If they had an example of *micaceella* before them, this is obviously a misinterpretation of structure from a poor preparation; for *micaceella* has as distinct a transtilla as *rileyella* and no broad ventral thickening of the tegumen. No phycitid in any nearly related group has such a tegumen.

611. Sosipatra anthophila (Dyar), new combination

FIGURES 618, 1106

Eurythmia anthophila Dyar, Ins. Insc. Menstr., vol. 13, p. 226, 1925.—McDunnough, Check list, No. 6394, 1939.

Forewing bluish gray, rather broadly shaded with white along costa and with some faint white dusting in terminal area; antemedial line slightly angulate, white outwardly bordered by blackish shading, especially below the white costal suffusion; subterminal line thin, white, practically straight, bordered inwardly by a narrow blackish shade and outwardly for a short distance from costa by a similar blackish shade; discal dots distinct, separate; terminal dots obscure. Hind wing white, translucent; a narrow, pale yellowish fuscous line along termen. Alar expanse 15–16 mm.

Male genitalia with apical process of gnathos a short, stout, blunt, oval, scooplike hook; transtilla arched, flattened at middle; vinculum with terminal margin angulate. Female genitalia with the bursa somewhat more strongly scobinate than in other species of the genus, especially near and at junction of bursa and ductus bursae; signum present.

TYPE LOCALITY: Uvalde, Tex. (type in USNM).

FOOD PLANT: *Opuntia* (larva feeding in the flowers).

Known only from the type series, a male from Uvalde (May) and one male and one female from Devils River, Tex. (May).

612. Sosipatra thurberiae (Dyar), new combination

FIGURES 619, 1107

Eurythmia thurberiae Dyar, Ins. Insc. Menstr., vol. 5, p. 46, 1917.—McDunnough, Check list No. 6393, 1939.

Forewing bluish gray more or less dusted with black, in some specimens the entire area between the transverse lines suffused with black, a fine whitish dusting usually sets off the entire basal area; antemedial line well out towards middle of wing, narrow and nearly vertical, narrowly bordered outwardly by some accentuation of the black dusting; subterminal line parallel to termen, slightly angled inwardly at vein 6 and lower fold; discal dots more or less distinct (at least the lower one) and from them a broadening wedge of pale scaling, extending to costa; terminal dots obscure, more or less confluent. Hind wing white to pale smoky fuscous; the veins more or less darkened and a narrow dark line along termen. Alar expanse, 11–19 mm.

Male genitalia similar to those of *anthophila* but easily distinguished by the shapes of transtilla and apical process of gnathos; terminal margin of vinculum evenly rounded. Female genitalia with very slender signum.

TYPE LOCALITY: Bowie, Ariz. (type in USNM).

FOOD PLANTS: *Cercis occidentalis* (larvae in pods), *Quercus* (larvae in "oak-apple" galls on leaves), *Thurberia* (larvae in seed pods).

DISTRIBUTION: *Arizona*, Bowie (June); *California*, Applegate (July, Aug.), Buelton (July), Calpella (July), Gasquet (July), Hopeland (July), San Felipe Wash (San Diego County, June), Three Rivers (Apr.); *Oregon*, Dundee (Aug.), Eugene (July), Woodburn (Aug.).

Genus *Sosipatra*, Species 613–615: *S. nonparilella* to *S. divergens*

[Harpe with apex of costa and cucullus upturned; eighth abdominal segment of male simple.]

613. Sosipatra nonparilella (Dyar), new combination

FIGURE 621

Ephestia nonparilella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 113, 1904.—McDunnough, Check list No. 6404, 1939.

Forewing white dusted with black, giving the wing a pale ashy gray ground color; discal spots and borders of transverse lines black and strongly contrasted; antemedial line indicated chiefly by its outer border, far out on wing (about middle), just below costa angled inward and running parallel with subterminal line; the latter white and straight except for a very slight notch at lower fold, parallel with and rather close to termen; discal dots confluent, forming a black streak along discocellular vein. Hind wing white, translucent; its terminal margin but slightly darkened. Alar expanse, 18 mm.

Male genitalia distinguished by shape of apical process of gnathos (fig. 621a).

TYPE LOCALITY: Santa Rita Mts., Ariz. (June; type in USNM).

FOOD PLANT: Unknown.

Known only from the male type. Dyar's original description is in error in one particular. He states that veins 3 and 5 of hind wing are "separate, but approximate at base." They are distinctly connate.

614. Sosipatra majorella (Dyar), new combination

FIGURES 620, 1108

Ephestia majorella Dyar, Ins. Insc. Menstr., vol. 10, p. 173, 1922.

Forewing similar to that of *micaceella* but with less contrast between the costal and inner areas, and the black borders of the transverse lines broader, more complete (not broken into dashes); ground color dark gray-brown with some lighter rust-brown scaling in the folds; antemedial line slightly angled just below costa; the black inner border of subterminal line angled outwardly at middle; discal spots confluent, black. Hind wing of male light brown, of female, whitish fuscous; the veins and terminal margin darker. Alar expanse, 20 mm.

Male genitalia similar to those of *nonparilella* except for a somewhat broader transtilla, more slender aedeagus and differently shaped apical projection of gnathos. Female genitalia with signum; bursa otherwise smooth.

TYPE LOCALITY: Guadalajara, México (type in USNM).

FOOD PLANT: Unknown.

In addition to the male type there is in the National Museum from Mexico City (Aug.) a female which Schaus or Dyar had associated with *micaceella*. Its maculation is a much better match for that of *majorella*, with which I associate it. The two species differ radically in male genitalia but are similar in color and pattern and easily confused. On the other hand, while they differ markedly in color, the types of *majorella* and *nonparilella* exhibit only minor structural differences.

615. Sosipatra divergens (Dyar)

FIGURE 1109

Ephestia divergens Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 345, 1914.

Forewing dark gray-brown; antemedial line vertical, at middle of wing, bordered outwardly by black; subterminal line oblique, slightly curved at fold, margined within by a thin black line; discal spots confluent, forming a blackish line along discocellular vein. Hind wing pale fuscous, veins and terminal margin very slightly darker. Alar expanse, 16 mm.

Female genitalia without signum. Male unknown.

TYPE LOCALITY: Taboga Isl., Panamá (type in USNM).

FOOD PLANT: Unknown.

Known only from the unique female type.

183. Genus Bethulia Ragonot

Bethulia Ragonot, Nouv. Gen., p. 36, 1888.—Hampson, *in* Ragonot, Monograph, pt. 2, pp. xiv, 304, 1901. (Type of genus: *Bethulia championella* Ragonot.)

The generic descriptions of Ragonot and Hampson are

faulty in several details. The type of *championella* (and only known example of the genus) is a female and not a male as stated by Ragonot and Hampson. The venation is similar to that of *Plodia*—veins 3 and 5 are slightly separated at base, not from a point, and 3 and 5 of hind wings are connate and not shortly stalked. The female genitalia are also similar to those of *Plodia* except that there is no signum. The labial palpi are oblique.

The genus is obviously very close to *Plodia* and *Ribua* but in the absence of a male it is impossible to characterize it properly or determine its status accurately.

616. Bethulia championella Ragonot

FIGURES 123, 1120

Bethulia championella Ragonot, Nouv. Gen., p. 37, 1888; Monograph, pt. 2, p. 304, 1901.—Druce, Biologia Centrali-Americana, Lepidoptera, Heterocera, vol. 2, p. 287, 1896.

The Ragonot figure of the type (Monograph, pl. 35, fig. 16) is somewhat misleading. An enlarged photograph, before me, shows the blackish margins defining the antemedial and subterminal lines stronger and somewhat broader than those in the published figure and a distinct scattering of blackish scales over the white areas of the forewing; the antemedial line is angulate (not "oblique") and the black border of the subterminal is complete (not broken as in the figure) and shows a sharp angulation at vein 6.

In female genitalia the projecting shield behind genitalia is subtriangulate and broadly flaring to its wide, slightly convex terminal margin.

If other specimens are ever received from Central America they should be easily identified; for *championella* is the only described white species, except *Socipatra rileyella*, in any of the genera, of similar venation and with the ductus bursae sclerotized and flattened for part of its length. From *rileyella* it is easily distinguished by its genitalia.

TYPE LOCALITY: San Joaquín, Vera Paz, Guatemala (type in BM).

FOOD PLANT: Unknown.

Known only from the type specimen.

184. Genus Ribua Heinrich

Ribua Heinrich, Proc. Ent. Soc. Washington, vol. 42, p. 31, 1940. (Type of genus; *Ribua innoxia* Heinrich.)

Tongue well developed. Antenna simple and pubescent. Labial palpus oblique in male, porrect in female (the third segment downcurved). Maxillary palpus minute, filiform. Forewing smooth; 9 veins; vein 2 from just before lower outer angle of cell; 3 from the angle; 4 absent; 5 closely approximate to 3 at base; 6 from below upper angle of cell, straight; 8 and 9 united; 10 from the cell, closely approximate to 8 for some distance from cell; male with costal fold enclosing a scale tuft. Hind wing with vein 2 from well before outer angle of cell; 3 and 5 approximate at base; 7 and 8 completely anastomosed beyond cell (rarely, in individual specimens, with 8 represented as a short spur at costa); cell slightly less than one-half the length of wing; discocellular vein curved. Abdomen of male with a pair of dorsolateral hair tufts on eighth segment.

Male genitalia with apical process of gnathos asymmetrical, bearing two short hooks. Transtilla a narrow band with flattened central process fusing to apical process of gnathos (fig. 622). Harpe with costa slightly produced at apex, otherwise simple. Vinculum long and broad.

Female genitalia with ductus bursae flattened and sclerotized for most of its length; bursa copulatrix with or without signa, latter when present consisting of one or two small, bluntly pointed, disclike spines, ductus seminalis from near anterior end of bursa.

The genus is close to but distinct from *Plodia*, distinguished by the following combination of characters: Veins 3 and 5, and 8 and 10 closely approximate at base; labial palpus of male oblique; tufts on eighth abdominal segment of male simple; apical process of gnathos asymmetrical and bifurcate; anellus fusing with gnathos; ductus seminalis from near anterior end of bursa.

617. Ribua innoxia Heinrich

FIGURES 622, 1115

Ribua innoxia Heinrich, Proc. Ent. Soc. Washington, vol. 42, p. 32, 1940.

Forewing ash gray, obscurely marked and shaded with blackish fuscous; an ill-defined dark basal patch; antemedial line faintly indicated, oblique, shaded outwardly by a blackish band; subterminal line obscure, pale, straight and parallel with termen, narrowly shaded inwardly and outwardly by dark scaling; the veins faintly dark-shaded; a scattering of dull reddish scales on the wing, especially along lower fold, on upper vein of cell and bordering subterminal line; all marking obscure and dark shading more or less diffused. Hind wing dull white; a narrow fuscous shade along costa and termen, most conspicuous at apex; veins slightly darkened. Alar expanse, 12–16 mm.

Male genitalia with prongs of apical process of gnathos separated (space between them U-shaped); vinculum nearly twice as long as tegumen. Female genitalia with two signa.

TYPE LOCALITY: Cuba (type in USNM).

FOOD PLANT: Fungus on pineapple.

The larvae of this species are frequently intercepted at our southern ports on pineapples from Cuba, but apparently do no damage to the fruit. A moth was recently received from Cuba which had been reared from a larva in decaying sugarcane. Apparently the species is more of a scavenger than anything else.

618. Ribua contigua, new species

FIGURES 623, 1117

Forewing reddish brown; black dusting sparser than on *innoxia* and largely replaced by red scaling; transverse lines obliterated. Alar expanse, 12–14 mm.

Male genitalia with prongs of apical process of gnathos close together, the space between them narrowly V-shaped and the prongs much shorter than those of

innoxia; vinculum shorter (not over one and one-half times the length of tegumen) and broader throughout than that of *innoxia*. Female genitalia not exhibiting any specific characters to distinguish them from those of *innoxia*.

TYPE LOCALITY: Dorado, Puerto Rico (type in Cornell Univ. Coll.; paratype, ♂, in USNM, 61394).

FOOD PLANT: Unknown.

Described from male type and female paratype from the type locality, collected May 30, 1930, by W. A. Hoffman, and two male paratypes from Cataño, Puerto Rico, collected by Leonard and Mills, May 16 and July 24, 1930.

Nothing is known of its life history, but its larval habits are probably similar to those of *innoxia*.

619. Ribua patriciella (Dyar), new combination

FIGURE 1116

Ephestia patriciella Dyar, Ins. Insc. Menstr., vol. 6, p. 140, 1918.

Forewing coloration similar to that of *contigua*, but the reddish dusting more towards a brown shade and less generally distributed; the veins outlined in blackish gray which predominates over the red-brown on most of the wing; transverse lines and discal spots obsolete. Alar expanse, 12 mm.

Female genitalia without signum.

TYPE LOCALITY: Baracoa, Cuba (Oct.; type in USNM).

FOOD PLANT: Unknown.

Known only from two specimens in poor condition, the type and one female paratype from Santiago, Cuba (May). The labial palpi seem more oblique than porrect, but they are twisted so much that their shape can not be accurately determined. The male is unknown. The three males that Dyar included among his paratypes are *Ephestia cautella*.

185. Genus Plodia Guénée

Plodia Guénée, Europaeorum Microlepidopterorum index methodicus . . . p. 80, 1845.—Hinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 202, 1865.—Snellen, De Vlinders van Nederland, Microlepidoptera, vol. 1, p. 163, 1882.—Hulst, Phycitidae of N. Amer., p. 200, 1890.—Ragonot, Monograph, pt. 2, p. xiv, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 305, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 201, 1910.—Forbes, Cornell Mem. 68, p. 636, 1923.—Meyrick, Revised handbook of British Lepidoptera, p. 386, 1938.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 203, 1932.—Pierce and Metcalf, Genitalia of the British Pyrales p. 6, 1938.—Janse, Journ. Ent. Soc. South Africa, vol. 8, p. 26, 1945. (Type of genus: *Tinea interpunctella* Hübner.)

Tongue well developed. Antenna simple and pubescent in both sexes. Labial palpus porrect. Maxillary palpus minute, filiform. Forewing smooth; 9 veins; vein 2 from before, but near, lower outer angle of cell; 3 from the angle; 4 absent; 5 appreciably separated from 3 at base; 6 from below upper angle of cell, straight; 8 and 9 united; 10 from the cell, separated from 8 at base; male with costal fold enclosing a scale tuft. Hind wing with 2 from well before outer angle of cell; 3 and 5 connate; 7 and 8 anastomosed from most or all of their lengths beyond cell; cell about half the length of wing; discocellular vein curved. Abdomen of male with two pairs of dorsal hair tufts, or compound dorsal tufts on eighth segment.

Male genitalia with apical projection of gnathos a small knob terminating in a very short, simple, blunt hook. Transtilla a narrow, curved, sclerotized band, not in any way fusing to gnathos. Uncus for most of its length rather narrow, its sides straight or but slightly tapering to bluntly apical margin. Harpe with a very slight, rounded projection from costa at middle and a short thornlike projection at apex, otherwise simple.

Female genitalia with ductus bursae flattened and sclerotized for over half its length, shorter than bursa; signa present, developed as a cluster of 3 to 5 contiguous, small, blunt, thornlike projections; ductus seminalis from about middle of bursa, near signa.

The genus is distinguished from *Ribua* by the following combination of characters: Labial palpi of both sexes porrect; veins 3 and 5 of forewing distinctly separated at base; 10 from cell and not close to 8 at base; 3 and 5 of hind wing connate; eighth abdominal segment of male with two or more pairs of dorsal tufts; ductus seminalis from middle of bursa copulatrix. In the Ragonot key to genera (Monograph, p. xiv) veins 3 and 5 of hind wing are said to be separate; but this is an error. They are definitely connate.

Plodia is a genus of definitely American origin. Its type species has become cosmopolitan through transportation in ship stores and the commercial distribution of dried grains and fruits; but all its nearest relatives (*Ribua, Caudellia, Bethulia*, etc.), and the only other known congeneric species (*dolorosa*), are confined to the New World.

620. Plodia interpunctella (Hübner)

FIGURES 124, 624, 1118

Tinea interpunctella Hübner, Sammlung europäischer Schmetterlinge, Lepidoptera 8, Tineae 5, pl. 45, fig. 310 [1810]–[1813].

Elucita interpunctalis Hübner, Verzeichnis bekannter Schmett-[er]linge, p. 347, 1825 (change in spelling for *interpunctella*).

Phycita interpunctella (Hübner) Treitschke, Die Schmetterlinge von Europa, vol. 10, p. 136, 1832.—Duponchel, Histoire naturelle des lépidoptères . . . de France, vol. 10, p. 224, 1836.

Myelois interpunctella (Hübner) Zeller, Isis von Oken, 1839, p. 176.

Plodia interpunctella (Hübner) Guénée, Europaeorum Microlepidopterorum index methodicus . . . , p. 80, 1845.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 202, 1865.—Snellen, De Vlinders van Nederland, Microlepidoptera, vol. 1, p. 163, 1882.—Ragonot, Ent. Monthly Mag., ser. 2, vol. 22, p. 25, 1885.—Hulst, Phycitidae of N. Amer., p. 200, 1900; U. S. Nat. Mus. Bull. 52, p. 437, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 305, 1901.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 201, 1910.—Forbes, Cornell Mem. 68, p. 636, 1923.—Curran, Sci. Agr., vol. 6, p. 386, 1926.—Hudson, Butterflies and moths of New Zealand, p. 156, 1928.—Meyrick, Revised handbook of British Lepidoptera, p. 386, 1928.—Noyes, Bull. Ent. Res., vol. 21, p. 81, 1930.—Richards and Herford, Ann. Appl. Biol., vol. 17, p. 380, 1930.—Hamlin, Reed, and Phillips, U. S. Dep. Agr. Techn. Bull. 242, 26 pp., 1931.—

Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 205, 1932.—Norris, Proc. Zool. Soc. London, pp. 597–611, 1932.—Dickins, Trans. Ent. Soc. London, vol. 85, p. 338, 1936.—Barth, Zool. Jarb., Jena, vol. 58, pp. 297–329, 1937; Zeitschr. Wiss. Zool., Leipzig, vol. 150, p. 27, 1938.—Lehmensick and Liebers, Zeits. Angew. Ent., Berlin, vol. 24, p. 441, 1937; p. 582, 1938.—McDunnough, Check list, No. 6408, 1939.—Hinton, Bull. Ent. Res., vol. 34, p. 185, 1943.—Corbet and Tams, Proc. Zool. Soc. London, p. 64, 1943.

Ephestia interpunctella (Hübner) Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa, vol. 4, p. 110, 1849.—Westwood and Humphreys, British moths and their transformations, p. 274, 1854.—Stainton, Manual of British butterflies and moths, vol. 2, p. 169, 1859.—Zeller, Verh. zool.-bot. Ges. Wien, vol. 25, p. 336, 1876; vol. 34, p. 310, 1884.—Riley and Howard, Insect Life, vol. 2, p. 277, 1890.

Tinea zeae Fitch, Second report on the noxious, beneficial and other insects, of the State of New York, p. 320, 1856.

Ephestia zeae (Fitch) Clemens, Proc. Acad. Nat. Sci. Philadelphia, p. 206, 1860.

Ephestia interpunctalis (Hübner) Butler, Ent. Monthly Mag., vol. 15, p. 273, 1879.—Druce, Biologia Centrali-Americana, Lepidoptera, Heterocera, vol. 2, p. 286, 1896.

Unadilla latercula Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 7, p. 255, 1901 (New synonymy).

Ephestia glycinivora Matsumura, "Oyo-Kinchyugakū" (Applied entomology), pt. 1, p. 561, 1917; Dai-Nippon Gaichyu Zensho (Injurious insects of the Japanese Empire), ed. 2, vol. 1, p. 529, 1920 (spelled here as *glycinivorella*).—Shibuya, Konchu Sekai, vol. 36, p. 225, 1932 (makes synonym of *interpunctella*).

Ephestia (*Strymax*) *latercula* (Hampson) Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 202, 1932.

Forewing with basal area ocherous white to pale ocherous, in fresh specimens well contrasted against remainder of wing; area beyond antemedial line rusty ocherous to reddish fuscous, the red shading marked along costal edge; central area more or less heavily dusted with leaden fuscous, the fuscous scaling forming an irregular blotch surrounding an ocherous line along the discocellular vein; transverse lines sublustrous, leaden lined; antemedial line rather broad, irregular, set well out towards middle of wing, oblique and slightly curved; subterminal line obscure, somewhat sinuate, more or less parallel with termen; a faint leaden line along termen. Hind wing pale, shining, fuscous; veins and terminal margin faintly darkened. The red scaling is pronounced on thorax and labial palpi as well as on costa of forewing. Alar expanse, 12–19 mm.

Male genitalia with transtilla a smooth, uninterrupted band; uncus not at all expanded at apex. Female genitalia with sclerotized projection of ductus bursae behind genital opening rather broad, variously shaped in individual specimens, angulate or rounded. Number of spines of signa also variable.

TYPE LOCALITIES: Europe (*interpunctella*, type lost); New York (*zeae*, in USNM); Nassau, Bahamas (*latercula*, in BM); Japan (*glycinivora*, in Hokkaido Imperial Univ., Sapporo, Japan).

FOOD: All kinds of stored and dried vegetable products.

DISTRIBUTION: Cosmopolitan.

This well-known and ubiquitous pest ("the Indian meal moth" of economic literature) requires little comment. It has an enormous literature. I have cited above only the more important systematic references and papers dealing with the physiology, morphology and biology of the insect. The fullest treatment of *Plodia interpunctella* and the common *Ephestia* species will be found in the paper by Richards and Thomson and that by Lehmensick and Liebers (1938). They contain an extended bibliography, as does also the paper by Hamlin, Reed, and Phillips. For additional references the "Index of American Economic Entomology" and the "Review of Applied Entomology" should be consulted.

Hampson's *latercula*, here placed in synonymy, has none of the diagnostic characters of the genus *Unadilla* in which he placed it. It is obviously a *Plodia*. I have seen the moth from Colombia he associated with his type and have examined its genitalia; and Clarke and Tams have compared the latter with the genitalia of the type from the Bahamas. The moths themselves are in very poor condition and show the basal area of the wing somewhat darker than in typical *interpunctella*, but the female genitalia show variation only of an individual nature.

621. Plodia dolorosa Dyar

FIGURES 625, 1119

Plodia dolorosa Dyar, Ins. Insc. Menstr., vol. 7, p. 63, 1919.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 204, 1932.

Forewing dark gray-brown (on the female type, the only unrubbed specimen before me, with a purplish sheen), the veins faintly darkened by black scaling; transverse lines and discal marks obsolete. Hind wings whitish fuscous, darker on the female, with veins clearly outlined by dark scaling and a fine, dark fuscous line along terminal margin. Alar expanse, 15–18 mm.

Male genitalia with the elements of transtilla slightly curled and weakly united at their apices (not the smooth band of *interpunctella*); apical process of gnathos somewhat larger; uncus a trifle broader and widened slightly at apex. Female genitalia with ductus bursae narrower; the dorsal projection at genital opening narrowly triangulate and pointed; signa more reduced.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

Represented in the National Collection by a series of 12 specimens, both males and females, from the type locality (Mar., Apr., May, Sept., Oct.).

Genera 186–188: *Anagasta to Nicetiodes*

[Venational division E. Forewing with 9 veins; 10 from the cell; 9 absent; 4 absent; 2 and 3 from the cell. Hind wing with discocellular vein curved. Male genitalia with transtilla complete or its elements greatly enlarged and touching at apices (except in *Anagasta*). Female genitalia with ductus bursae unsclerotized except, occasionally, immediately adjacent to genital opening.]

186. Anagasta, new genus

TYPE OF GENUS: *Ephestia kühniella* Zeller.

Tongue well developed. Antenna simple and pubes-

cent in both sexes. Labial palpus upturned, not reaching vertex in male, extending slightly above in female. Maxillary palpus minute, filiform. Forewing smooth; 9 veins; venation individually variable; vein 2 from well before lower outer angle of cell; 4 absent; 3 and 5 from the lower angle of cell, normally closely approximate at base, occasionally connate or shortly stalked; 6 normally from below upper angle of cell and only slightly curved towards base (nearly straight), occasionally curved upward to the angle and closely approximate to 8; 8 and 9 united; 10 from the cell, separated from 8 at base; male without costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 normally approximate at base, rarely connate or very shortly stalked and, when so, usually on only one hind wing of an individual specimen; 7 and 8 anastomosed for most or all their lengths beyond cell; cell about one-third the length of wing; discocellular vein curved. Abdomen of male with two pairs of short, simple, rather weak, dorsal hair tufts on eighth segment.

Male genitalia with apical projection of gnathos a very small, shortly bifurcate hook. Transtilla incomplete, its elements long, slender, and widely separated at their apices. Uncus long and moderately broad (longer than tegumen), beyond its broad base slightly tapering to rounded apical margin. Harpe elongate; costa produced at apex into a short, free hook. Aedeagus enlarged and ventrally cleft at apex. Vinculum stout, but slightly longer than greatest width, tapering slightly to broad terminal margin.

Female genitalia with apophyses of ovipositor and intersegmental area between ovipositor and eighth segment collar very long; ductus bursae membranous throughout, strongly spined at junction with bursa; genital opening simple and unsclerotized; signa present, consisting of from one to four separate, more or less elongate and angled discs; ductus seminalis from near middle of bursa, approximate to signa.

The generic separation of *kuhniella* from the other stored-product insects of the *Ephestia* group requires some justification in view of the close association of all of them in habits, distribution, and indoor association; but in any nice definition of *Ephestia*, *kühniella* fits very badly. On female genitalia it could squeeze into *Ephestia*, even though its long extruded ovipositor sets it apart; but on male characters it differs radically. It has no trace of a costal fold, while this structure is strongly developed in all the true *Ephestia*. Its transtilla is not only incomplete but the elements are slender and no wise enlarged, connected, or even approximate at their apices, quite the opposite of the development of that organ in *Ephestia*. Also its venation is erratic, even for a phycitid. Veins 6 and 8 of forewing are parallel from a short distance beyond cell as in *Ephestia* as defined in this paper; but the condition of 3 and 5 of fore and hind wings is variable to a degree not found in the true Ephestias. In addition to its adult characters *kühniella* has the dorsum of the pupal thorax rugose. In *Ephestia* the thorax of the pupa is smooth. Altogether *kühniella* is an aberrant species, probably of a different faunal origin from some, at least, of the stored-product *Ephestia* species. Both they and *kühniella* are obviously of Old World origin. From all available evidence the true home of *kühniella* seems to be the Mediterranean region, probably Asia Minor, as suggested in 1930 by both Lebedev and Klemm.

622. Anagasta kühniella (Zeller)

FIGURES 626, 1124

Ephestia kühniella Zeller, Stettiner, Ent. Zeit., vol. 40, p. 466, 1879.—Snellen, Tijds. voor Ent., vol. 28, p. 237, 1885.—Barrett, Ent. Monthly Mag., vol. 23, p. 255, 1887.—Klein, Proc. Ent. Soc. London, p. lii, 1887.—Omerod, Insect Life, vol. 1, p. 314, 1889.—Fletcher, Ent. Soc. Ontario, Twentieth Ann. Rept., p. 95, 1889. Insect Life, vol 2, p. 187, 1889; Canadian Ent., vol. 22, p. 41, 1890.—Hulst, Phycitidae of N. Amer., p. 198, 1890; U. S. Nat. Mus. Bull. 52, p. 435, 1903.—Riley, Insect Life, vol. 5, p. 276, 1892.—Danysz, Mém. de Lab. Parasit. vég. Bourse de Commerce, vol. 1, pp. viii–58, 1893.—Howard, Insect Life, vol. 7, p. 416, 1895.—Johnson, *in* Forbes, Nineteenth report of the State Entomologist on the noxious and beneficial insects of the State of Illinois, 65 pp., 1895–1896.—Druce, Biologia-Centrali Americana, Lepidoptera, Heterocera, vol. 2, p. 286, 1896.—Fuller, Agr. Gaz. New South Wales, vol. 7, pp. 444–453. 1896.—Lounsbury, Ent. News, vol. 10, p. 291, 1899.—Hampson *in* Ragonot, Monograph, pt. 2, p. 279, 1901.—Carpenter, Econ. Proc. Roy. Dublin Soc., vol. 1, p. 209, 1903.—Barrett, Lepidoptera of the British Islands, vol. 10, p. 54, 1905.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 201, 1910.—Mosher, Bull. Illinois State Lab. Nat. Hist., vol. 12, p. 24, fig. 74, 1916.—Durant and Beveridge, Journ. Roy. Army Med. Corps., vol. 20, pp. 615–634, 1913; reprint with notes, Brit. Mus. (Nat. Hist.), London, 1918.—Burkhardt, Zeitschr. Angew. Ent., Berlin, vol. 6, pp. 25–60, 1919 (biology).—Whiting, Journ. Exp. Zool., vol. 28, pp. 413–441 (genetics).—Forbes, Cornell Mem. 68, p. 635, 1923.—Curran, Sci. Agr., vol. 6, p. 385, 1926.—Hering, Anz. für Schädlingsk., vol. 2, p. 139, 1926.—Richardson, Journ. Agr. Res., vol. 32, p. 895, 1926.—White, Proc. Ent. Soc. Washington, vol. 29, p. 147, 1927.—Candura, Boll. Lab. Zool. Portici, vol. 21, p. 149, 1928.—Hudson, Butterflies and moths of New Zealand, p. 156, 1928.—Meyrick, Revised handbook of British Lepidoptera, p. 389, 1928.—Kühn and Henke, Ges. Wiss. Göttingen, Math. Phys., Abh., new ser., vol. 15, 121 pp., 1929 (physiology).—Brindley, Ent. Soc. Amer. Ann., vol. 23, p. 740, 1930.—Klemm, Mitt. Ges. Vorratsschutz, vol. 6, p. 26, 1930.—Lebedev, Zeitschr. Angew. Ent., Berlin, vol. 6, pp. 597–605, 1930.—Noyes, Bull. Ent. Res., vol. 21, p. 77, 1930.—Richards and Herford, Ann. Appl. Biol., vol. 17, p. 380, 1930.—Clausen, U. S. Dep. Agr. circ. 168, p. 92, 1931 (Japanese record).—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 177, 1932.—Norris, Proc. Zool. Soc. London, pp. 597–611, 1932; pp. 903–934, 1933; pp. 333–360, 1934.—Dickins, Trans. Ent. Soc. London, vol. 85, p. 333, 1936.—Busnel, Rev. Path. Veg. et Ent. Agr. France, pp. 137–162, Apr. 1937 (larval anatomy and physiology).—Lehmensick and Liebers, Zeits. angew. Ent., Berlin, vol. 24, p. 442, 1937 (egg).—Pierce and Metcalf, Genitalia of the British Pyrales, p. 7, 1938.—McDunnough, Check list, No. 6399, 1939.—Corbet and Tams, Entomologist, vol. 78, p. 87, 1945.

Ephestia fuscofasciella Ragonot, N. Amer. Phycitidae, p. 17, 1887.—Hulst, Phycitidae of N. Amer., p. 198, 1890.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 278, 1901.

Ephestia gilonella Druce, Biologia Centrali-Americana, Lepidoptera, Heterocera, vol. 2, p. 286, 1896.

Ephestia sericaria Authors (not Scott), Ragonot, Bull. Soc. Ent. France, vol. 61, p. cclxxiv, 1892.—Richards and Thomson,

Trans. Ent. Soc. London, vol. 80, pp. 171, 177, 1932.—Corbet and Tams, Proc. Ent. Soc. London (ser. B), vol. 113, p. 68, 1943; Entomologist, vol. 76, p. 15, 1943.—Hinton, Bull. Ent. Res., vol. 34, p. 195, 1943.

Forewing gray, more or less dusted with black and with blackish markings; antemedial line grayish white (this pale shade on some specimens extending over the remainder of the basal area), slightly oblique and irregularly dentate, bordered outwardly by a black shade varying from a narrow line to a broad suffusion; subterminal line pale gray, obscure on most specimens, variable and irregularly dentate, usually with a dark inner border; veins in outer area of wing somewhat darkly outlined; discal dots at end of cell pronounced, sometimes confluent along discocellular vein but usually well separated and the lower dot elongated slightly along veins 3 and 5; a row of faint dark dots along termen. Hind wings translucent, whitish, the veins and terminal margin pale brownish fuscous. Alar expanse, 18–28 mm.

Genitalic characters as given for the genus. The male genitalia are remarkably uniform and exhibit little individual variation, considering the variability of the species otherwise. The female genitalia are variable (see fig. 1124) in the number and shape of the signa.

TYPE LOCALITIES: Germany (*kühniella*, in BM); Durango, Mexico (*gitonella*, in BM); Texas (*fuscofasciella*, in Paris Mus.).

FOOD: Flour, grains, nuts, dried fruits, chocolate, seeds, biscuits, cakes, jellies, candy, and a host of other dried and stored vegetable products. The favored foods are wheat and other grain flours. Other records, unless based upon reared adults, should be received with caution; for the larvae are very difficult to distinguish from those of a number of other phycitids feeding on dried vegetable matter, and records based upon larval identifications are as apt to be incorrect as not. The species is of major economic importance only as a flour and milled-grain feeder and is often a serious pest in flour mills. It is apparently an indoor insect and requires a high temperature throughout the year for maximum development.

DISTRIBUTION: Nearly cosmopolitan.

"The Mediterranean flour moth" has probably as extensive a literature as any other lepidopteron. Only the more important systematic, biological, and physiological references are given above. For further references the papers by Noyes (1931) and Richards and Thomson (1932), the "Index of American Economic Entomology," "Zoological Record," and "Review of Applied Entomology" should be consulted.

Considering its variability *kühniella* has remarkably little synonymy except for numerous misspellings of its specific name. A list of these will be found in the Richards and Thomson paper (1932). Most modern authors use the equivalent spelling *kuehniella* in place of *kühniella;* but as the latter was the original orthographic form and the species was named in honor of Professor Kühn of Halle we are obliged by the international rules to follow it.

The name *fuscofasciella* Ragonot applies to a color form with broad blackish borders to the transverse lines and a contrasted pale area of forewing. Such examples occur rather frequently in our Southwestern States. Unless venation is noted, it is easy to confuse *kühniella* with large examples of *Vitula edmandsae*. Pale specimens of the two species are strikingly similar in habitus.

The original specimens before Zeller when he described *kühniella* are in the British Museum but, according to Clarke and Tams, no one specimen bears a type designation so I am here designating a male from the original series as lectotype. This specimen bears three labels, the first a small white one with the inscription, "excl. 4/7/77"; a second label inscribed in Zeller's handwriting "*Ephestia kühnii* Z," "MSS.Z"; and a third label with the inscription "Zell. Coll. 1884." Tams concurs in this selection.

187 Genus Ephestia Guénée

Ephestia Guénée, Europaeorum Microlepidopterorum index methodicus . . . p. 81, 1845; Ann. Soc. Ent. France, ser. 2, vol. 3, p. 319, 1845.—Zeller, Isis von Oken, 1848, pp. 585, 592.—Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa, vol. 4, p. 110, 1849.—Heinemann, Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 201, 1865.—Meyrick, Proc. Linn. Soc. New South Wales, vol. 3, p. 215, 1878; vol. 4, p. 234, 1879; vol. 7, p. 160, 1882; Revised handbook of British Lepidoptera, p. 387, 1928.—Hulst, Phycitidae of N. Amer., p. 197, 1890; U. S. Nat. Mus. Bull. 52, p. 434, 1903.—Ragonot, Monograph, pt. 2, p. xiii, 1901.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 271, 1901.—Forbes, Cornell Mem. 68, p. 634, 1923.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 171, 1932.—Bisset *in* Pierce and Metcalfe, Genitalia of the British Pyrales, p. 58, 1938. (Type of genus: *Tinea elutella* Hübner.)

Hyphantidium Scott, Proc. Zool. Soc. London, vol. 27, p. 207, 1859. (Type of genus: *Hyphantidium sericarium* Scott.)

Cadra Walker, List, vol. 30, p. 961, 1864 (Type of genus: *Cadra defectella* Walker.)

Tongue well developed. Antenna simple and pubescent in both sexes. Labial palpus upturned, reaching slightly above vertex. Maxillary palpus minute, filiform. Forewing smooth; 9 veins; vein 2 from before but rather near lower outer angle of cell; 3 from outer angle; 4 absent; 5 more or less approximate to 3 at base; 6 from below upper angle of cell, straight or slightly curved towards base (from a slight distance beyond base running parallel with 8); 9 absent; 10 from the cell; male with a strong costal fold enclosing scale tuft. Hind wing with vein 2 from well before lower outer angle of cell; 3 and 5 approximate at base or short stalked (*elutella*); 7 and 8 anastomosed for most or all of their lengths beyond cell; cell one-half or slightly less than one-half the length of wing; discocellular vein curved. Abdomen of male with compound dorsal tufts.

Male genitalia with gnathos terminating in a pair of well-spaced prongs. Transtilla complete or, if elements slightly separated, their apices broadly developed, if complete with flaring lateral projections. Uncus short, broad; its terminal margin bluntly rounded. Aedeagus not appreciably enlarged at apex; penis armed with a

sclerotized band or a row of sclerotized wrinklings. Vinculum stout, longer than broad, tapering slightly to blunt terminal margin.

Female genitalia with apophyses of ovipositor and intersegmental area between ovipositor and eighth segment collar short; ductus bursae strongly spined towards bursa or bearing a longitudinal row of sclerotized ridges; signa present, consisting of a row of narrow sclerotized discs; ductus seminalis from bursa approximate to signa.

Ephestia as here defined is an Old World genus. Even with *kühniella* and the formerly included American species removed, it remains somewhat of a heterogeneous group. I suspect that the type species (*elutella*) has a different faunal origin than *cautella*, *figulilella*, *callidella*, and *afflatella*, which, because of their similar habits, present distribution and genitalic structures are associated with it; but until the Old World species now in *Ephestia* can be thoroughly studied and the incongruous ones given a better generic placement we shall have to keep the more or less cosmopolitan species together. However, *elutella* has a different hind wing venation and a different type of harpe from the others and I believe will eventually be generically distinguished.[13] Three species are represented in the Americas, all apparently imports from the Old World. They separate into groups as follows:

Hind wing with veins 3 and 5 stalked; costa of harpe smooth.
Hind wing with veins 3 and 5 approximate at base; harpe with digitate projection from middle or near middle of costa.

Color and markings are of little help in distinguishing the species. There is so much individual variation and so little specific difference, even between typical specimens, that superficial habitus can not be trusted. Genitalia on the other hand do readily identify and distinguish the species. Their specific characters are several, obvious, and consistent. These organs should be examined in every instance when specific identification is of any importance.

Genus *Ephestia*, Species 623: *E. elutella*

[Hind wing with veins 3 and 5 stalked; costa of harpe smooth.]

623. Ephestia elutella (Hübner)

FIGURES 126, 628, 1122

Tinea elutella Hübner, Sammlung europäischer Schmetterlinge, Lepidoptera 8, Tinea 5, pl. 24, fig. 163, 1796.

Phycis elutea Haworth, Lepidoptera Britannica, p. 496, 1811 (amended spelling for *elutella*).

Phycis semirufa Haworth, Lepidoptera Britannica, p. 496, 1811.

Phycis rufa Haworth, Lepidoptera Britannica, p. 497, 1811.

Phycis elutella (Hübner) Zincken, *in* Germar and Zincken, Mag. der Ent., vol. 3, p. 175, 1818.—Treitschke, Die Schmetterlinge von Europa, vol. 9, p. 194, 1832.—Duponchel, Histoire naturelle des lépidoptères, ou papillons de France, vol. 10, p. 204, 1836.

[13] *Ephestia vitivora* Filipjev (Deuts. Ent. Zeit. "Iris," Dresden, vol. 45, p. 70, 1931) from Transcaucasia is distinct from, but obviously very close to, and in the event of any further division of *Ephestia*, congeneric with *elutella*—suggesting a western Asiatic origin for the latter.

Phycita semirufa (Haworth) Stephens, Illustrations of British entomology, Haustellata, vol. 4, p. 305, 1834.—Wood, Index entomologicus, p. 210, pl. 46, fig. 1457, 1839.—Westwood and Humphreys, British moths and their transformations, vol. 2, p. 229, 1845.

Phycita elutella (Hübner) Stephens, Illustrations of British entomology, Haustellata, vol. 4, p. 304, 1834.—Wood, Index entomologicus, p. 210, pl. 46, fig. 1454, 1839.—Westwood and Humphreys, British moths and their transformations, vol. 2, p. 229, 1845.

Myelois elutella (Hübner) Zeller, Isis von Oken, 1839, pp. 176, 343.

Ephestia elutella (Hübner) Guénée, Europaeorum Microlepidopterorum index methodicus . . . , p. 81, 1845.—Herrich-Schäffer, Systematische Bearbeitung der Schmetterlinge von Europa, vol. 4, p. 110, 1849.—Stainton, Manual of British butterflies and moths, vol. 2, p. 168, 1859.—Heinemann, Die Schmetterlinge Deutschlands und der Schweiz, Abt. 2, vol. 1, pt. 2, p. 201, 1865.—Zeller, Verh. zool.-bot. Ges. Wien, vol. 25, p. 338, 1876.—Hulst, Phycitidae of N. Amer., p. 200, 1900; U. S. Nat. Mus. Bull. 52, p. 435, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 300, 1901.—Forbes, Cornell Mem. 68, p. 635, 1923.—Curran, Sci. Agr., vol. 6, p. 386, 1926.—Meyrick, Revised handbook of British Lepidoptera, p. 388, 1928.—Munro and Thomson, Empire Marketing Board, No. 24, London, H. M. Stationery Office, p. 22, 1929.—Noyes, Bull. Ent. Res., p. 80, 1930.—Richards and Herford, Ann. Appl. Biol., vol. 17, p. 380, 1930.—Back and Reed, Journ. Econ. Ent., vol. 23, p. 1004, 1930.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 185, 1932.—Bovingdon, Empire Marketing Board, No. 67, pp. 1–88, 1933.—Norris, Proc. Zool. Soc. London, 1934, pp. 333–360, 1934.—Dickins, Trans. Ent. Soc. London, vol. 85, p. 348, 1936.—Lehmensick and Liebers, Zeitschr. angew. Ent., Berlin, vol. 24, p. 442, 1937.—Pierce and Metcalfe, Genitalia of the British Pyrales, p. 6, 1938.—McDunnough, Check list, No. 6401, 1939.—Hinton, Bull. Ent. Res., vol. 34, p. 196, 1943.—Corbet and Tams, Proc. Zool. Soc. London, vol. 113, ser. B, p. 64, 1943.

Hypantidium sericarium Scott, Proc. Zool. Soc. London, vol. 27, p. 207, 1859.—Corbet and Tams, Entomologist, vol. 78, p. 87, 1945 (establish synonymy with *elutella*).

Ephestia semirufa (Haworth) Staudinger, Horae Soc. Ent. Rossicae, vol. 15, p. 229, 1879.

Ephestia roxburghii Gregson, Entomologist, vol. 6, p. 318, 1873.—Ragonot, Monograph, pt. 2, p. 301, 1901.—Richards and Thomson, Trans. Ent. Soc. Lond., vol. 80, p. 187, 1932.

Ephestia elutella unicolorella Staudinger, Horae Soc. Ent. Rossicae, vol. 15, p. 228, 1879.

Ephestia unicolorella Staudinger, Horae Soc. Ent. Rossicae, vol. 16, p. 89, 1881.—Ragonot and Hampson, *in* Ragonot, Monograph, pt. 2, p. 229, 1901.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 187, 1932.

Ephestia amarella Dyar, Proc. U. S. Nat. Mus., vol. 27, p. 921, 1904.

Forewing dark brown to pale gray, sometimes with a paler shade between lower fold and inner margin; color variable; transverse lines usually distinguishable; antemedial line obscure, oblique, bordered outwardly by a narrow dark shade, the latter approaching middle of wing; subterminal line somewhat sinuate, faintly bordered on both sides by dark lines. Hind wing smoky white to pale fuscous. Alar expanse, 13–18 mm.

Male genitalia with prongs of apical process of gnathos forming a V, more narrowly spaced than in other species of the genus. Harpe without projections from costa. Female genitalia with ductus bursae rather coarsely spined for about half its length towards bursa; bursa evenly and minutely spined.

TYPE LOCALITIES: Germany (*elutella*, type lost); England (*semirufa*, type lost; *rufa* and *roxburghii*, in BM); Malatia, Asia Minor (*unicolorella*, in Mus. Univ. Berlin); Australia (*sericarium*, in BM); Kalso, Kootenai District, British Columbia (amarella), in USNM).

FOOD: Dried fruits, seeds, nuts, chocolate, cocoa, tobacco, and a number of other dried vegetable products. Feeding records based on larval identifications should be accepted with extreme caution; for the larvae of *elutella*, are often impossible to distinguish from those of *cautella*, and have been frequently confused with them. The so-called characters given in literature for separation of the larvae of the two species are not constant and should not be depended upon for specific identification. In both Europe and the United States *elutella* seems to breed out-of-doors to some extent but has been noticed as a pest only in storage houses, in England chiefly on stored cocoa and in America on tobacco. In our economic literature it is known as "the tobacco moth." Aside from its depredations in tobacco warehouses it appears to be only a minor and occasional pest on other stored products in the United States.

DISTRIBUTION: Practically cosmopolitan, but apparently less numerous and not so generally distributed as either *Plodia interpunctella* or *Ephestia cautella*.

The moths are easily separable from the other two species found here (*cautella* and *figulilella*) and from other truly congeneric European species by the short stalking of veins 3 and 5 of hind wing. In other true *Ephestia* these veins are always approximate at base. They should be examined in every instance where specific identification is of any importance.

The above synonymy gives only the more important references. Some Old World references cited by Richards and Thomson (1932) and Hulst (1903) have been omitted and, except for a few essential articles, no attempt has been made to cover the economic literature, which is both extensive and repetitious.

Genus *Ephestia*, Species 624 and 625: *E. cautella* and *E. figulilella*

[Hind wing with veins 2 and 5 approximate at base; harpe with digitate projection from middle or near middle of costa.]

624. Ephestia cautella (Walker)

FIGURES 125, 629, 1121

Pempelia cautella Walker, List, vol. 27, p. 73, 1863.

Cadra defectella Walker, List, vol. 30, p. 962, 1864.

Nephopteryx desuetella Walker, List, vol. 35, p. 1719, 1866.

Ephestia cahiritella Zeller, Stettiner, Ent. Zeit., vol. 28, p. 384, 1867.—South, Entomologist, vol. 23, p. 304, 1890.—Van Deventer, Tijdschr. voor Ent., vol. 46, p. 80, 1904.—Barrett, Lepidoptera of the British Islands, vol. 10, p. 56, 1905.

Ephestia passulella Barrett, Ent. Monthly Mag., vol. 11, p. 271, 1875.—Ragonot, Ent. Monthly Mag., vol. 22, p. 24, 1885.

Salebria cautella (Walker) Cotes and Swinhoe, Catalogue of the moths of India, pt. 6, p. 675, 1889.

Ephestia cautella (Walker) Hampson, Moths, vol. 4, p. 66, 1896, *in* Blanford, Fauna of British India.—Ragonot, Monograph, pt. 2, p. 292, 1901.—Hulst, U. S. Nat. Mus. Bull. 52, p. 434, 1903.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 202, 1910.—Chittenden, U. S. Dep. Agr. Bur. Ent. Bull. 104, 40 pp., 1911.—Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 345, 1914.—Forbes, Cornell Mem. 68, p. 635, 1923.—Curran, Sci. Agr., vol. 6, p. 386, 1926.—Meyrick, Revised Handbook of British Lepidoptera, p. 388, 1928.—Shibuya, Journ. Faculty Agric. Hokkaido Imperial Univ., Sapporo, vol. 22, p. 77, 1298.—Richards and Herford, Ann. Appl. Biol., vol. 17, p. 380, 1930.—Noyes, Bull. Ent. Res., p. 80, 1930.—Simmons, Reed, and McGregor, U. S. Dep. Agr. Cir. 157, p. 36, 1931.—Keifer, Monthly Bull. Dep. Agr. California, vol. 20, p. 619, 1931.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 197, 1932.—Bovingdon, Empire Marketing Board, No. 67, pp. 1–88, 1933.—Norris, Proc. Zool. Soc. London, 1934, pp. 333–360, 1934.—Dickins, Trans. Ent. Soc. London, vol. 85, p. 342, 1936.—Lehmensick and Liebers, Zeitschr. angew. Ent., Berlin, vol 24, p. 443, 1937.—Pierce and Metcalfe, Genitalia of the British Pyrales, p. 7, 1938.—McDunnough, Check list, No. 6403, 1939.—Hinton, Bull. Ent. Res., vol. 34, p. 193, 1943.—Corbet and Tams, Proc. Zool. Soc. London, vol. 113, ser. B, p. 64, 1943.

Cryptoblabes formosella Wileman and South (♂), Entomologist, vol. 51, p. 219, 1918.—Shibuya, Journ. Faculty Agric. Hokkaido Imperial Univ., Sapporo, vol. 22, pp. 17, 88, 1928.

Color and markings similar to those of *elutella* and as variable, expecially on the females. On the average the antemedial line is less oblique in both *cautella* and *figulilella* than in *elutella*, but this difference does not hold for all specimens. *E. cautella* is distinguished by its genitalia, both male and female. They are quite distinct from those of any other phycitid.

Alar expanse, 11–18 mm.

Male genitalia with prongs of apical process of gnathos forming a broad U, widely spaced. Harpe with a short, digitate projection from near middle of costa. Transtilla with a broad fusion at middle and prominent, round, flattened, lateral lobes.

Female genitalia with ductus bursae bearing a longitudinal row of strongly sclerotized and pigmented ridges, the latter forming a narrow, fluted band somewhat over half as long as the ductus. Bursa copulatrix rather coarsely spined over about half its surface.

TYPE LOCALITIES: Ceylon, India (*cautella* and *defectella*, in BM); Moreton Bay, Queensland, Australia (*desuetella*, in BM); Cairo, Egypt (*cahiritella*, in BM); England (*passulella*, in BM); Takow, Formosa (*formosella*, in BM).

FOOD: All kinds of dried, stored vegetable products.

DISTRIBUTION: Cosmopolitan.

This species is as abundant, and probably as destructive to dry fruits, grains, nuts, and other stored vegetable products, as *Plodia interpunctella*. Surprisingly enough it has fewer economic references than either *elutella* or *figulella* though it appears to be more widely distributed and more of a general nuisance than either of them. In the list of common names approved by the American Association of Economic Entomologists it is known as the "almond moth." In economic literature generally it has also been referred to as the "dried currant moth" and the "fig moth."

625. Ephestia figulilella Gregson

FIGURES 630, 1123

Ephestia figulilella Gregson, Entomologist, vol. 5, p. 385, 1871.—Ragonot, Ent. Monthly Mag., vol. 22, p. 25, 1885.—Hampson and Ragonot, *in* Ragonot, Monograph, pt. 2, p. 282, 1901.—Hulst, U. S. Nat. Mus. Bull. 52, p. 435, 1903.—Caradja, Deutsche Ent. Zeitschr., "Iris," vol. 24, p. 210, 1910.—Spuler, Die Schmetterlinge Europas, vol. 2, p. 202, 1910.—Turati and Zanon, Atti Soc. Italiana Sci. nat., vol. 61, p. 164, 1922.—Keifer, Monthly Bull. Dep. Agr. California, vol. 20, p. 619, 1931.—Richards and Thomson, Trans. Ent. Soc. London, vol. 80, p. 194, 1932.—Donohoe and Barnes, Journ. Econ. Ent., vol. 27, pp. 1070, 1075, 1934.—Pierce and Metcalfe, Genitalia of the British Pyrales, p. 6, 1938.—McDunnough, Check list, No. 6402, 1939.—Hinton, Bull. Ent. Res., vol. 34, p. 194, 1943.—Corbet and Tams, Proc. Zool. Soc. London, vol. 113, ser. B, p. 68, 1943.—Donohoe et al., U. S. Dep. Agr. Techn. Bull. 994, pp. 1–23, 1949.

Ephestia ficulella Barrett, Ent. Monthly Mag., vol. 11, p. 271, 1875 (emended spelling for *figulilella*).—Meyrick, Proc. Linn. Soc. New South Wales, vol. 4, p. 244, 1880.—Chittenden, U. S. Dep. Agr. Div. Ent. Bull. 8 (new ser.), p. 10, 1897.—Meyrick, Revised hand book of British Lepidoptera, p. 388, 1928.

Ephestia milleri Zeller, Verh. zool.-bot. Ges. Wien., vol. 25, p. 339, 1876.—Druce, Biologia Centrali Americana, Lepidoptera, Heterocera, vol. 2, p. 287, 1890.

Ephestia figuliella Forbes, Cornell Mem. 68, p. 635, 1923 (misspelling).

Ephestia figulella Curran, Sci. Agr., vol. 6, p. 386, 1926 (misspelling).

Ephestia venosella Turati, Atti Soc. Italiana Sci. Nat., vol. 65, p. 58, 1926.

Ephestia ernestinella Turati, Atti Soc. Italiana Sci. Nat., vol. 66, p. 330, 1927.

The genitalia are distinctive but there are no consistent superficial characters for the separation of *figulilella* from *cautella*.

Alar expanse, 12–17 mm.

Male genitalia with prongs of apical process of gnathos U-shaped with the base of the U flattened and the prongs well separated. Harpe with a long digitate projection from midcosta. Transtilla with its elements broadened and touching (but not fusing) at their apices.

Female genitalia with ductus bursae armed with a spiral of short, broadly based spines; a cluster of similar spines at terminal end of bursa copulatrix; a pair of fan-shaped scale tufts from intersegmental area adjacent to genital opening; signa consisting of a row of a half dozen elongate, narrow discs.

TYPE LOCALITIES: Liverpool, England (*figulilella*, in BM); Central America (*milleri*, in BM); Bengasi, Cyrenaica (*venosella*, [?] Turati Coll.); Giarabub, Cyrenaica (*ernestinella*, [?] Turati Coll.).

FOOD: Dried fruits, nuts, seeds, meal, beans, etc.

DISTRIBUTION: Europe, Asia, North and West Africa, Hawaii, Australia, North and South America. In the United States it seems to have established itself only in California where it is a minor pest of dried raisins, though it has been intercepted at various ports of entry in stored products. It is apparently less widely distributed and of considerably less economic importance than either *cautella* or *elutella*. In our economic literature it is known as the "raisin moth," and has a growing list of economic references, for which the Review of Applied Entomology should be consulted. Some Old World references cited by Richards and Thomson (1932) have been omitted from the foregoing synonymy.

188. Genus Nicetiodes Schaus

Nicetiodes Schaus, Zoologica (Contr. New York Zool. Soc.), vol. 5, No. 2, p. 48, 1923 (Type of genus: *Nicetiodes apianella* Schaus).

Tongue well developed. Antenna pubescent; shaft of male dilated and with a shallow, ventral sinus towards base; shaft of female simple. Labial palpus slender, upturned, reaching slightly above vertex; third segment acuminate, about half the length of second. Maxillary palpus rather broadly dilated with scales on female, less so on male. Forewing of male with some raised scales along upper margin of cell towards base (possibly a specific character), of female smooth; 9 veins; vein 2 from before but near lower outer angle of cell; 3 and 5 from the angle, closely approximate or connate at base; 4 absent; 6 from below upper angle, straight; 8 and 9 united; 10 from the cell, separate from 8 at base; male with a strong costal fold enclosing hair tuft. Hind wing with vein 2 from very close to lower outer angle of cell; 3 and 5 stalked for less than half their lengths; 7 and 8 anastomosed for most of their lengths beyond cell; cell about half the length of wing; discocellular vein curved. Abdomen of male with compound dorsal tufts.

Male genitalia with gnathos terminating in an enlarged, angulate knob. Transtilla complete, a narrow, low-arched bridge with slight central projection. Uncus narrow stemmed, abruptly expanding and flatly bilobed at extremity; a short, broad scaphium projecting from its base. Harpe with sacculus slightly produced at extremity, otherwise simple. Anellus tubular with attached ventral shield bearing short lateral lobes. Aedeagus long, rather stout, flaring and sharply angled at apex; penis with a few weakly sclerotized wrinklings, otherwise unarmed. Vinculum triangulate, longer than broad.

Female genitalia with ductus bursae scobinate towards bursa and narrowly sclerotized at genital opening; signa present, consisting of a row of small sclerotized discs; ductus seminalis from bursa approximate to signa.

A distinct genus at once distinguished by its peculiar uncus and gnathos and projecting sacculus. Contains but one described species.

626. Nicetiodes apianella Schaus

FIGURES 127, 637, 1125

Nicetiodes apianella Schaus, Zoologica, vol. 5, No. 2, p. 48, 1923.

Forewing blackish fuscous with a few dull whitish scales at base and a shading of them surrounding discocellular vein and in area beyond subterminal line; transverse lines white, well separated, the antemedial line narrow, straight, and nearly vertical; subterminal line faint, irregularly and shortly dentate, rather near termen; discal dots obscure. Hind wing smoky white;

the veins slightly darkened and a similar narrow dark shade along terminal margin. Alar expanse, 13 mm.

Genitalic characters as given for the genus; the tubular part of anellus partially scobinate.

TYPE LOCALITY: Conway Bay, Indefatigable, South Seymore, Tower Island, Galápagos (type in USNM).

FOOD PLANT: Unknown.

Known only from the male type and female paratype from the type locality. A rather striking species conspicuous because of its blackish forewings with contrasted white antemedial line.

Genera 189–191: *Varneria* to *Erelieva*

[Venational division F. Forewing with 9 veins; 2 from the cell; 3 and 5 stalked; 4 absent; 9 absent; 10 from the cell.]

189. Genus Varneria Dyar

Varneria Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 114, 1904.—Forbes, Cornell Mem. 68, p. 639, 1923. (Type of genus: *Varneria postremella* Dyar.)

Tongue well developed. Antenna weakly pubescent; shaft simple, sometimes showing a slight bend at base (but no sinus and the bend as obvious in female as male). Labial palpus oblique, slender, laterally flattened, reaching as high as vertex; third segment slightly less than half as long as second. Maxillary palpus filiform. Forewing smooth; 9 veins; vein 2 from lower outer angle of cell or from very close to the angle, connate with or approximate to the stalk of 3–5 at base; 4 absent; 3 and 5 stalked; 6 from below upper angle of cell, straight; 8 and 9 united (9 absent); 10 from the cell, separated from 8 at base; male with strong costal fold containing projecting hair tuft. Hind wing with vein 2 from close to lower outer angle of cell; 3 and 5 long stalked; 7 and 8 completely anastomosed beyond cell; cell one-half the length of wing; discocellular vein curved. Abdomen of male with rather weak, compound, dorsolateral scale tufts.

Male genitalia with apical process of gnathos U-shaped, the prongs rather short and moderately stout. Transtilla complete, a narrow curved band. Harpe with projecting spur from base of costa, otherwise simple. Anellus a simple shield. Aedeagus straight, simple, not appreciably tapering; penis bearing a flat, weakly sclerotized plate, otherwise unarmed. Vinculum subtriangulate, stout, no longer or but slightly longer than greatest width.

Female genitalia with ductus bursae sclerotized and flattened for more than half its length from genital opening and with sclerotized, projecting, dorsal shield behind genital opening; bursa copulatrix with or without signum, latter when present a small flat plate with a few toothlike projections along one edge; ductus seminalis from near middle of bursa.

Four species are here recognized as belonging to the genus; but two of these are of doubtful specific status. The absence of males in two of the species and the scarcity of specimens in those known only from females makes the evaluation of characters for specific separation very difficult. All of the species have a superficial character in common in the vinous red ground color of the forewings.

627. Varneria postremella Dyar

FIGURES 88, 631, 1110

Varneria postremella Dyar, Proc. Ent. Soc. Washington, vol. 6, p. 115, 1904.—Ely, Proc. Ent. Soc. Washington, vol. 12, p. 203, 1910.—Forbes, Cornell Mem. 68, p. 639, 1923.—McDunnough, Check list, No. 6406, 1939.

Forewing vinous red; basal half of costa overlaid with blackish scales; a line of blackish scales along discal fold, spreading somewhat between veins 3 and 6, this blackish dusting variable and sparse in some specimens; no transverse lines or discal spots distinguishable. Hind wing smoky fuscous, costal and terminal margins darker. Alar expanse, 9–10.5 mm.

Male genitalia with costal process from harpe directed forward, hooked at apex; lower margin of harpe incurved near apex. Terminal margin of vinculum angulate. Female genitalia with signum present; projecting shield behind genital opening subtriangulate, sides incurved, apex truncate.

TYPE LOCALITY: Kentucky (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Connecticut*, East River (July); *Maryland*, Hyattsville (Aug.), Plummers Isl. (July); *Virginia*, Mountain Lake (July); *Kentucky* (July).

In *postremella* vein 2 of forewing is connate with the stalk of 3–5. In the remaining species of *Varneria* it is closely approximate. This character, however, might be expected to vary in individual specimens if more were available.

628. Varneria nannodes Dyar

FIGURE 1111

Varneria nannodes Dyar, Proc. Ent. Soc. Washington, vol. 47, p. 346, 1914.

This species is represented only by the female type, which in color, markings, and genitalia exhibits nothing to distinguish it specifically from females of *postremella*. It is probably a synonym of the latter; but in the absence of a male of *nannodes* or any matching examples between Virginia and Panamá it were wiser to hold any synonymy in abeyance. Alar expanse, 8.5 mm.

TYPE LOCALITY: Cabima, Panamá (type in USNM).

FOOD PLANT: Unknown.

629. Varneria atrifasciella Barnes and McDunnough

FIGURE 1112

Varneria atrifasciella Barnes and McDunnough, Contributions, vol. 2, p. 184, 1913.—McDunnough, Check list, No. 6407, 1939.

Forewing dark vinous red rather heavily dusted with blackish scales; in the paratype faint indications of pale (yellowish) antemedial and postmedial lines, these, however, not distinguishable in the type and their position chiefly indicated by the concentration of blackish scaling

between them. Hind wing smoky white, the veins slightly darker. Alar expanse, 9–9.5 mm.

Female genitalia without signum; projecting shield behind genital opening large and approximately square; an eversible lobe in ventral membrane between ovipositor and eighth-segment collar.

TYPE LOCALITY: Everglades, Fla. (type in USNM).

FOOD PLANT: Unknown.

Represented only by the type and one paratype from the type locality (Apr.),.both females.

630. Varneria dubia, new species

FIGURES 632, 1113

Similar to *atrifasciella* except that forewing is less abundantly shaded with black and female genitalia show slight differences in the shape of the shield at genital opening and the eighth-segment collar (compare figs. 1112 and 1113). Alar expanse, 8.5–11 mm.

Male genitalia with costal process from harpe directed backward, curved, pointed at apex; lower margin of harpe evenly convex toward apex. Female genitalia with projecting shield behind genital opening triangulate; eighth-segment collar appreciably narrower towards base on dorsum; otherwise as in *atrifasciella*.

TYPE LOCALITY: El Yunque, Luquillo Mts., Puerto Rico (type in Cornell Univ. Coll.; paratypes in Cornell Univ. and USNM, 61395).

FOOD PLANT: Unknown.

Described from male type and one male and four female paratypes from the type locality, Mar. 29 to Apr. 23, 1930, Cornell University lot 795 sub. 9 and 40. In addition to the types there are fragments of a broken specimen in the Cornell Collection from Jajome Alta, Puerto Rico, June 18, 1930, J. A. Hoffman, collector.

This species is uncomfortably close to *atrifasciella* and may be nothing more than a race or variety of it, but in all the females before me the genitalic differences, slight though they be, are consistent, and in the absence of any authentic males of *atrifasciella* or sufficient female examples of any *Varneria* species to determine the extent of individual variation in genitalia it seems safest to define *dubia* as a distinct species.

190. Genus Eurythmia Ragonot

Eurythmia Ragonot, N. Amer. Phycitidae, p. 16, 1887.—Hulst, Phycitidae of N. Amer., p. 195, 1900.—Hampson, *in* Ragonot, Monograph, pt. 2, pp. xiii, 266, 1901. (Type of genus: *Ephestia hospitella* Zeller.)

Tongue well developed. Antenna weakly pubescent, simple. Labial palpus upturned, reaching vertex, laterally flattened and somewhat rough scaled; third segment slightly more than half as long as second. Maxillary palpus filiform. Forewing smooth; 9 veins; vein 2 from very close to lower outer angle of cell; 3 from the angle, shortly stalked with 5; vein 4 absent; 6 from below but near upper angle, very slightly bent; 8 and 9 united; 10 from the cell, separated from 8 at base; male with short costal fold. Hind wing with 2 from close to lower outer angle of cell; 3 and 5 stalked for at least half their lengths; 7 and 8 anastomosed for most of their lengths beyond cell (free element of 8 very short); cell less than half the length of wing; discocellular vein curved. Eighth abdominal segment of male simple.

Male genitalia with gnathos terminating in a very short, stout, narrowly forked projection. Transtilla complete, arched and produced at middle into a narrowly forked projection with shorter central spur. Harpe with costa sclerotized for half its length, the apex of the sclerotized margin projecting as a free spur. Anellus a curved shield with short lateral lobes. Aedeagus tapering sharply from enlarged base to bluntly pointed apex; penis armed with an elongate sclerotized spiral band covered with short saw-toothed spines. Vinculum triangulate, longer than greatest width and tapering to a blunt point.

Female genitalia with ductus bursae membranous throughout; genital opening simple; bursa copulatrix with signa a series of (3 to 6) detached, broad-based, short, thornlike spines and narrow-bladed discs situated near anterior end of the bursa and a cluster of several similar, much smaller spines near junction of bursa and ductus bursae; ductus seminalis from bursa in the neighborhood of the larger signa.

Eurythmia is distinguished chiefly by the armature of the penis, the arrangement of the signa in bursa, and the simple eighth abdominal segment of the male. The venation is similar to that of *Varneria* except for the shorter stalking of veins 3 and 5 of forewing, normally a character of, at most, specific significance. Ragonot and Hampson interpret the forewing venation differently from that given here; namely, 2–3 united and 4–5 stalked rather than 4 absent and 3–5 stalked. The end result would be the same, but the male genitalia do not indicate any affinities to the genera having 2 and 3 stalked and tending to fuse and do show affinities to *Ephestiodes* (especially the aberrant species *noniella* and *stictella*) where veins 4 and 5 are stalked and 4 shows a tendency to disappear (compare venation of *E. plorella*, fig. 109).

Apparently the genus as here defined is confined to North America; at least, no tropical species have as yet been discovered. Several have been described from the United States on trifling differences of color and maculation. They exhibit no differences in male genitalia of any significance and no consistent characters in the female genitalia. There is great variability in the number, arrangement, and shape of the spines and discs forming the signa; but this is individual and as great between females of a given series as between it and any of the other named forms. Pending some information on the biology, and more material from intervening areas of the distribution, we shall have to keep some of the names; but I suspect that they all represent but one variable species. Figures 633c–d show extremes of variation in the forked central projection from transtilla between a small Texas example of *hospitella* and the type of *diffusella* Ely. Such difference is not of more than individual significance as we have both extremes and all intergrades in male examples of *hospitella*.

631. Eurythmia hospitella (Zeller)

FIGURES 87, 633, 1130

Ephestia hospitella Zeller, Verh. zool.-bot. Ges. Wien, vol. 25, p. 338, 1875.

Eurythmia hospitella (Zeller) Ragonot, N. Amer. Phycitidae, p. 16, 1887.—Hulst, Phycitidae of N. Amer., p. 196, 1900; U. S. Nat. Mus. Bull. 52, p. 436, 1903.—Hampson, *in* Ragonot, Monograph, pt. 2, p. 266, 1901.—McDunnough, Check list, No. 6385, 1939 (in part).

Eurythmia spaldingella Dyar, Proc. Ent. Soc. Washington, vol. 7, p. 39, 1905.—McDunnough, Check list, No. 6391, 1939. (New synonymy.)

Forewing white more or less dusted with fuscous, the concentrated brown dusting appearing more or less blackish to the naked eye; antemedial line transverse, indicated by a dark outer border which is frequently produced into a sharp, outward angle at top of cell; subterminal line near and parallel to termen, bordered inwardly by a dark border and outwardly by some dark dusting; discal dots at end of cell small, blackish, separate. Hind wing whitish, subpellucid; the veins but faintly darkened; a fuscous line along termen. Alar expanse, 10–15 mm.

Male genitalia as given for the genus: Female genitalia with the larger spines and discs, comprising the signa, varying from 4 to 6. The type of *hospitella* has 5. One of the paratypes of *spaldingella* has 4, as in *yavapaella* (fig. 1131). The other female paratype of *spaldingella* has 5, as has a specimen from Winter Park, Fla. A female of *hospitella* in the National Museum from Texas (fig. 1130a) shows 6. There is no correspondence between locality or pattern variation and the number of the larger signa.

TYPE LOCALITIES: Texas (*hospitella*, in BM); Stockton, Utah (*spaldingella*, in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Florida*, Winter Park (July); *Texas*, Bosque County (May, July); Brownsville (May), Kerrville (July); *Arizona*, Maricopa County, Fish Creek (Sept.), Phoenix (Sept.), Liberty (Sept.); *Utah*, Stockton (Aug., Sept.).

Our series (14 specimens) under *hospitella* in the National Collection contained two species, not distinguishable on superficial characters but radically different in male and female genitalia. Eight of these specimens were the true *hospitella*. The remaining six are *quantulella* Hulst which Ragonot (1889), Hulst (1900), Hampson (1901), and later authors have treated as a synonym of *hospitella*, but which, along with *parvulella* Ely and the tropical forms Dyar described under *Eurythmia*, I am removing to form the new genus *Erelieva*. From Clarke's notes I suspect that the original type series of *hospitella* in the British Museum is also a mixture. It consists of four females and two males. As no one of the cotypes was designated by Zeller or any later worker as the actual holotype I am here designating the female of his type series dated "17–V" as lectotype. It bears the following labels: A small white label with the numerals "17/5" to indicate date; another white, rectangular label with the inscription "Bosque Co. Texas"; the usual Zeller rectangular green label inscribed "hospitella Z. Texas Stt. 68"; and another white label with "Zell. Coll. 1884." A sketch of the genitalia of this lectotype shows five of the larger signa in bursa (2 thorns and 3 discs) similar to the arrangement shown in figure 1130.

632. Eurythmia hospitella yavapaella Dyar, new status

FIGURE 1131

Eurythmia yavapaella Dyar, Journ. New York Ent. Soc., vol. 14, p. 108, 1906.—McDunnough, Check list, No. 6392, 1939.

Forewing more heavily dusted with dark scaling than in typical *spaldingella;* general color, to the naked eye, more brownish fuscous than ash gray and with the dark borders of the transverse lines more or less obscured in the dark overscaling of the wing; hind wing with a faint smoky tint. Alar expanse, 13.5–15.5 mm.

Female genitalia of specimen from Glenwood Springs, Colo. (fig. 1131) show four large signa. Another female from the same locality and collection shows six of the larger signa. A San Diego, Calif., female (fig. 1131a) shows five.

TYPE LOCALITY: Yavapai County, Ariz. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Arizona*, Yavapai County; *Colorado*, Glenwood Springs; *California*, San Diego (May, July), San Felipe Wash, San Diego County (June).

This is at most a race and probably no more than a color variety of *hospitella*. I am holding the name merely as a precaution against possible future separation.

633. Eurythmia angulella Ely

FIGURE 1132

Eurythmia angulella Ely, Proc. Ent. Soc. Washington, vol. 12, p. 202, 1910.—McDunnough, Check list, No. 6387, 1939.

Eurythmia diffusella Ely, Proc. Ent. Soc. Washington, vol. 12, p. 202, 1910.—McDunnough, Check list, No. 6388, 1939. (New synonymy.)

Similar to the dark western form, *yavapaella*, except dark margins of transverse lines of forewing somewhat more contrasted and hind wings darker. Bursa copulatrix of female also larger than that of any western specimens. The name *angulella* may apply only to a northeastern race of *hospitella* but in the absence of any intergrading examples from any central United States localities we must keep *angulella* specifically separated. Ely's *diffusella*, represented only by his male type, is simply a slightly more brownish specimen of *angulella* with slightly wider dark margin to the antemedial line. Alar expanse, 12–14 mm.

TYPE LOCALITY: East River, Conn. (*angulella* and *diffusella*, in USNM).

FOOD PLANT: Unknown.

Represented in the National Museum by five males and nine females from the type locality (July) and one male from Trenton, Ontario, Canada (July).

634. Eurythmia fumella Ely

FIGURE 1133

Eurythmia fumella Ely, Proc. Ent. Soc. Washington, vol. 12, p. 202, 1910.—McDunnough, Check list, No. 6389, 1939.

Probably nothing more than an aberrant form of *angulella*; but known only from the unique female type, and differing from *angulella* in the wider diffusion of the whitish transverse lines of forewing, especially the antemedial line and in the blackish suffusion over the area between the lines. Bursa of female with but three of the larger signa. Alar expanse, 14 mm.

TYPE LOCALITY: East River, Conn. (July, in USNM).

FOOD PLANT: Unknown.

191. Erelieva, new genus

TYPE OF GENUS: *Pempelia quantulella* Hulst.

Characters of *Eurythmia* except: Male genitalia without an apical process to gnathos, the arms of gnathos fusing at their distal ends into the sclerotized subanal plate (subscaphium); aedeagus not tapering, expanding into a wide mouth at apex; penis unarmed except for some sclerotized wrinklings; transtilla produced at middle into a stout, widely forked projection. Female genitalia with bursa copulatrix evenly and finely scobinate over entire inner surface; signa a single elongate series of (5 to 14) thornlike spines; no cluster of smaller spines at junction of bursa and ductus bursae, except in *parvulella* where such spines are arranged in a spiral extending into the ductus. Eighth abdominal segment of male with compound dorsolateral scale tufts.

The species included in this new genus are removed from *Eurythmia* because of their radically different genitalia. They are a tropical group with a couple of extensions into the United States, while *Eurythmia*, as now restricted, seems to be confined to the continental United States. I suspect that, as in *Eurythmia*, the several specific names (with the exception of *parvulella*) represent no more than varieties of one widely distributed, superficially variable species; but this cannot be determined from the specimens now available.

635. Erelieva quantulella (Hulst), new combination

FIGURES 634, 1134

Pempelia quantulella Hulst, Ent. Amer., vol. 3, p. 134, 1887.

Eurythmia quantulella (Hulst) Ragonot, Ent. Amer., vol. 5, p. 116, 1889 (referred as synonym of *E. hospitella*).

Eurythmia santiagella Dyar, Ins. Insc. Menstr., vol. 7, p. 62, 1919. (New synonymy.)

Eurythmia hospitella Dyar (not Zeller), Ins. Insc. Menstr., vol. 13, p. 226, 1925.

Forewing fuscous more or less dusted with white, giving the wing a pale gray cloor, usually paler and more contrasting on the basal area; antemedial line slightly oblique, bordered outwardly by blackish fuscous; subterminal line faint with a narrow, blackish, inner border; discal dots faint, but distinct and separate. Hind wing dusky white, with veins perceptibly darkened and dark fuscous borders along costa and outer margin. Alar expanse, 11–15 mm.

Male genitalia as given for the genus. Female genitalia with from 10 to 14 signa.

TYPE LOCALITIES: Blanco County, Tex. (*quantulella*, in AMNH, ex Rutgers); Santiago, Cuba (*santiagella*, in USNM).

FOOD PLANTS: *Opuntia* (flowers), bell pepper, sorghum. The larvae are evidently flower or seed feeders in the plants attacked.

DISTRIBUTION: UNITED STATES: *Texas*, Blanco County (Aug.), Carrizo Springs (Oct.), Uvalde (June). PUERTO RICO: Aguirre Central (Apr.), Coamo Springs (Apr.), Palmas Abajas (near Guayama, July), Puerto Real (Vieques Isl., Apr., July), San Germán (Apr., Aug.). VIRGIN ISLANDS: Kingshill (St. Croix; Mar., Oct., Nov., Dec.), no specific locality (Apr.). CUBA: Santiago. HAITI: Port au Prince (May).

The type of *quantulella* in the Rutgers Collection is indeed a "very frail" specimen as Hulst said. It consists of a head, thorax, and a fragment of one forewing and is a female (not a male as stated by Hulst). A similar female from Blanco County, Tex. (in USNM), is also labeled "type" by Hulst. The two specimens are obviously conspecific. Dyar's *santiagella* has nothing to distinguish it from Texas specimens except the slightly larger size of his female type (14 mm.). The male associated with it and also from Santiago is considerably smaller (11.5 mm.). A long series of Cornell specimens from Puerto Rico and the Virgin Islands exhibits considerable variation in size and the distinctness of the pale basal area of forewing and the extremes of variation in the number of spines (signa) in the bursa. There are no consistent genitalic or pattern differences to distinguish even local races within the species, which is apparently a tropical one that has extended its range or been introduced into Texas.

The only Texas specimens I have seen are those in the National Museum, three males and five females. Three of the females came originally from Hulst through the Brooklyn and Fernald Collections. One female, from Uvalde, was reared June 1925 by A. P. Dodd from a larva feeding in the flowers of an *Opuntia*. The remaining female and the three males were reared at Carrizo Springs, Oct. 28, 1944, by members of the Special Survey of the Division of Plant Quarantine of the U. S. Bureau of Entomology and Plant Quarantine from larvae feeding in the ripened pods of bell pepper. The sorghum record is from reared examples in the National Collection from St. Croix.

636. Erelieva coca (Dyar), new combination

Eurythmia coca Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914.

Eurythmia coquilla Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 339, 1914 (new synonymy).

Eurythmia mossa Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 340, 1914 (new synonymy).

Eurythmia uncta Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 340, 1914 (new synonymy).

Differs from *quantulella* only in its somewhat smaller average size (10–12 mm.) and the more suffused brown-

ish color of forewing, the basal area being but slightly if any paler than the remainder of the wing. The color differences noted by Dyar among his supposed Panamá species are not so great as the variation exhibited by the Puerto Rican series of *quantulella* and the palpal differences he stresses are purely imaginary. The heads of his specimens were so badly battered and the palpi so distorted it would be impossible to determine their exact lengths, shapes, or scaling even if there were such differences, which there are not. I have grave doubt that *coca* is anything but a local form of *quantulella*; but in the absence of any examples of *Erelieva* from the mainland between Panamá and Texas it seems best to retain *coca* as a specific designation until more material is available.

The genitalia are not significantly different from those of *quantulella*.

TYPE LOCALITIES: Taboga Island, Panamá (*coca* and *uncta*, in USNM); La Chorrera, Panamá (*coquilla*, in USNM); Taboguilla Island, Panamá (*mossa*, in USNM).

FOOD PLANT: Unknown.

The only specimens I have seen are the 13 specimens (a male and 12 females dated Feb. and May) originally associated by Dyar with his several names and one female from Corazal, Panamá (Mar.), which he had erroneously associated with his female type of "*Eurythmia vestilla*," the latter, itself, a synonymy of *Ephestiodes plorella*.

637. Erelieva parvulella (Ely), new combination

FIGURE 1135

Eurythmia parvulella Ely, Proc. Ent. Soc. Washington, vol. 12, p. 202, 1910.—McDunnough, Check list, No. 6386, 1939.

Forewing brown with a very sparse dusting of whitish scales and a glossy sheen in contrast to the duller appearance of *quantulella* and *coca;* transverse lines straight, narrow, the antemedial line more distinct than in the other two species; veins 3 and 5 very shortly stalked. Hind wing glossy fuscous; veins not appreciably darker and terminal margin but faintly so. Alar expanse, 11–12.5 mm.

Male genitalia not appreciably different from those of *quantulella*. Female genitalia with from 5 to 7 signa and a spiral of small spines at junction of bursa and ductus bursae and extending into the ductus.

TYPE LOCALITY: East River, Conn. (type in USNM).

FOOD PLANT: Unknown.

A distinct species, distinguished by its glossy brown forewing, its darker hind wing, fewer signa, and the spiral spining at junction of bursa and ductus bursae. It is represented in the National Museum by a good series (37 specimens) collected by Ely in July 1909 and 1910 at the type locality; but, so far as I know, has not turned up since from any other locality. It may be indigenous to the northeastern United States or an invader from the Tropics. I suspect that it is the latter.

Group III

[Hind wing with veins 3 and 4 both absent.]

Key to the genera of group III

1. Forewing with veins 2 and 3 united; 4 and 5 stalked 2
   Forewing with veins 2 and 3 stalked; 4 and 5 united . . . . . Cabnia (p. 310)
2. Hind wing with discocellular vein absent; 6 greatly reduced . . . Microphycita (p. 310)
   Hind wing with discocellular vein present; 6 normal . . . . . Rabiria (p. 311)

192. Genus Cabnia Dyar

Cabnia Dyar, Journ. New York Ent. Soc., vol. 12, p. 108, 1904.—Forbes, Cornell Mem. 68, p. 639, 1923. (Type of genus: *Cabnia myronella* Dyar.)

Tongue very short; but exposed between the well-spaced labial palpi. Antenna pubescent; on male with a broadly scaled basal segment and a short, deep incurvation in base of shaft. Labial palpus upturned, short, not reaching to vertex; second segment triangularly scaled; third segment very short and broadly scaled. Maxillary palpus minute, hardly distinguishable. Forewing smooth; 9 veins; veins 2 and 3 stalked; 4 and 5 united, separated from the stalk of 2–3 at base; 6 from below upper angle of cell, straight; 8 and 9 united; 10 from the cell, well separated from 8 at base; male with a strong costal fold. Hind wing with vein 2 from well before lower outer angle of cell; 5 from the angle; 7 and 8 completely anastomosed beyond cell; discocellular vein very weak, curved. Eighth abdominal segment of male simple.

Male genitalia with apical process of gnathos a very short, blunt hook. Transtilla complete. Uncus long (but not longer than tegumen), moderately broad, beyond its broad base but slightly tapering to rounded apical margin. Harpe elongate; costa produced at apex into a short, free hook. Aedeagus simple, not tapering, and not appreciably enlarged at apex. Penis unarmed.

Female genitalia with ductus bursae membranous, short (much shorter than bursa); bursa copulatrix elongate, membranous, weakly scobinate over most of its inner surface; signa present but very weak, consisting of a pair of minute disks; genital opening simple; ductus seminalis from anterior end of bursa.

On its abbreviated tongue *Cabnia* could go in the Anerastiinae where it is placed in our recent list of North American Lepidoptera. However, on male genitalia and habitus it seems to fit better into the Phycitinae. The ocelli are present and the tongue not entirely concealed by the palps. The genus contains one North American species.

638. Cabnia myronella Dyar

FIGURES 128, 627, 1138

Cabnia myronella Dyar, Journ. New York Ent. Soc., vol. 12, p. 108, 1904.—Forbes, Cornell Mem. 68, p. 639, 1923.—McDunnough, Check list, No. 6427, 1939.

Forewing dark cinereus, uniformly colored, many of the scales tipped with dull white, giving the wing a slightly frosted appearance; transverse lines obsolete, or nearly so. Hind wing whitish, subpellucid; a very faint dark line along termen. Alar expanse 10–11 mm.

Genitalic characters as given for the genus. The male genitalia are remarkably like those of *Anagasta kühniella*, differing chiefly in the proportionally shorter uncus and the presence of a complete transtilla.

TYPE LOCALITY: Washington, D. C. (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: *Massachusetts*, Vinyard Haven (Aug.); *District of Columbia* (June); *Florida*, Lake Placid (Mar., Apr.).

193. Genus Microphycita Dyar

Microphycita Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 346, 1914. (Type of genus: *Microphycita titillella* Dyar.)

Tongue well developed. Antenna pubescent, simple. Labial palpus upturned, slender; reaching to vertex; third segment as long as second, acuminate. Maxillary palpus minute, filiform. Forewing smooth; 9 veins; veins 2 and 3 united; 4 and 5 stalked, the stalk separated from 2 and 3 at base; 6 from below upper angle of cell, straight; 9 absent; 10 stalked with 8; male with costal fold. Hind wing with veins 2 and 5 rather short; 6 greatly reduced and obsolescent at base; 7 absent; cell open (discocellular vein absent). Eighth abdominal segment of male simple.

Male genitalia without apical projection from gnathos, the slender lateral arms fusing into sclerotized subanal

plate. Transtilla complete and greatly developed. Uncus absent. Harpe with cucullus projecting into a blunt point at apex. Anellus semitubular with elongate, slender, lateral lobes. Aedeagus curved, slightly tapered. Penis without armature. Vinculum as broad as long.

Female genitalia with ductus bursae membranous, slender, longer than bursa; bursa copulatrix round, membranous; signum a finely, densely spined plate; genital opening simple; ductus seminalis from middle of bursa.

A tropical genus of uncertain affinities. Dyar's interpretation of the forewing venation differs from mine. He considered vein 4 absent and veins 3 and 5 stalked. The end result would be the same, whichever interpretation is accepted.

639. Microphycita titillella Dyar

FIGURES 130, 636, 1137

Microphycita titillella Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 346, 1914.

Forewing dull ocherous with a narrow dark (fuscous) shade along costa and termen, expanding somewhat at tornal area; transverse lines obscure; the antemedial line near middle of wing, vertical and straight, indicated chiefly by a narrow, fuscous, outer border; subterminal line well back from terminal margin, also indicated by a narrow, inner border, subparallel to antemedial line; no distinguishable discal dots. Hind wing pale smoky fuscous. Alar expanse, 6–8 mm.

Genital characters as given for the genus.

TYPE LOCALITY: Río Trinidad, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Cabima (May), Río Trinidad (Mar., May, June).

194. Rabiria, new genus

TYPE OF GENUS: *Microphycita conops* Dyar

Characters of *Microphycita* except: Forewing with vein 10 from the cell, separated from 8 at base. Hind wing with veins of normal length; vein 2 from before lower outer angle of cell; cell closed, discocellular vein curved. Male genitalia with apical process of gnathos well developed, U-shaped; uncus strongly developed (similar to that of *Cabnia*); harpe simple, elongate, apical margin evenly rounded; anellus a simple curved band, without lateral lobes; aedeagus straight, not tapering; transtilla a narrow, arched bridge. Female genitalia with signum a small, smooth disk.

This genus is erected to receive *conops* originally included in *Microphycita* by Dyar along with the type species (*titillella*) of the latter genus. Why Dyar ever included the two species under one generic heading—even without examination of their genitalia—is difficult to understand; for the hind wing venation of the two is radically different.

640. Rabiria conops (Dyar), new combination

FIGURES 129, 635, 1136

Microphycita conops Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 346, 1914.

Forewing dark fuscous with a faint bronzy sheen; without transverse lines or discal spots. Hind wing pale translucent fuscous. Alar expanse, 8 mm.

Genitalic characters as given for the genus.

TYPE LOCALITY: La Chorrera, Panamá (type in USNM).

FOOD PLANT: Unknown.

DISTRIBUTION: PANAMÁ: Cabima (May), La Chorrera (Apr., May) Río Trinidad (May).

Represented so far only by the original type series, three males and one female. The type is a male (not a female as stated by Dyar). The genitalia are figured from this specimen and from a female (May) from the type locality.

Genera and species unplaced, unrecognized, or referred from the Phycitinae

Unplaced

[Myelois] grossipunctella Ragonot

FIGURES 915, 916

Myelois grossipunctella Ragonot, Nouv. Gen., p. 8, 1888; Ent. Amer., vol. 6, p. 64, 1890; Monograph, pt. 1, p. 51, 1893.—McDunnough, Check list, No. 6069, 1939.

This species was described from a male in the Oberthür Collection without locality label, but presumably from Australia. There is a series in the U. S. National Museum from California reared from larvae feeding on the "cottony cushion scale" and undoubtedly introduced with that insect. This series was reared under No. 869–09 by Coquillet, April 1889, and the species has not been recovered since in California, so apparently it did not become established there. It should be dropped from our lists.

It is not a *Myelois* as the genitalia clearly indicate; but its proper placement could only be made by one thoroughly acquainted with the Australian Phycitidae.

TYPE LOCALITY: Australia [?] (location of type unknown to me).

FOOD: *Icerya purchasi*. Larva a predator.

[Myelois] famula Zeller

FIGURE 910

Myelois famula Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 218, 1881.

Myelois restrictella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 220, 1881.

Salebria famula (Zeller) Ragonot, Monograph, pt. 1, p. 365, 1893.

This species and its synonym (*restrictella*) are known only from their female types. Their genitalia are identical and suggest a placement much closer to *Fundella* than to either *Myelois* or *Salebria*. It will have to wait upon discovery of a male.

TYPE LOCALITIES: Barranquila, Colombia (*famula*, in BM); Honda, Colombia (*restrictella*, in BM).

[Nephopteryx] fuscifrontella Zeller

FIGURE 911

Nephopteryx fuscifrontella Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 183, 1881.—Ragonot, Monograph, pt. 1, p. 282, 1893.

In the U. S. National Museum are two females from Colombia identified by Ragonot as *fuscifrontella*. The genitalia of one of these are figured. A male will be needed for generic placement. Whatever it is, the species is not a *Nephopteryx*.

TYPE LOCALITY: Honda, Colombia (type in BM).

[Salebria] nigricans Hulst

FIGURE 918

Salebria nigricans Hulst, Canadian Ent., vol. 32, p. 171, 1900.—McDunnough, Check list, No. 6201, 1939.

I have seen nothing resembling the female type, whose genitalia are figured. A male will be needed for proper generic placement.

TYPE LOCALITY: Phoenix, Ariz. (type in AMNH, ex Rutgers).

[Hypochalcia] cervinistrigalis Walker

FIGURE 919

Hypochalcia cervinistrigalis Walker, List, pt. 27, p. 45, 1863.—Ragonot, Monograph, pt. 1, p. 585, 1893.

Photographs of the female type and its genitalia are before me. The latter are figured. I have seen nothing like them. A male will be needed for generic placement.

TYPE LOCALITY: Santo Domingo [Dominican Republic] (type in BM).

Hypochalcia hulstiella Ragonot

Hypochalcia hulstiella Ragonot, N. Amer. Phycitidae, p. 11, 1887; Monograph, pt. 1, p. 603, 1893.—Hulst, Phycitidae of N. Amer., p. 168, 1890.—McDunnough, Check list, No. 6275, 1939.

According to Clarke the type lacks an abdomen and is otherwise in very poor condition. It is very likely not an American example. Ragonot's figure (Monograph, pl. 21, fig. 5) strongly resembles one of the variants of the European *Hypochalcia ahenella* with well-marked lines.

TYPE LOCALITY: "Texas" (type in Paris Mus.).

[Elasmopalpus] corrientellus Ragonot

FIGURE 917

Elasmopalpus corrientellus Ragonot, Nouv. Gen., p. 23, 1888; Monograph, pt. 1, p. 423, 1893.

This is not an *Elasmopalpus*, but generic placement cannot be made without an authentic male. The type is a female. Its genitalia are figured.

TYPE LOCALITY: Corrientes, Argentina (type in Paris Mus.).

[Euzophera] postflavida Dyar

FIGURE 1128

Euzophera postflavida Dyar, Ins. Insc. Menstr., vol. 11, p. 29, 1928.

This species is represented by the female type and a female paratype (in USNM) from St. Laurent Maroni,

French Guiana, and a female (in Cornell Collection) from Tumatumari, Potaro River, British Guiana (June). The male is unknown. The distinctive genetalia and coloration readily identify the species. The basal half of hind wing and the abdomen (except for the last two segments) are ochre yellow; apical half of hind wing and the two caudal segments of abdomen blackish. A male, however, will be needed before the species can be properly placed generically. It is not a *Euzophera*.

TYPE LOCALITY: Nouveau Chantier, French Guiana (Sept.; type in USNM).

FOOD PLANT: Unknown.

[Euzophera] rinmea Dyar

FIGURE 1129

Euzophera rinmea Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 335, 1914.

Known only from the female type. Impossible to place without male.

TYPE LOCALITY: Río Trinidad, Panamà (Mar.; type in USNM).

FOOD PLANT: Unknown.

[Euzophera] came Dyar

FIGURE 1126

Euzophera came Dyar, Ins. Insc. Menstr., vol. 7, p. 56, 1919.

Represented in the National Collection by the female type and five other females from the type locality. Not a *Euzophera* but cannot be placed without male.

TYPE LOCALITY: Cayuga, Guatemala (type in USNM).

FOOD PLANT: Unknown.

[Euzophera] gais Dyar

Euzophera gais Dyar, Ins. Insc. Menstr., vol. 7, p. 57, 1919.

Represented only by the unique female type, which is probably a synonym of *Anthropteryx irichampa* Dyar. Both species have similar genitalia. Synonymy and proper placement will have to wait upon recovery of a male.

TYPE LOCALITY: Cayuga, Guatemala (June; type in USNM).

FOOD PLANT: Unknown.

Genus Anthropteryx Dyar

FIGURE 1059

Anthropteryx Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 335, 1914. (Type of genus: *Anthropteryx irichampa* Dyar, loc. cit., p. 336.)

This genus is probably a good one, but was erected upon a freak specimen and the venational "characters" as given are incorrect. Vein 4 is absent from the left forewing of *irichampa* but present on the right wing and long stalked with 5, and vein 3 is connate with the stalk of 4–5, not stalked as stated by Dyar. The species belongs, therefore, in venational group A (11 veins in forewing and vein 2 from the cell). Its genitalia indicate close relationship to *Moodnopsis*. A male will be needed before the status of *Anthropteryx* can be determined. The type of genus is represented only by its unique female type.

TYPE LOCALITY: Taboga Island, Panamá (Feb.; type in USNM).

FOOD PLANT: Unknown.

[Moodna] formulella Schaus

FIGURE 1127

Moodna formulella Schaus, Ann. Mag. Nat. Hist. ser. 8, vol. 11, p. 252, 1913.

A large (28 mm.), strikingly marked species which should be easy to recognize if more specimens are discovered. So far known only from the unique female type. A male will be needed for proper placement. It is obviously not a *Moodna*, having 11 veins in the forewing, with 4 and 5 stalked for a little more than half their lengths; 2 from before the lower outer angle of cell; 3 from the angle and slightly separated from the stalk of 4–5; 6 straight from below upper angle of cell; 8 and 9 long stalked; 10 from the cell but rather close to the stalk of 8–9. Hind wing with 2 from well before the angle of the cell; 3 and 5 from the angle, approximate at base; 7 and 8 anastomiosed from most of their lengths beyond cell; cell one-third the length of wing; discocellular vein curved. The transverse lines of forewing are rather close together, the antemedial line being near the middle of the wing. The dark areas and markings of the wing are a reddish brown rather than the usual fuscous shades.

TYPE LOCALITY: Juan Viñas, Costa Rica (Feb.; type in USNM).

FOOD PLANT: Unknown.

[Eucampyla] putidella Schaus

FIGURE 1095

Eucampyla putidella Schaus, Ann. Mag. Nat. Hist., ser. 8, vol. 11, p. 250, 1913.

Known only from the female type. A male is needed for proper placement. Certainly does not belong in *Eucampyla*, which is an Australian genus not represented in the American faunas. May be an aberrant example of *Vitula*. The venation and female genitalia are those of *Vitula* except for the presence of vein 9 in both forewings (8 and 9 being long stalked) and the absence of scobinations in the bursa.

TYPE LOCALITY: Mount Poas, Costa Rica (May; type in USNM).

FOOD PLANT: Unknown.

[Honora] dulciella Hulst

FIGURE 951

Honora dulciella Hulst, Journ. New York Ent. Soc., vol. 8, p. 223, 1900.—McDunnough, Check list, No. 6349, 1939.

This species has the venation of *Honora* but the female genitalia are altogether wrong for that genus. A male will be needed for proper placement. At present *dulciella* is represented only by the female type.

TYPE LOCALITY: Palm Beach, Fla. (type in USNM).

FOOD PLANT: Unknown.

Unrecognized

Myelois infusella Zeller

Myelois infusella Zeller, Isis von Oken, 1848, p. 869.
Salebria infusella (Zeller) Ragonot, Monograph, pt. 1, p. 352, 1893.

Unknown to me. The type is supposed to be in the Berlin Museum, but Dr. Hering was unable to locate it.

TYPE LOCALITY: Port-au-Prince, Haiti.

Genus Phycitopsis Ragonot

Phycitopsis Ragonot, N. Amer. Phycitidae, p. 4, 1887; Monograph, pt. 1, p. 185, 1893.—Hulst, Phycitidae of N. Amer., p. 133, 1890. (Type of genus: *Phycitopsis flavicornella* Ragonot, loc. cit.—Hulst, op. cit., p. 134.—McDunnough, Check list, No. 6124, 1939.)

I have seen nothing from America that could be this genus or species. According to Clarke's notes the female type is not in either the Paris or British Museum Collections. From the Ragonot descriptions the genus should go into venational division D and the species must strongly resemble the Old World *Phycita spissicella* (Fabricus). I suspect that *flavicornella* is a European specimen and the "Texas" locality is a mislabeling. This is quite likely if the type was a Boll specimen.

There is a discrepancy between Ragonot's description and his figure of the labial palpus (Monograph, pl. 8, fig. 10). The figure shows an oblique, moderately long (not a very short) ascending palp.

TYPE LOCALITY: "Texas" (type lost?).

Euzophera intextella (Zeller)

Myelois intextella Zeller, Isis von Oken, 1848, p. 871.
Euzophera intextella (Zeller) Ragonot, Monograph, pt. 2, p. 53, 1901.

Unknown to me. The type is supposed to be in the Berlin Museum but Dr. Hering has been unable to locate it.

TYPE LOCALITY: St. Thomas, British West Indies.

Euzophera daedalella Ragonot

Euzophera daedalella Ragonot, Nouv. Gen. p. 32, 1888; Monograph, pt. 2, p. 56, 1910.

Unknown to me. This type is also supposed to be in the Berlin Museum. Dr. Hering was unable to locate it.

TYPE LOCALITY: Chanchamayo, Perú.

Zophodia brevistrigella Ragonot

Zophodia brevistrigella Ragonot, Nouv. Gen., p. 31, 1888; Monograph, pt. 2, p. 24, 1901.

According to Ragonot the type (♀) was deposited in the Staudinger Collection in Berlin. It has not been located and so far I have seen nothing that agrees with the description and figure published in the Ragonot monograph.

TYPE LOCALITY: Nova Friburgo, Brazil.

Zophodia subcanella (Zeller)

Myelois subcanella Zeller, Isis von Oken, 1848, p. 873.
Zophodia subcanella (Zeller) Ragonot, Monograph, pt. 2, p. 22, 1901.

Unknown to me. Type supposed to be in Berlin Museum but not located.

TYPE LOCALITY: Brazil.

Psorosa disticta (Zeller)

Euzophera disticta Zeller, Horae Soc. Ent. Rossicae, vol. 16, p. 232, 1881.
Psorosa disticta (Zeller) Ragonot, Monograph, pt. 2, p. 107, 1901.

A photograph of the genitalia of the female type shows two large opposed signa composed of cup-shaped, strongly spined concave plates (similar to those of *Rotruda mucidella*). I have seen nothing that matches the type exactly either in structure or superficially. It is obviously not a *Psorosa* or a *Euzophera;* but generic placement cannot be made without a male.

TYPE LOCALITY: Maraquita, Colombia (type in BM).

Hornigia clitellatella Ragonot

Hornigia clitellatella Ragonot, Nouv. Gen., p. 36, 1888.

In the Ragonot monograph (pt. 2, p. 269, 1901) Hampson places *clitellatella* in *Moodna*. It apparently belongs somewhere near *Moodna*, in venational group C, but accurate placement must wait upon discovery of a male from Chile. The female type is in the Paris Museum. I have seen nothing agreeing with Ragonot's description or figure (Monograph, pl. 34, fig. 12).

TYPE LOCALITY: Callao, Chile (type in Paris Mus.).

Moodna olivella Hampson

Moodna olivella Hampson, *in* Ragonot, Monograph, pt. 2, p. 268, 1901.

I have seen nothing agreeing with either the description or figure (pl. 49, fig. 12) in the Monograph. Clarke's notes on the genitalia of the unique male type in the British Museum show that *olivella* cannot be a *Moodna*. The gnathos apparently is more like that of *Moodnopsis*. Placement will have to wait upon recovery of additional specimens.

TYPE LOCALITY: Petrópolis, Brazil.

Euzopherodes megalopalis Hampson

Euzopherodes megalopalis Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 14, p. 181, 1904.

According to Clarke's notes the type in the British Museum is a female (not a male as stated by Hampson) and has a glued-on abdomen, which may or may not belong with the remainder of the specimen. A photograph of the type shows a moth superficially similar to *Nicetiodes apianella* Schaus in markings. Its venation (if correctly given) places it in venational group D where we have nothing resembling it. We shall have to wait upon additional specimens (male and female)

for proper placement. Hampson's reference to the Old World *Euzopherodes* is obviously wrong.

TYPE LOCALITY: Nassau, Bahamas.

Genera and species referred from Phycitinae

Genus Eutrichocera Hampson

Eutrichocera Hampson, Ann. Mag. Nat. Hist., ser. 7, vol. 14, p. 182, 1904. (Type of genus: *Eutrichocera paurolepidalis* Hampson, loc. cit.)

This is an Epipaschiid. The genus is a synonym of *Pococera* and its type species a synonym of *P. insularella* Ragonot.

TYPE LOCALITY: Abaco, Bahamas (type, ♂, in BM).

Myelois atristrigella Ragonot

Myelois atristrigella Ragonot, Monograph, pt. 1, p. 40, pl. 18, fig. 3, 1893.

This species goes to the *Epipaschiidae*. I have examined the type. It has the normal epipaschiid venation, but will require a new genus, for it does not fit comfortably in any of our described epipaschiid genera. Its peculiar forewing pattern should make it easy to identify if more specimens are recovered. At present it is known only from the unique male type.

TYPE LOCALITY: Puerto Rico (type in Zool. Mus. Univ. Berlin).

Genus Psammia Hampson

Psammia Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 71, 1930. (Type of genus: *Psammia flavipicta* Hampson, loc. cit.—McDunnough, Check list, No. 6234, 1939.)

Genus and species go to Anerastiinae.

TYPE LOCALITY: Florida (type in BM).

Megasis indianella Dyar

Megasis indianella Dyar, Ins. Insc. Menstr., vol. 11, p. 28, 1923.—McDunnough, Check list, No. 6265, 1939.

Goes to Anerastiinae. Dyar's species is a synonym of *Ragonotia olivella* Hulst.

TYPE LOCALITY: Indian Wells, Calif. (type in USNM).

Euzophera tintilla Dyar

Euzophera tintilla Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 334, 1914.

Goes to Anerastiinae. Described from single male. Generic placement uncertain.

TYPE LOCALITY: Porto Bello, Panamá (Apr.; type in USNM).

FOOD: Unknown. Larva probably a coccid feeder.

Euzophera conquistador Dyar

Euzophera conquistador Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 335, 1914.

Goes to Anerastiinae. Described from single female. Generic placement uncertain.

TYPE LOCALITY: Cabima, Panamá (May; type in USNM).

FOOD: Unknown.

Euzophera mabes Dyar

Euzophera mabes Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 335, 1914.

Goes to Anerastiinae. Described from female. Generic placement uncertain.

TYPE LOCALITY: Taboga Island, Panam (Feb.; type in USNM).

FOOD: Unknown.

Euzophera climosa Dyar

Euzophera climosa Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 335, 1914.

The original series before Dyar consisted of three males and four females (not one male and five females as stated) and only the male holotype and one male from the type locality can be definitely assigned to the name. The other male from the type locality is congeneric but a distinct, undescribed species. The four females represent two species, each of which consists of one example from Río Trinidad and one from Porto Bello. Which of these female species, if either, represents the other sex of *climosa* is not possible to determine. All these specimens belong in the Anerastiinae and will require reference to a new genus when that subfamily is revised.

TYPE LOCALITY: Río Trinidad, Panamá (Mar.; type in USNM).

FOOD: Unknown. Probably a coccid feeder.

Zophodia epischnioides Hulst

Zophodia epischnioides Hulst, Canadian Ent. vol. 32, p. 173, 1900.

I have been unable to locate the type of this species in the Rutgers Collection or elsewhere. From the description I suspect that it is an Anerastiine. It is obviously not a *Zophodia*. Disposition of the name can wait upon a revision of the Anerastiinae.

TYPE LOCALITY: Not given (type lost?).

FOOD PLANT: Unknown.

Genus Harnochina Dyar

Harnochina Dyar, Proc. U. S. Nat. Mus., vol. 47, p. 340, 1914. (Type of genus: *Harnochina rectilinea* Dyar, loc. cit.)

Goes to the Anerastiinae. The tongue is absent.

TYPE LOCALITY: Corozal, Canal Zone, Panamá (Mar.; type in USNM).

FOOD PLANT: Unknown.

Genus Nasutes Hampson

Nasutes Hampson, Ann. Mag. Nat. Hist., ser. 10, vol. 5, p. 53, 1930. (Type of genus: *Nasutes venata* Hampson, op. cit. p. 54.)

This genus is a synonym of *Bandera* Ragonot and its type species (*venata*) a synonym of *B. cupidinella* (Hulst).

I have before me an enlarged photograph of the genitalia of the male type of *venata* and a slide of the genitalia of the male type of *cupidinella;* the two, both from Colorado, are identical in all details. The genus *Bandera* is a true anerastiid on habitus and all characters except the tongue. This organ is reduced, but not concealed between the labial palpi as in typical Anerastiinae. However, *Bandera* lacks any trace of an ocellus, as do several other Anerastiinae. This organ is present in all genera of Phycitinae in the Americas.

TYPE LOCALITY: Colorado (type in BM).

FOOD PLANT: Unknown.

Maricopa albocostella Hulst

Maricopa albocostella Hulst, Canadian Ent., vol. 32, p. 176, 1900.
Valdiria albocostella (Hulst) Barnes and McDunnough, Check list of the Lepidoptera of Boreal America, No. 5755.—McDunnough, Check list, No. 6354, 1939.

Not a *Valdivia*. Goes to Anerastiinae. Has no tongue visible. The type is a male with veins 4 and 5 united in forewing and with a slight excavation in the base of the antennal shaft.

TYPE LOCALITY: Anglesea, N. J. (type in AMNH, ex Rutgers).

FOOD PLANT: Unknown.

Checklist of American Phycitinae

1. Cryptoblabes Zeller
   1. gnidiella (Millière): Europe, Africa, Asia, Bermuda, Venezuela, Brazil
2. Acrobasis Zeller
   Mineola Hulst
   Seneca Hulst
   Acrocaula Hulst
   2. indigenella (Zeller): Eastern U. S. and Canada, California
      nebulo (Walsh)
      nebulella (Riley)
      zelatella (Hulst)
   3. grossbecki (Barnes and McDunnough), new comb.: Florida
   4. vaccinii Riley: U. S.
   5. amplexella Ragonot: Eastern U. S.
   6. tricolorella Grote: U. S., Canada
      scitulella Hulst
   7. comptella Ragonot: Western U. S.
   8. minimella Ragonot: Eastern U. S.
      nigrosignella Hulst
   9. feltella Dyar: Eastern U. S., Canada
   10. palliolella Ragonot: Eastern U. S., Canada
      albocapitella Hulst
   11. caryalbella Ely: U. S. (Connecticut)
   12. juglandis (LeBaron): Eastern U. S.
   13. sylviella Ely: Eastern U. S., Canada
   14. kearfottella Dyar: Eastern U. S.
   15. caryae Grote: Eastern U. S., Canada
   16. evanescentella Dyar: U. S. (Florida)
   17. stigmella Dyar: Eastern U. S.
   18. aurorella Ely: Eastern U. S.
   19. peplifera Dyar: Eastern U. S.
   20. exsulella (Zeller), new comb.: Eastern U. S.
      septentrionella Dyar
   21. angusella Grote: Eastern U. S., Canada
      eliella Dyar
   22. demotella Grote: Eastern U. S.
   23. latifasciella Dyar: Eastern U. S.
   24. irrubriella Ely: Eastern U. S.
   25. normella Dyar: Eastern U. S. (Connecticut)
   26. malipennella Dyar: Eastern U. S. (Connecticut)
   27. dyarella Ely: Eastern U. S. (Connecticut)
   28. ostryella Ely: Eastern U. S., Canada
   29. secundella Ely: Eastern U. S., Canada
   30. coryliella Dyar: Eastern U. S.
   31. hebescella Hulst: Eastern U. S. (New Jersey)
   32. cirroferella Hulst: Eastern U. S. (Texas)
   33. cunulae Dyar and Heinrich: Eastern U. S.
   34. caryivorella Ragonot: Eastern and Southwestern U. S.
   35. comacornella (Hulst), new comb.: Eastern U. S. (Texas)
   36. betulella Hulst: Eastern and Western U. S., Canada
   37. rubrifasciella Packard: Eastern U. S., Canada
      alnella McDunnough
   38. comptoniella Hulst: Eastern U. S., Canada
   39. myricella Barnes and McDunnough: U. S. (Florida)
   40. tumidulella (Ragonot), new comb.: U. S. (Florida)
3. Rhodophaea Guénée
   41. caliginella (Hulst), new comb.: U. S. (California, Arizona)
      caliginoidella (Dyar)
   42. supposita (Heinrich), new comb.: Canada (British Columbia)
4. Trachycera Ragonot
   43. pallicornella (Ragonot): U. S. (Texas)
5. Anabasis Heinrich, new genus
   44. ochrodesma (Zeller), new comb.: U. S., (Florida), México, Guatemala, Panamá Colombia, West Indies
      crassisquamella (Hampson)
6. Mildrixia Dyar
   45. constitutionella Dyar: México, Guatemala
7. Sematoneura Ragonot
   46. atrovenosella Ragonot: México, Costa Rica, Colombia, Ecuador, Perú, Argentina
   47. abitus Heinrich, new species: Ecuador
8. Hypsipyla Ragonot
   48. grandella (Zeller): U. S. (Florida), West Indies and Tropical America to Argentina
      cnabella Dyar
   49. ferrealis (Hampson), new comb.: Tropical America (Costa Rica to Brazil)
   50. dorsimacula (Schaus), new comb.: Costa Rica
   51. fluviatella Schaus: Costa Rica
9. Hemiptilocera Ragonot
   52. chinographella Ragonot: French Guiana, Brazil, Perú
   53. bigrana (Zeller): México, Colombia
   54. plumigerella (Ragonot), new comb.: "Amer. Merid."
   55. letharda (Schaus), new comb.: Panamá, México
   56. jocarella (Schaus): Costa Rica, Panamá, Brazil
   57. exoleta (Zeller): Colombia

10. Crocidomera Zeller
    58. turbidella Zeller: Cuba, Jamaica, México, U. S. (Texas)
    59. fissuralis (Walker): Dominican Republic, Puerto Rico
        adonea (Felder and Rogenhofer)
    60. stenopteryx (Dyar), new comb.: México
11. Cuniberta Heinrich, new genus
    61. subtinctella (Ragonot), new comb.: Western U. S. and Canada
12. Heras Heinrich, new genus
    62. disjunctus Heinrich, new species: Colombia
13. Adanarsa Heinrich, new genus
    63. intransitella (Dyar), new comb.: U. S. (Arizona, New Mexico)
14. Birinus Heinrich, new genus
    64. russeolus Heinrich, new species: British Guiana
15. Bertelia Barnes and McDunnough
    65. grisella Barnes and McDunnough: U. S. (Arizona)
16. Hypargyria Ragonot
    66. definitella (Zeller): Puerto Rico, Virgin Islands, Colombia, Brazil
    67. slossonella (Hulst), new comb.: U. S. (Florida), México
        tenuella (Barnes and McDunnough)
17. Charadrica Heinrich, new genus
    68. annuliferella (Dyar), new comb.: U. S. (New Mexico, Arizona)
    69. hystriculella (Hulst), new comb.: U. S. (Texas, Florida)
    70. bicolorella (Barnes and McDunnough), new comb.: U. S. (Arizona, Nevada, California)
18. Myelopsis Heinrich, new genus
    71. coniella (Ragonot), new comb.: U. S., Canada, México
        nefas (Dyar)
    72. immundella (Hulst), new comb.: U. S. (Texas)
    73. subtetricella (Ragonot), new comb.: U. S., Canada
        zonulella (Ragonot)
        obnupsella (Hulst)
    74. minutularia (Hulst), new comb.: U. S. (Texas)
    75. alatella (Hulst), new comb.: Western U. S.
        rectistrigella (Ragonot)
        fragilella (Dyar)
        piazzella (Dyar)
19. Anypsipyla Dyar
    76. univitella Dyar: Cuba, México, Guatemala, Panamá, Venezuela, Brazil, Perú, Ecuador, Jamaica
20. Apomyelois Heinrich, new genus
    77. bistriatella (Hulst), new comb.: Eastern U. S., Canada
        bilineatella (Ragonot)
21. Ectomyelois Heinrich, new genus.
    78. decolor (Zeller), new comb.: Tropical America
        ephestiella (Hampson)
    79. ceratoniae (Zeller), new comb.: Europe, U. S. (Florida), Puerto Rico, Jamaica, Argentina
        oporedestella (Dyar)
    80. muriscis (Dyar), new comb.: Tropical America
        palpalis (Dyar)
    81. furvidorsella (Ragonot), new comb.: Puerto Rico
    82. zeteki Heinrich, new species: Panamá
22. Paramyelois Heinrich, new genus.
    83. transitella (Walker), new comb.: U. S., tropical America
        notatalis (Walker)
        solitella (Zeller)
        duplipunctella (Ragonot)
        venipars (Dyar)
        cassiae (Dyar)
23. Pseudodivona Dyar
    84. commensella Dyar: México
    85. cispha Dyar: Guatemala, Costa Rica, British Honduras
    86. santa-maria Dyar: Guatemala
    87. carabayella Dyar: Perú, Bolivia, Colombia
24. Protomoerbes Heinrich, new genus
    88. aberrans Heinrich, new species: Colombia
    89. separabilis Heinrich, new species: Colombia
25. Diatomocera Ragonot
        Cabima Dyar
    90. tenebricosa (Zeller): Colombia, French Guiana, Costa Rica
    91. dosia (Dyar), new comb.: Panamá
    92. excisalis (Hampson), new comb.: French Guiana, Bolivia (?)
    93. decurrens (Dyar), new comb.: Panamá
    94. majuscula Heinrich, new species: Brazil
    95. albosigno Heinrich, new species: Brazil
    96. hoplidice (Dyar), new comb.: Panamá
    97. extracta Heinrich, new species: Costa Rica
    98. mochlophleps (Dyar), new comb.: México
26. Pseudocabima Heinrich, new genus
    99. castronalis Heinrich, new species: Brazil
    100. fearnella (Schaus), new comb.: Costa Rica, Guatemala
    101. guianalis Heinrich, new species: French Guiana, British Guiana
    102. euzopherella (Dyar), new comb.: Panamá
    103. pombra (Dyar), new comb.: Panamá
    104. nigristrigella (Ragonot), new comb.: Brazil
    105. arizonensis Heinrich, new species: U. S. (Arizona)
    106. expunctrix (Dyar and Heinrich), new comb.: Brazil
    107. perrensiella (Ragonot, new comb.: Argentina

108. rubrizonalis (Hampson), new comb.: French Guiana, Brazil

27. HYALOSPILA Ragonot
109. stictoneurella Ragonot: México, Guatemala, Brazil
110. celiella Schaus: Costa Rica
111. insequens Heinrich, new species: Bolivia, Colombia
112. majorina Heinrich, new species: México
113. fulgidula Heinrich, new species: Cuba
114. egenella (Ragonot), new comb.: Brazil
115. xanthoudemia (Dyar), new comb.: Panamá, Costa Rica
116. angulinella (Schaus), new comb.: Costa Rica
117. clevelandella (Dyar): Panamá
118. semibrunneella Ragonot: Colombia

28. FUNDELLA Zeller
119. pellucens Zeller: U. S. (Florida), West Indies, Brazil, Bolivia
cistipennis (Dyar)
120. argentina Dyar: U. S. (Florida, Texas), West Indies, Venezuela, Brazil, Argentina
eucasis Dyar
121. agapella Schaus: Galápagos Islands
122. ignobilis Heinrich: México, Guatemala, Costa Rica, Cuba, Puerto Rico, Haiti
123. ahemora Dyar: México, Guatemala, Costa Rica

29. DIFUNDELLA Dyar
124. corynophora Dyar: Guatemala, Panamá, French Guiana
125. subsutella (Schaus), new comb.: Costa Rica
126. distractor Heinrich, new species: Puerto Rico
127. tolerata Heinrich, new species: Bolivia

30. COPTARTHRIA Ragonot
128. dasypyga (Zeller): Colombia, Guatemala

31. PROMYLEA Ragonot
129. lunigerella Ragonot: Western U. S. and Canada.
130. lunigerella glendella (Dyar): Colorado
131. dyari Heinrich, new name: México
zimmermani (Druce)
drucei (Dyar)
132. druceii (Ragonot), new comb.: Guatemala
133. mindosis Dyar: México
134. dasystigma Dyar: México

32. ANADELOSEMIA Dyar
135. senesciella (Schaus): Costa Rica
136. tecmessella (Schaus): Costa Rica
137. fifria Dyar: Guatemala
138. base Dyar: Guatemala
139. obstitella (Schaus), new comb.: Costa Rica
140. texanella (Hulst), new comb.: U. S. (Texas, Florida), Puerto Rico, Cuba
dulciella (Hulst)
141. condigna Heinrich, new species: U. S. (Arizona)

33. DASYPYGA Ragonot
142. alternosquamella Ragonot: Western U. S., Canada
stictophorella Ragonot

34. RAMPYLLA Dyar
143. orio Dyar: México
144. polydectella (Schaus): Costa Rica
145. subcaudata (Dyar), new comb.: Guatemala, Costa Rica, Brazil
146. lophotalis Heinrich, new species: México, Guatemala

35. FULRADA Heinrich, new genus
147. querna (Dyar), new comb.: Panamá
148. carpasella (Schaus), new comb.: Galápagos Islands

36. SCORYLUS Heinrich, new genus
149. cubensis Heinrich, new species: Cuba

37. DAVARA Walker
Homalopalpia Dyar
Eucardinia Dyar
150. caricae (Dyar), new comb.: U. S. (Florida), Tropical America
dalera (Dyar)
151. columnella (Zeller), new comb.: Colombia
152. nerthella (Schaus), new comb.: México, Guatemala, Costa Rica
euthales (Dyar)
153. paranensis (Dyar), new comb.: Brazil
154. azonaxsalis Walker: Brazil
155. interjecta Heinrich, new species: Puerto Rico, Dominican Republic
156. rufulella (Ragonot), new comb.: Puerto Rico

38. SARASOTA Hulst
Cuba Dyar
157. plumigerella Hulst: U. S. (Florida)
158. furculella (Dyar), new comb.: Cuba, Puerto Rico, Dominica, Virgin Islands
159. ptyonopoda (Hampson), new comb.: Windward Islands

39. PIESMOPODA Zeller
Discopalpia Ragonot
Amphycitopsis Dyar
160. rubicundella Zeller: Brazil
161. xanthomera Dyar: Guatemala, Panamá Costa Rica, French Guiana
xanthozona Dyar
162. trichomata (Zeller): Colombia
163. flavicans (Zeller): Colombia, French Guiana
fratella Dyar
164. ragonoti (Dyar), new comb.: México, Guatemala, Costa Rica
165. isabella (Dyar), new comb.: Costa Rica
166. xanthopolys Dyar: Panamá
167. parva Heinrich, new species: Panamá
168. semirufella (Zeller): Colombia
169. apocerastes Dyar: México, Costa Rica, French Guiana, Brazil, Dominica
170. montella Schaus: Costa Rica

40. Atheloca Heinrich, new genus
    171. subrufella (Hulst), new comb.: U. S. (Florida), Cuba, Virgin Islands
        filiolella (Hulst). Virgin Islands
        ptychis (Dyar)
    172. bondari Heinrich, new species: Brazil
41. Praedonula Heinrich, new genus
    173. almonella (Dyar), new comb.: Panamá
42. Peadus Heinrich, new genus
    174. burdettellus (Schaus), new comb.: Costa Rica, Guatemala
        semproniella (Schaus)
    175. dissitus Heinrich, new species: Brazil
    176. subaquilellus (Ragonot), new comb.: Guatemala
43. Gabinius Heinrich, new genus
    177. paulsoni (Ragonot), new comb.: Chile
44. Ceracanthia Ragonot
        Procandiopa Dyar
    178. mamella (Dyar), new comb.: Panamá, Guatemala
    179. vepreculella Ragonot: Ecuador
45. Megarthria Ragonot
    180. peterseni (Zeller): Guatemala, Colombia, Brazil, Perú
    181. squamifera Heinrich, new species: Costa Rica
    182. frustrator Heinrich, new species: Costa Rica
    183. schausi Heinrich, new species: Costa Rica
    184. cervicalis Dyar: Cuba
    185. alpha Heinrich, new species: Guatemala, México, Costa Rica, Panamá, Bolivia, Brazil
    186. beta Heinrich, new species: México, Guatemala, Costa Rica, Trinidad
46. Drescoma Dyar
    187. cyrdipsa Dyar: México, Guatemala, Panamá, French Guiana
    188. cinilixa Dyar: Guatemala, Panamá
47. Monoptilota Hulst
    189. pergratialis (Hulst): U. S.
        grotella (Ragonot)
        nubilella Hulst
48. Zamagiria Dyar
    190. dixolophella Dyar: Panamá
    191. pogerythrus Dyar: México, Guatemala
    192. hospitabilis Dyar: Cuba
    193. masculinus Dyar: Guatemala
    194. australella (Hulst), new comb.: U. S. (Texas, Florida)
        bumeliella (Barnes and McDunnough): U. S. (Texas, Florida)
    195. fraterna Heinrich, new species: Cuba
    196. laidion (Zeller): U. S. (Florida), Tropical America
        deia Dyar
        striella Dyar
    197. ipsetona Dyar: Costa Rica
49. Anegcephalesis Dyar
    198. arctella (Ragonot), new comb.: U. S. (Florida), Bahamas, Cuba
        cathaeretes Dyar
50. Magiriopsis Heinrich, new genus
    199. denticosella (Dyar), new comb.: Tropical America
        cristalis (Hampson)
51. Ancylostomia Ragonot
    200. stercorea (Zeller): U. S. (Florida), Tropical America
        ignobilis (Butler)
        diffissella (Zeller)
    201. sauciella (Zeller): Colombia
    202. argyrophleps Dyar: México, Guatemala
    203. euchroma Dyar: Brazil
52. Caristanius Heinrich, new genus
    204. pellucidellus (Ragonot), new comb.: Puerto Rico, St. Vincent, Jamaica, Surinam, Brazil
        melanoplaga (Hampson)
    205. decoloralis (Walker), new comb.: Southern U. S.
        metagrammalis (Walker)
        furfurellus (Hulst)
        floridellus (Hulst)
    206. guatemalellus (Ragonot), new comb.: Guatemala
53. Etiella Zeller
    207. zinckenella (Treitschke): Europe, Asia, U. S., Tropical America
        etiella (Treitschke)
        schisticolor Zeller
        villosella Hulst
        rubribasella Hulst
54. Glyptocera Ragonot
    208. consobrinella (Zeller): Eastern U. S., Canada
        busckella (Dyar)
55. Pima Hulst
    209. boisduvaliella (Guénée), new comb.: Europe, Canada
    210. albiplagiatella (Packard), new comb.: Eastern U. S., Canada
    211. albiplagiatella occidentalis Heinrich, new race: Western U. S.
    212. fosterella Hulst: Western U. S., Canada
    213. vividella (McDunnough), new comb.: Canada
    214. albocostalialis (Hulst), new comb.: Western U. S., Canada
    215. albocostalialis subcostella (Ragonot), new comb.: Southwestern U. S.
    216. fulvirugella (Ragonot,) New comb.: Western U. S. (California)
    217. granitella (Ragonot), new comb.: Western U. S.
        piperella (Dyar)

218. parkerella (Schaus), new comb.: Western U. S. (Montana)

56. INTERJECTIO Heinrich, new genus
    219. denticulella (Ragonot), new comb.: Northwestern U. S., Canada
    220. columbiella (McDunnough), new comb.: Northwestern U. S., Canada
    221. ruderella (Ragnot), new comb.: "N. Amer." (California?)
    222. niviella (Hulst) new comb.: U. S., Canada
57. AMBESA Grote
    223. laetella Grote: Western U. S., Canada
    224. walsinghami (Ragonot): Western U. S.
        monodon Dyar
    225. walsinghami mirabella Dyar, new status: U. S. (Southern California)
    226. lallatalis (Hulst): Western U. S. (Nevada, Utah)
58. CATASTIA Hübner
    227. bistriatella (Hulst), new comb.: Western U. S. (California)
    228. incorruscella (Hulst), new comb.: Western U. S. (California)
    229. actualis (Hulst), new comb.: Western U. S., Canada
59. IMMYRLA Dyar
    230. nigrovittella Dyar: Eastern U. S.
60. OREANA Hulst
    231. unicolorella (Hulst): Eastern U. S., Canada
        leucophaeella (Hulst)
61. OLYBRIA Heinrich
    232. aliculella (Hulst), new comb.: Southwestern U. S.
        oberthuriella (Ragonot)
    233. furciferella (Dyar) new comb.: Southwestern U. S. (Arizona)
62. SALEBRIACUS Heinrich, new genus
    234. odiosellus (Hulst), new comb.: Western U. S.
        bakerella (Dyar)
        yumaella (Dyar)
63. SALEBRIARIA Heinrich, new genus
    235. turpidella (Ragonot), new comb.: Southern U. S.
        ademptandella (Dyar)
    236. nubiferella (Ragonot), new comb.: U. S.
    237. engeli (Dyar) U. S.
    238. annulosella (Ragonot), new comb.: U. S. (Texas, North Carolina)
        robustella (Dyar)
    239. tenebrosella (Hulst), new comb.: U. S.
        quercicolella (Ragonot)
        heinrichalis (Dyar)
    240. pumilella (Ragonot) new comb.: Southeastern U. S.
        georgiella (Hulst)
    241. fructetella (Hulst) new comb.: U. S.
        rectistrigella (Dyar)
64. QUASISALEBRIA Henrich, new genus
    242. admixta Heinrich, new species: Western U. S.
65. ORTHOLEPIS Ragonot
    243. jugosella Ragonot: Eastern U. S., Canada
    244. pasadamia (Dyar), new comb.: U. S., Canada
66. POLOPEUSTIS Ragonot
    245. arctiella (Gibson): Alaska, Canada
67. MEROPTERA Grote
        Emmerita Hampson
    246. mirandella Ragonot: Western U. S.
    247. cviatella Dyar: U. S. (Illinois, Mississippi)
    248. pravella (Grote): U. S., Canada
    249. abditiva Heinrich, new species: Canada
68. NEPHOPTERYX Hübner
    250. subfuscella (Ragonot), new comb.: Eastern U. S., Canada
        semiobscurella (Hulst)
    251. delassalis Hulst: Western U. S.
        purpurella (Hulst)
        pudibundella (Ragonot)
    252. delassalis fraudifera Heinrich, new race: Canada (British Columbia), U. S. (Washington)
    253. rubescentella (Hulst): U. S.
    254. fernaldi (Ragonot), new comb.: U. S., Canada
    255. dammersi Heinrich, new species: Western U. S. (California, Arizona)
    256. dammersi floridensis Heinrich, new race: U. S. (Florida)
    257. vetustella (Dyar), new comb.: U. S., Canada
    258. inconditella (Ragonot), new comb.: Western U. S. (Arizona, Colorado)
    259. subcaesiella (Clemens), new comb.: U. S., Canada
        contatella (Grote)
    260. virgatella (Clemens), new comb.: U. S., Canada
        quinquepunctella (Grote)
    261. carneella Hulst: U. S., Canada
        inquilinella (Ragonot)
    262. basilaris Zeller: U. S., Canada
    263. termitalis (Hulst), new comb.: Western U. S., Canada
        levigatella (Hulst)
    264. termitalis yuconella Dyar, new status: Alaska
    265. bifasciella Hulst: U. S. (Arizona)
        nogalesella (Dyar)
    266. uvinella (Ragonot), new comb.: Eastern U. S.
        afflictella (Hulst)
        liquidambarella (Dyar)
    267. celtidella (Hulst), new comb.: U. S.

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268. rubrisparsella (Ragonot): U. S.
rufibasella (Ragonot)
croceella (Hulst)
texanella (Hulst)
269. gilvibasella Hulst: U. S. (Texas)
lacteella (Hulst)
270. crassifasciella Ragonot: Eastern U. S.
decipientella Dyar
crataegella B. and McD.
271. bisra Dyar: México

69. TLASCALA Hulst
272. reductella (Walker): Eastern U. S.
gleditschiella (Fernald)

70. TULSA Heinrich, new genus
273. finitella (Walker), new comb.: Eastern U. S., Canada
melanellus (Hulst)
274. umbripennis (Hulst), new comb.: U. S. (Colorado)
gillettella (Dyar)
275. oregonella. (Barnes and McDunnough), new comb.: U. S. (Oregon)
276. infinitella (Dyar), new comb.: México

71. HOMOEOGRAPHA Ragonot
277. lanceolella Ragonot: Perú

72. TELETHUSIA Heinrich, new genus
278. ovalis (Packard), new comb.: U. S., Canada
latifasciatella (Packard)
geminipunctella (Ragonot)
modestella (Hulst)
279. rhypodella (Hulst), new comb.: U. S. ("Oregon")

73. PHOBUS Heinrich, new genus
280. brucei (Hulst), new comb.: Western U. S.
281. funerellus (Dyar), new comb.: Western U. S., Canada
282. curvatellus (Ragonot), new comb.: Western U. S.
283. incertus Heinrich, new species: Western U. S. (California)

74. ACTRIX Heinrich, new genus
284. nyssaecolella (Dyar), new comb.: Eastern U. S.
285. dissimulatrix Heinrich, new species: Eastern U. S. (Virginia)

75. STYLOPALPIA Hampson
286. lunigerella Hampson: West Indies, México
287. scobiella (Grote), new comb.: U. S. (Texas, Colorado)
decimerella (Hulst)
288. argentinensis Heinrich, new species: Argentina

76. PYLA Grote
289. fasciolalis (Hulst), new comb.: Canada (British Columbia)
290. impostor Heinrich, new species: Western U. S., Canada
291. aequivoca Heinrich, new species: Western Canada
292. insinuatrix Heinrich, new species: Canada (Manitoba)
293. aenigmatica Heinrich, new species: U. S., Canada
294. criddlella Dyar: Canada (Manitoba)
295. fusca (Haworth), new comb.: Holarctic
moestella (Walker)
frigidella (Packard)
cacabella (Hulst)
triplagiatella (Dyar)
296. hypochalciella (Ragonot), new comb.: Northwestern U. S., Canada.
blackmorella (Dyar)
297. hanhamella Dyar: Canada (Manitoba)
298. scintillans (Grote): Western U. S. (California)
feella Dyar
299. sylphiella Dyar: Northwestern U. S., Canada
300. rainierella Dyar: Northwestern U. S. (Washington)
301. aeneella Hulst: Western U. S. (Colorado, Utah)
302. aeneoviridella Ragonot: Western U. S., Canada
303. metalicella Hulst: Western U. S. (Colorado, Utah)
304. fasciella Barnes and McDunnough: Northwestern U. S. (California)
305. nigricula Heinrich, new species: Western U. S. (Nevada)
306. viridisuffusella Barnes and McDunnough: Western U. S. (California)

77. DIORYCTRIA Zeller
Pinipestis Grote
307. abietella (Denis and Schiffermüller): Northern Hemisphere
decuriella (Hübner)
abietivorella (Grote)
elegantella (Hulst)
308. sysstratiotes Dyar: Guatemala
309. reniculella (Grote): Northern U. S., Canada
310. ponderosae Dyar: Western U. S. (Montana, California)
311. majorella Dyar: México
muellerana Dyar
312. disclusa Heinrich: Eastern U. S.
313. auranticella (Grote): Western U. S., Canada
miniatella Ragonot
xanthaenobares Dyar
314. erythropasa (Dyar): Southwestern U. S. (Arizona)
315. horneana (Dyar): Cuba
316. pygmaeella Ragonot: Eastern U. S.
317. zimmermani (Grote): U. S., Canada
delectella (Hulst)
austriana (Cosens)
318. cambiicola (Dyar): Western U. S.
319. amatella (Hulst): Eastern U. S.
320. albovittella (Hulst): Western U. S.

321. gulosella (Hulst), new comb.: Western U. S. (Colorado, New Mexico)
322. baumhoferi Heinrich, new species: Southwestern U. S. (Arizona)
323. subtracta Heinrich, new species: Southwestern U. S. (New Mexico)
324. clarioralis (Walker): Eastern U. S.
brunneella (Dyar)

78. ORYCTOMETOPIA Ragonot
325. fossulatella Ragonot: U. S. (Texas), Tropical America
moeschleri (Ragonot)

79. SARATA Ragonot
326. edwardsialis (Hulst), new comb.: Western U. S.
polyphemella (Ragonot)
327. pullatella (Ragonot), new comb.: Western U. S.
328. punctella (Dyar), new comb.: México
329. punctella septentrionaria Heinrich, new race: Western U. S.
330. incanella (Hulst), new comb.: Western U. S.
aridella (Dyar)
331. atrella (Hulst), new comb.: Western U. S. (Colorado)
332. caudellella (Dyar), new comb.: Western U. S., Canada
333. dnopherella Ragonot: Western U. S. (California)
334. nigrifasciella Ragonot: Western U. S., Canada
335. cinereella Hulst: Western U. S. (Colorado)
336. rubrithoracella (Barnes and McDunnough), new comb.: Western U. S.
337. tephrella Ragonot: Western U. S. (Washington)
338. alpha Heinrich, new species: Canada (Saskatchewan)
339. beta Heinrich, new species: Western U. S., Canada
340. gamma Heinrich, new species: Western U. S. (California)
341. iota Heinrich, new species: Western U. S. (California)
342. perfuscalis (Hulst): Western U. S.
excantalis (Hulst)
343. epsilon Heinrich, new species: Western U. S.
344. phi Heinrich, new species: Western U. S.
345. kappa Heinrich, new species: Western U. S. (Arizona)
346. delta Heinrich, new species: Western U. S.

80. PHILODEMA Heinrich, new genus
347. rhoiella (Dyar), new comb.: Western U. S.

81. LIPOGRAPHIS Ragonot
348. fenestrella (Packard): Western U. S. (California)
humilis Ragonot
349. leoninella (Packard): Western U. S., Canada
pallidella (Dyar)
350. truncatella (Wright), new comb.: Southwestern U. S. (California)
351. umbrella (Dyar), new comb.: Southwestern U. S. (California)
352. subosseella Hulst: Bahamas

82. ADELPHIA Heinrich, new genus
353. petrella (Zeller), new comb.: U. S.
rubiginella (Walker)
rufinalis (Walker)
hapsella (Hulst)
354. ochripunctella (Dyar), new comb.: Western U. S. (California)

83. TOTA Heinrich, new genus
355. galdinella (Schaus), new comb.: Galápagos Islands

84. UFA Walker
356. lithosella (Ragonot), new comb.: Southwestern U. S., México
luteella Hulst)
357. roseitinctella (Dyar), new comb.: Southwestern U. S., México
358. senta Heinrich, new species: Southwestern U. S. (Texas, Arizona)
359. rubedinella (Zeller), new comb.: U. S. (Florida), Tropical America
translucida (Walker)
rufescentalis (Walker)
minualis (Walker)
deprivalis (Walker)
venezuelalis Walker
pyrrhochrellus (Ragonot)

85. ELASMOPALPUS Blanchard
360. lignosellus (Zeller): U. S., Tropical America
angustellus Blanchard
tartarella (Zeller)
incautella (Zeller)
major (Zeller)
anthracellus Ragonot
carbonella (Hulst)
puer Dyar

86. ACRONCOSA Barnes and McDunnough
361. albiflavella Barnes and McDunnough: Western U. S. (California)
362. albiflavella castrella Barnes and McDunnough: Western U. S. (New Mexico)
363. similella Barnes and McDunnough: Western U. S. (Nevada, Utah)

87. PASSADENA Hulst
364. flavidorsella (Ragonot): Western U. S., México
canescentella (Hulst)
constantella Hulst
cinctella (Hulst)

88. ULOPHORA Ragonot
Acromeseres Dyar
365. groteii Ragonot: Eastern U. S.
tephrosiella Dyar
366. guarinella (Zeller): Cuba, Colombia
dialithus (Dyar)

89. CHORRERA Dyar
    367. idiotes Dyar: Panamá
    368. extrincica (Dyar), new comb.: Cuba
    369. postica (Zeller), new comb.: Colombia
90. TACOMA Hulst
    370. feriella Hulst: Southwestern U. S.
        submedianella Dyar
91. ADELPERGA Heinrich, new genus
    371. cordubensiella (Ragonot), new comb.: Argentina
92. EUMYSIA Dyar
    372. mysiella (Dyar): Western U. S.
    373. maidella (Dyar): Western U. S., Canada
    374. pallidipennella (Hulst), new comb.: Western U. S.
    375. fuscatella (Hulst): Western U. S. (California)
    376. semicana Heinrich, new species: Western U. S. (Washington)
93. DIVITIACA Barnes and McDunnough
    377. ochrella Barnes and McDunnough: Southern U. S. (Florida)
    378. simulella Barnes and McDunnough: Southern U. S. (Florida)
    379. parvulella Barnes and McDunnough: Southern U. S. (Florida)
    380. parvulella consociata Heinrich, new race: Colombia
94. MACRORRHINIA Ragonot
        Dolichorrhinia Ragonot
    381. aureofasciella Ragonot: Southwestern U. S., México
    382. placidella (Zeller): Brazil
95. OCALA Hulst
    383. dryadella Hulst: Southern U. S. (Florida)
        platanella (Grossbeck)
96. VALDIVIA Ragonot
        Maricopa Hulst
    384. coquimbella Ragonot: Chile
    385. lativittella (Ragonot): Southwestern U. S., México
        aureomaculella (Dyar)
    386. walkerella (Ragonot), new comb.: Chile
97. PROTASIA Heinrich, new genus
    387. mirabilicornella (Dyar), new comb.: Western U. S. (California)
98. HETEROGRAPHIS Ragonot
        Mona Hulst
    388. morrisonella Ragonot: U. S., México
        coloradensis Ragonot
        olbiella (Hulst)
        ignistrigella Ragonot
        palloricostella (Walter)
99. STAUDINGERIA Ragonot
    389. albipenella (Hulst): Western U. S.
        olivacella Dyar
        perluteella Dyar
100. HULSTIA Ragonot
    390. undulatella (Clemens): U. S., Canada
        rubiginalis (Walker)
        obsipella (Hulst)
        fumosella (Hulst)
101. HONORA Grote
    391. mellinella Grote: U. S.
        ochrimaculella Ragonot
    392. subsciurella Ragonot: Western U. S.
    393. sciurella Ragonot: Western U. S. (California)
    394. dotella Dyar: Western U. S. (California)
    395. montinatatella (Hulst): Western U. S.
        canicostella Ragonot
    396. perdubiella (Dyar), new comb.: Western U. S.
102. HONORINUS Heinrich, new genus
    397. fuliginosus Heinrich, new species: Perú
103. ONCOLABIS Zeller
        Endommasis Hampson
    398. anticella Zeller: Tropical America
        nigritella (Hampson)
104. CABOTIA Ragonot
        Encystia Hampson
    399. semidiscella Ragonot: Argentina
    400. schini (Berg): Argentina
    401. rhythmatica Dyar: Panamá
    402. cundajensis (Zeller): Colombia
        impeditella (Zeller)
    403. bonhoti (Hampson), new comb.: Bahamas, Jamaica
105. CANARSIA Hulst
    404. ulmiarrosorella (Clemens): U. S., Canada
        pneumatella (Hulst)
        ulmella (Ragonot)
        fuscatella (Hulst)
        gracilella Hulst
        feliculella Dyar
106. HARNOCHA Dyar
    405. velessa Dyar: Panamá
107. EURYTHMASIS Dyar
    406. ignifatua Dyar: Panamá, Puerto Rico, Cuba
108. EURYTHMIDIA Ragonot
    407. ignidorsella (Ragonot): U. S. (Arizona), México, Panamá
109. WUNDERIA Grossbeck
    408. neaeriatella Grossbeck: U. S. (Florida)
110. OEDOTHMIA Hampson
        Synothmia Hampson
    409. endopyrella Hampson: México, Bahamas
        bahamasella (Hampson)
111. STYLOBASIS Hampson
    410. rubripurpurea Hampson: México, Brazil
112. DIVIANA Ragonot
        Dannemora Hulst
    411. eudoreella Ragonot: Eastern U. S.
        edentella (Hulst)

113. PALATKA Hulst
412. nymphaeella (Hulst): Eastern U. S.
verecuntella (Grossbeck)
114. CACOZOPHERA Dyar
413. venosa Dyar: Guatemala
115. PSOROSINA Dyar
414. hammondi (Riley): Eastern and Central U. S., Canada
angulella Dyar
116. PATRICIOLA Heinrich, new genus
415. semicana Heinrich, new species: Utah
117. PACONIUS Heinrich, new genus
416. corniculatus Heinrich, new species: Puerto Rico
118. APTUNGA Heinrich, new genus
417. macropasa (Dyar), new comb.: Guatemala, México
418. imperfecta (Dyar), new comb.: Guatemala
119. ANDERIDA Heinrich, new genus
419. sonorella (Ragonot), new comb.: México, U. S. (Arizona)
placidella (Dyar)
120. CASSIANA Heinrich, new genus
420. malacella (Dyar), new comb.: México, Puerto Rico, Virgin Islands
121. MESCINIA Ragonot
421. triloses Dyar: Panamá
mosces Dyar
422. pandessa Dyar: Guatemala
423. bacerella Dyar: Cuba
424. estrella Barnes and McDunnough: U. S. (Florida)
425. moorei Heinrich, new species: British Guiana
426. parvula (Zeller): Colombia
427. commatella (Zeller): Colombia
428. berosa Dyar: Panamá, Puerto Rico
429. peruella Schaus: Perú
430. discella Hampson: México, Guatemala
431. indecora Dyar: México
122. NONIA Ragonot
Hypermescinia Dyar
432. exiguella (Ragonot): Tropical America
lambella (Dyar)
123. PHESTINIA Hampson
433. costella Hampson: Jamaica, Puerto Rico
124. COMOTIA Dyar
434. torsicornis Dyar: Panamá
435. convergens (Dyar), new comb.: Guatemala
125. BEMA Dyar
Relmis Dyar
436. neuricella (Zeller), new comb.: Tropical America
myja Dyar
437. fritilla Dyar: Guatemala
438. ydda (Dyar), new comb.: Panamá, French Guiana
439. yddiopsis (Dyar), new comb.: Cuba
440. fifaca (Dyar), new comb.: Panamá
126. HOMOEOSOMA Curtis
Phycidea Zeller
441. electellum (Hulst): U. S., México, Guatemala, Cuba, British West Indies
opalescellum (Hulst)
texanellum Ragonot
tenuipunctella Ragonot
differtella Barnes and McDunnough
442. stypticellum Grote: U. S., Canada
uncanale Hulst
443. striatellum Dyar: Southwestern U. S.
444. oslarellum Dyar: Western U. S.
445. oslarellum breviplicitum Heinrich, new race: Southwestern U. S. (California)
446. illuviellum Ragonot: U. S. (Arizona, Colorado), México
candidella Hulst
447. illuviellum emendator Heinrich, new race: Western U. S.
448. imitator Heinrich, new species: Southwestern U. S. (California)
449. longiventrellum Ragonot: Chile
noctividella Ragonot
450. albescentellum Ragonot: Western U. S.
elongellum Dyar
451. impressale Hulst: Western U. S., Canada
452. inornatellum (Hulst): Eastern U. S.
453. deceptorium Heinrich, new species: U. S. (Pennsylvania), Canada
454. discrebile Heinrich, new species, Brazil
455. peregrinum Heinrich, new species: U. S. (California), Costa Rica
456. vepallidum Heinrich, new species: Argentina
457. ditaeniatellum Ragonot: Chile
458. oconequensis (Dyar), new comb.: Perú
459. assitum Heinrich, new species: Perú
460. acmaeopterum Ragonot: Chile
461. nimbosellum Ragonot: Chile
462. unionellum Ragonot: México
127. PATAGONIA Ragonot
463. magellanella (Ragonot): Chile
128. ROTRUDA Heinrich, new genus
464. mucidella mucidella (Ragonot), new comb.: Western U. S., Canada
465. mucidella reliquella (Dyar), new comb.: Eastern U. S., Canada
466. mucidella olivaceela (Ragonot), new comb.: Tropical America
musiosum (Dyar)
cubella (Dyar)
467. mucidella affusella (Ragonot), new comb.: Argentina
129. STREPHOMESCINIA Dyar
468. schausella Dyar: Cuba
130. UNADILLA Hulst
Strymax Dyar

469. erronella (Zeller): Tropical America.
ubacensis (Zeller)
bipunctella (Hampson)
dorae (Dyar)
pyllis (Dyar)
470. maturella (Zeller): Colombia, Guatemala, Cuba
471. albidiorella (Richards and Thomason); new comb.: Perú
472. floridensis Heinrich, new species: U. S. (Florida)
473. nasutella Hulst: U. S. (New Mexico)

131. LAETILIA Ragonot
Laosticha Hulst
474. coccidivora (Comstock): U. S.
pallida (Comstock)
dilatifasciella (Ragonot)
hulstii Cockerell
475. coccidivora quadricolorella (Dyar), new comb.: Southwestern U. S.
476. coccidivora cardini Dyar: Cuba, U. S. (Florida)
477. obscura Dyar: Cuba
478. portoricensis Dyar: Puerto Rico
479. melanostathma (Meyrick), new comb.: Argentina
480. amphimetra (Meyrick), new comb.: Argentina
481. zamacrella Dyar: Western U. S. (California)
482. myersella Dyar: Eastern U. S.
483. ephestiella (Ragonot): Southwestern U. S. (Arizona)
lustrella (Dyar)
484. fiskella Dyar: Eastern U. S. (North Carolina)
485. glomis (Dyar), new comb.: Panamá

132. BAPHALA Heinrich, new genus
486. basimaculatella (Ragonot), new comb.: Western U. S.
eremiella (Dyar)
487. goyensis (Ragonot), new comb.: Brazil, Uruguay, Argentina
488. goyensis olivacea Heinrich, new race: Argentina
489. homoeosomella (Zeller), new comb.: Tropical America.
bodkini (Dyar)
rusto (Dyar)
taboga (Dyar)
saissetiae (Dyar)
490. haywardi Heinrich, new species: Argentina
491. glabrella (Dyar), new comb.: Guatemala
492. squalida (Walker), new comb.: Brazil

133. RHAGEA Heinrich, new genus
493. packardella (Ragonot), new comb.: Western U. S.
orobanchella (Dyar)
494. stigmella (Dyar), new comb.: Southwestern U. S. (California), México
maculicula (Dyar)

134. ZOPHODIA Hübner
Dakruma Grote
495. convolutella (Hübner): Europe, U. S., Canada
grossulariella (Hübner)
turbatella (Grote)
grossulariae (Riley)
franconiella (Hulst)
bella Hulst
ihouna Dyar
dilativitta Dyar
magnificans Dyar

135. MELITARA Walker
496. prodenialis Walker: U. S.
bollii (Zeller)
497. dentata (Grote): U. S.
doddalis Dyar

136. OLYCELLA Dyar
498. junctolineella (Hulst): Southern U.S. (Texas)
499. junctolineella pectinatella (Hampson): México
500. nephelepasa (Dyar:) México
501. subumbrella Dyar: Western U. S.

137. OLYCA Walker
502. phryganoides Walker: Dominican Republic, Haiti

138. ALBERADA Heinrich
503. parabates (Dyar): U. S., México
504. bidentella (Dyar): Southwestern U. S. (Texas, Arizona)
505. holochlora (Dyar): Southwestern U. S. (Texas)

139. NANAIA Heinrich
506. substituta Heinrich: Perú

140. CACTOBLASTIS Ragonot
Neopyralis Brèthes
507. cactorum (Berg): Argentina, Uruguay, Australia
508. ronnai (Brèthes): Brazil
509. doddi Heinrich: Argentina
510. mundelli Heinrich: Perú
511. bucyrus Dyar: Argentina

141. CAHELA Heinrich
512. ponderosella (Barnes and McDunnough): Western U. S., México
purgatoria (Dyar)
interstitialis (Dyar)
phoenicis (Dyar)

142. RUMATHA Heinrich
513. glaucatella (Hulst): Southern U. S.
514. bihinda (Dyar): Western U. S.
515. polingella (Dyar): Southwestern U. S. (Arizona, Texas)

143. YOSEMITIA Ragonot
516. graciella (Hulst): Western U. S.
517. longipennella (Hulst): Southwestern U. S. (Texas)
518. fieldiella (Dyar): Western U. S. (California, Arizona)
519. didactica Dyar: México

144. TUCUMANIA Dyar
520. tapiacola Dyar: Argentina
521. porrecta Dyar: Uruguay
145. EREMBERGA Heinrich
522. leuconips (Dyar): Western U. S. (Arizona)
523. creabates (Dyar): Western U. S. (California)
524. insignis Heinrich: México
146. SALAMBONA Heinrich
525. analamprella (Dyar): Argentina
147. PAROLYCA Dyar
526. asthenosoma (Dyar): French Guiana
148. SIGELGAITA Heinrich
527. chilensis Heinrich: Chile
528. huanucensis Heinrich: Perú
529. transilis Heinrich: Perú
149. AMALAFRIDA Heinrich
530. leithella (Dyar): West Indies, Venezuela, Colombia
150. OZAMIA Ragonot
531. lucidalis (Walker): West Indies
532. fuscomaculella (Wright): Southwestern U. S. (California)
heliophila Dyar
533. fuscomaculella clarefacta Dyar: U. S. (Texas), México
534. thalassophila Dyar: U. S. (California)
535. immorella (Dyar), new comb.: México
536. stigmaferella Dyar: Argentina
537. hemilutella Dyar: Argentina
538. punicans Heinrich: Argentina
151. CACTOBROSIS Dyar
539. fernaldialis (Hulst): Southwestern U. S.
gigantella (Ragonot)
cinerella (Hulst)
540. longipennella (Hampson): México
elongatella (Hampson):
541. maculifera Dyar: México
542. insignatella Dyar: México
543. strigalis (Barnes and McDunnough): Western U. S., México
152. DRESCOMOPSIS Dyar
544. soraella (Druce): Tropical America
drucella (Dyar)
subelisa Dyar
153. ILLATILA Dyar
545. gurbyris Dyar: Panamá
154. LASCELINA Heinrich, new genus
546. canens Heinrich, new species: Southern U. S. (Texas), México
155. METEPHESTIA Ragonot
547. simplicula (Zeller): U. S. (Florida), Puerto Rico, Colombia, British West Indies
156. SELGA Heinrich, new genus
548. arizonella (Hulst), new comb.: Southwestern U. S. (Arizona)
157. ENTMEMACORNIS Dyar
549. proselytes Dyar: Guatemala
550. pulla Heinrich, new species: Brazil
158. CAYENNIA Hampson
551. rufitinctalis Hampson: French Guiana
159. RIOJA, Heinrich, new genus
552. nexa Heinrich, new species: Argentina
160. MOERBES Dyar
553. dryopella (Schaus): Costa Rica
554. alveolella (Ragonot), new comb.: Brazil
555. emendata Heinrich, new species: Panamá, French Guiana
161. MOODNOPSIS Dyar
Campyloplesis Dyar
556. decipiens Dyar: México
557. perangusta (Dyar), new comb.: Trinidad
558. inornatella (Ragonot), new comb.: Costa Rica, Brazil
559. parallela Heinrich, new species: Brazil, Perú
560. inveterella (Dyar), new comb.: Guatemala
561. portoricensis Heinrich, new species: Puerto Rico
162. EDULICA Ragonot
562. compedella (Zeller): Tropical America
163. EUZOPHERA Zeller
563. semifuneralis (Walker): U. S., Canada, México
aglaeella Ragonot
pallulella (Hulst)
564. ostricolorella Hulst: Eastern U. S.
565. nigricantella Ragonot: Southwestern U. S., México
griselda Dyar
164. EXUPERIUS Heinrich, new genus
566. negator Heinrich, new species: Perú
165. EULOGIA Heinrich, new genus
567. ochrifrontella (Zeller), new comb.: U. S., Canada
ferruginella (Ragonot)
166. PROSOEUZOPHERA Heinrich, new genus
568. impletella (Zeller), new comb.: Colombia, Jamaica, Puerto Rico
167. FARNOBIA Heinrich, new genus
569. quadripuncta (Zeller), new comb.: Costa Rica, Panamá, French Guiana, Colombia
168. GENNADIUS Heinrich, new genus
570. junctor Heinrich, new species: French Guiana
169. MICROMESCINIA Dyar
571. pygmaea Dyar: Panamá
170. EPHESTIODES Ragonot
572. gilvescentella Ragonot: Western U. S., Canada, México
nigrella Hulst
573. infimella Ragonot: Eastern U. S.
574. erythrella Ragonot: Western U. S., Canada
coloradella (Hulst)
benjaminella Dyar
575. mignonella Dyar: U. S. (Texas)
576. erasa Heinrich, new species: U. S. (Florida)
577. lucidibasella Ragonot: Chile
578. productella Ragonot: Colombia (?)
579. indentella Dyar: Bermuda

469. erronella (Zeller): Tropical America.
ubacensis (Zeller)
bipunctella (Hampson)
dorae (Dyar)
pyllis (Dyar)
470. maturella (Zeller): Colombia, Guatemala, Cuba
471. albidiorella (Richards and Thomason); new comb.: Perú
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473. nasutella Hulst: U. S. (New Mexico)

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Laosticha Hulst
474. coccidivora (Comstock): U. S.
pallida (Comstock)
dilatifasciella (Ragonot)
hulstii Cockerell
475. coccidivora quadricolorella (Dyar), new comb.: Southwestern U. S.
476. coccidivora cardini Dyar: Cuba, U. S. (Florida)
477. obscura Dyar: Cuba
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479. melanostathma (Meyrick), new comb.: Argentina
480. amphimetra (Meyrick), new comb.: Argentina
481. zamacrella Dyar: Western U. S. (California)
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483. ephestiella (Ragonot): Southwestern U. S. (Arizona)
lustrella (Dyar)
484. fiskella Dyar: Eastern U. S. (North Carolina)
485. glomis (Dyar), new comb.: Panamá

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eremiella (Dyar)
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488. goyensis olivacea Heinrich, new race: Argentina
489. homoeosomella (Zeller), new comb.: Tropical America.
bodkini (Dyar)
rusto (Dyar)
taboga (Dyar)
saissetiae (Dyar)
490. haywardi Heinrich, new species: Argentina
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orobanchella (Dyar)
494. stigmella (Dyar), new comb.: Southwestern U. S. (California), México
maculicula (Dyar)

134. ZOPHODIA Hübner
Dakruma Grote
495. convolutella (Hübner): Europe, U. S., Canada
grossulariella (Hübner)
turbatella (Grote)
grossulariae (Riley)
franconiella (Hulst)
bella Hulst
ihouna Dyar
dilativitta Dyar
magnificans Dyar

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bollii (Zeller)
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doddalis Dyar

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502. phryganoides Walker: Dominican Republic, Haiti

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503. parabates (Dyar): U. S., México
504. bidentella (Dyar): Southwestern U. S. (Texas, Arizona)
505. holochlora (Dyar): Southwestern U. S. (Texas)

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506. substituta Heinrich: Perú

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Neopyralis Brèthes
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508. ronnai (Brèthes): Brazil
509. doddi Heinrich: Argentina
510. mundelli Heinrich: Perú
511. bucyrus Dyar: Argentina

141. CAHELA Heinrich
512. ponderosella (Barnes and McDunnough): Western U. S., México
purgatoria (Dyar)
interstitialis (Dyar)
phoenicis (Dyar)

142. RUMATHA Heinrich
513. glaucatella (Hulst): Southern U. S.
514. bihinda (Dyar): Western U. S.
515. polingella (Dyar): Southwestern U. S. (Arizona, Texas)

143. YOSEMITIA Ragonot
516. graciella (Hulst): Western U. S.
517. longipennella (Hulst): Southwestern U. S. (Texas)
518. fieldiella (Dyar): Western U. S. (California, Arizona)
519. didactica Dyar: México

144. TUCUMANIA Dyar
520. tapiacola Dyar: Argentina
521. porrecta Dyar: Uruguay
145. EREMBERGA Heinrich
522. leuconips (Dyar): Western U. S. (Arizona)
523. creabates (Dyar): Western U. S. (California)
524. insignis Heinrich: México
146. SALAMBONA Heinrich
525. analamprella (Dyar): Argentina
147. PAROLYCA Dyar
526. asthenosoma (Dyar): French Guiana
148. SIGELGAITA Heinrich
527. chilensis Heinrich: Chile
528. huanucensis Heinrich: Perú
529. transilis Heinrich: Perú
149. AMALAFRIDA Heinrich
530. leithella (Dyar): West Indies, Venezuela, Colombia
150. OZAMIA Ragonot
531. lucidalis (Walker): West Indies
532. fuscomaculella (Wright): Southwestern U. S. (California)
heliophila Dyar
533. fuscomaculella clarefacta Dyar: U. S. (Texas), México
534. thalassophila Dyar: U. S. (California)
535. immorella (Dyar), new comb.: México
536. stigmaferella Dyar: Argentina
537. hemilutella Dyar: Argentina
538. punicans Heinrich: Argentina
151. CACTOBROSIS Dyar
539. fernaldialis (Hulst): Southwestern U. S.
gigantella (Ragonot)
cinerella (Hulst)
540. longipennella (Hampson): México
elongatella (Hampson):
541. maculifera Dyar: México
542. insignatella Dyar: México
543. strigalis (Barnes and McDunnough): Western U. S., México
152. DRESCOMOPSIS Dyar
544. soraella (Druce): Tropical America
drucella (Dyar)
subelisa Dyar
153. ILLATILA Dyar
545. gurbyris Dyar: Panamá
154. LASCELINA Heinrich, new genus
546. canens Heinrich, new species: Southern U. S. (Texas), México
155. METEPHESTIA Ragonot
547. simplicula (Zeller): U. S. (Florida), Puerto Rico, Colombia, British West Indies
156. SELGA Heinrich, new genus
548. arizonella (Hulst), new comb.: Southwestern U. S. (Arizona)
157. ENTMEMACORNIS Dyar
549. proselytes Dyar: Guatemala
550. pulla Heinrich, new species: Brazil
158. CAYENNIA Hampson
551. rufitinctalis Hampson: French Guiana
159. RIOJA, Heinrich, new genus
552. nexa Heinrich, new species: Argentina
160. MOERBES Dyar
553. dryopella (Schaus): Costa Rica
554. alveolella (Ragonot), new comb.: Brazil
555. emendata Heinrich, new species: Panamá, French Guiana
161. MOODNOPSIS Dyar
Campyloplesis Dyar
556. decipiens Dyar: México
557. perangusta (Dyar), new comb.: Trinidad
558. inornatella (Ragonot), new comb.: Costa Rica, Brazil
559. parallela Heinrich, new species: Brazil, Perú
560. inveterella (Dyar), new comb.: Guatemala
561. portoricensis Heinrich, new species: Puerto Rico
162. EDULICA Ragonot
562. compedella (Zeller): Tropical America
163. EUZOPHERA Zeller
563. semifuneralis (Walker): U. S., Canada, México
aglaeella Ragonot
pallulella (Hulst)
564. ostricolorella Hulst: Eastern U. S.
565. nigricantella Ragonot: Southwestern U. S., México
griselda Dyar
164. EXUPERIUS Heinrich, new genus
566. negator Heinrich, new species: Perú
165. EULOGIA Heinrich, new genus
567. ochrifrontella (Zeller), new comb.: U. S., Canada
ferruginella (Ragonot)
166. PROSOEUZOPHERA Heinrich, new genus
568. impletella (Zeller), new comb.: Colombia, Jamaica, Puerto Rico
167. FARNOBIA Heinrich, new genus
569. quadripuncta (Zeller), new comb.: Costa Rica, Panamá, French Guiana, Colombia
168. GENNADIUS Heinrich, new genus
570. junctor Heinrich, new species: French Guiana
169. MICROMESCINIA Dyar
571. pygmaea Dyar: Panamá
170. EPHESTIODES Ragonot
572. gilvescentella Ragonot: Western U. S., Canada, México
nigrella Hulst
573. infimella Ragonot: Eastern U. S.
574. erythrella Ragonot: Western U. S., Canada
coloradella (Hulst)
benjaminella Dyar
575. mignonella Dyar: U. S. (Texas)
576. erasa Heinrich, new species: U. S. (Florida)
577. lucidibasella Ragonot: Chile
578. productella Ragonot: Colombia (?)
579. indentella Dyar: Bermuda

580. plorella Dyar: Panamá
vestilla (Dyar)
581. stictella (Hampson), new comb.: Bahamas, West Indies
uniformella Hampson
granulella Hampson
582. noniella Dyar: Panamá

171. AZAERA Schaus
Calamophleps Dyar
583. muciella Schaus: Costa Rica, Guatemala, Panamá
squalidella (Dyar)
584. nodoses (Dyar), new comb.: Panamá
585. lophophera (Dyar), new comb.: Panamá

172. MOODNA Hulst
586. ostrinella (Clemens): U. S., Canada
obtusangulella (Ragonot)
pelviculella Hulst
587. bisinuella Hampson: México, U. S. (Texas)

173. VITULA Ragonot
588. edmandsae (Packard): Eastern U. S., Canada
dentosella Ragonot
589. edmandsae serratilineella Ragonot, new status: Western U. S., Canada
590. lugubrella Ragonot, new comb.: Western U. S. (California)
591. pinei Heinrich, new species: Western U. S. (Utah, Nevada)
592. inanimella (Dyar), new comb.: México, Guatemala
ticitoa (Dyar)
593. laura (Dyar), new comb.: Guatemala

174. MANHATTA Hulst
Hornigia Ragonot
594. setonella (McDunnough), new comb.: U. S. (Utah), Canada (British Columbia)
595. broweri Heinrich, new species: Eastern U.S. (Maine)

175. VERINA Heinrich, new genus
596. supplicella (Dyar), new comb.: México, Guatemala, Panamá, Brazil

176. VAGOBANTA Heinrich, new genus
597. divergens (Butler), new comb.: Chile

177. MOODNELLA Heinrich, new genus
598. paula Heinrich, new species: Guatemala, Brazil, Argentina

178. VOLATICA Heinrich, new genus
599. pachytaeniella (Ragonot), new comb.: Brazil
600. trinitatis Heinrich, new species: Trinidad

179. VEZINA Heinrich, new genus
601. parasitaria Heinrich, new species: Argentina, Brazil

180. CAUDELLIA Dyar
602. apyrella Dyar: Eastern U. S. (Maryland)
603. albovittella Dyar: Eastern U. S.
604. nigrella (Hulst), new comb.: Western U. S.
arizonella (Walter)
605. declivella (Zeller), new comb.: Panamá, Colombia
animosella (Dyar)
606. colorella (Dyar), new comb.: Panamá
607. clara Heinrich, new species: Puerto Rico

181. MICROPHESTIA Dyar
608. animalcula Dyar: Panamá

182. SOSIPATRA Heinrich, new genus
609. rileyella (Ragonot), new comb.: Western U. S., México
610. micaceella (Hampson): México
611. anthophila (Dyar), new comb.: Western U. S. (Texas)
612. thurberiae (Dyar), new comb.: Western U. S.
613. nonparilella (Dyar), new comb.: Western U. S. (Arizona)
614. majorella (Dyar), new comb.: México
615. divergens (Dyar): Panamá

183. BETHULIA Ragonot
616. championella Ragonot: Guatemala

184. RIBUA Heinrich
617. innoxia Heinrich: Cuba
618. contigua Heinrich, new species: Puerto Rico
619. patriciella (Dyar), new comb.: Cuba

185. PLODIA Guénée
620. interpunctella (Hübner): Cosmopolitan
interpunctalis (Hübner)
zeae (Fitch)
latercula (Hampson)
glycinivora (Matsumura)
621. dolorosa Dyar: Guatemala

186. ANAGASTA Heinrich, new genus
622. kühniella (Zeller): Cosmopolitan
fuscofasciella (Ragonot)
gitonella Druce

187. EPHESTIA Guénée
Hyphantidium Scott
623. elutella (Hübner): Cosmopolitan
elutea (Haworth)
semirufa (Haworth)
rufa (Haworth)
sericarium (Scott)
roxburghii Gregson
unicolorella Staudinger
amarella Dyar
624. cautella (Walker): Cosmopolitan
defectella (Walker)
desuetella (Walker)
cahiritella Zeller
passulella Barrett
formosella (Wileman and South)
625. figulilella Gregson: Europe, Asia, Africa, Hawaii, Australia, North America (U. S., California), South America
ficulella Barrett
milleri Zeller
figuliella Forbes
figulella Curran
venosella Turati
ernestinella Turati

188. NICETIODES Schaus
626. apianella Schaus: Galápagos Islands
189. VARNERIA Dyar
627. postremella Dyar: Eastern U. S.
628. nannodes Dyar: Panamá
629. atrifasciella Barnes and McDunnough: Southern U. S. (Florida)
630. dubia Heinrich, new species: Puerto Rico
190. EURYTHMIA Ragonot
631. hospitella (Zeller): Southern and Western U. S.
spaldingella Dyar
632. hospitella yavapaella Dyar, new status: Western U. S.
633. angulella Ely: Eastern U. S., Canada
diffusella Ely
634. fumella Ely: Eastern U. S. (Connecticut)
191. ERELIEVA Heinrich, new genus
635. quantulella (Hulst), new comb.: Southern U. S. (Texas), West Indies
santiagella (Dyar)
636. coca (Dyar), new comb.: Panamá
coquilla (Dyar)
mossa (Dyar)
uncta (Dyar)
637. parvulella (Ely), new comb.: Eastern U. S. (Connecticut)
192. CABNIA Dyar
638. myronella Dyar: Eastern U. S.
193. MICROPHYCITA Dyar
639. titillella Dyar: Panamá
194. RABIRIA Heinrich, new genus
640. conops (Dyar), new comb.: Panamá

Species unplaced or unrecognized

brevistrigella Ragonot [*Zophodia*]
came Dyar [*Euzophera*]
cervinistrigalis Walker [*Hypochalcia*]
clitellatella Ragonot [*Hornigia*]
corrientellus Ragonot [*Elasmopalpus*]
daedalella Ragonot [*Euzophera*]
disticta Zeller [*Psorosa*]
dulciella Hulst [*Honora*]
famula Zeller [*Myelois*]
flavicornella Ragonot [*Phycitopsis*]
formulella Schaus [*Moodna*]
fuscifrontella Zeller [*Nephopteryx*]
gais Dyar [*Euzophera*]
grossipunctella Ragonot [*Myelois*]
hulstiella Ragonot [*Hypochalcia*]
infusella Zeller [*Myelois*]
intextella Zeller [*Euzophera*]
irichampa Dyar [*Anthropteryx*]
megalopalis Hampson [*Euzopherodes*]
nigricans Hulst [*Salebria*]
olivella Hampson [*Moodna*]
postflavida Dyar [*Euzophera*]
putidella Schaus [*Eucampyla*]
rinmea Dyar [*Euzophera*]
subcanella Zeller [*Zophodia*]

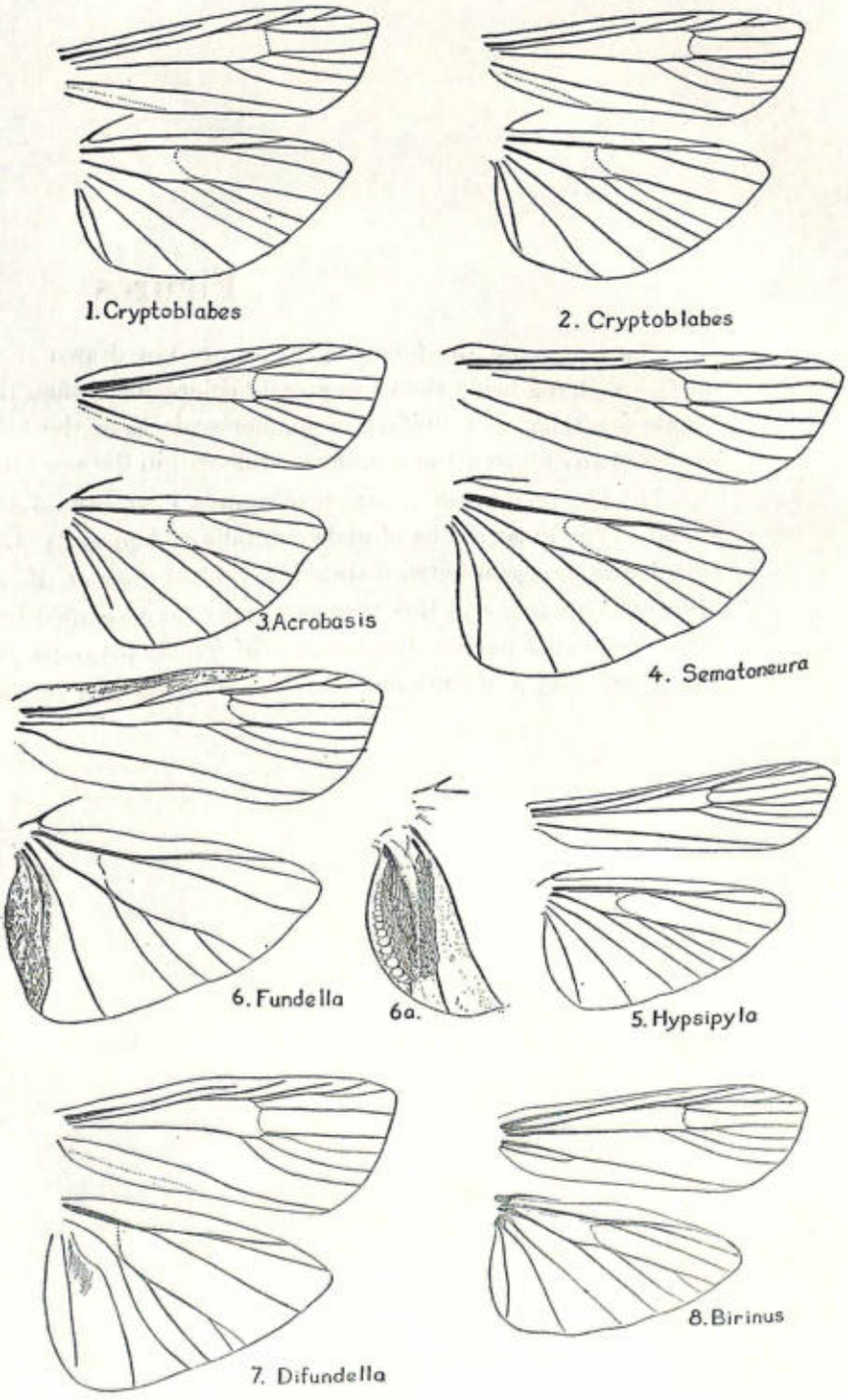
Figures

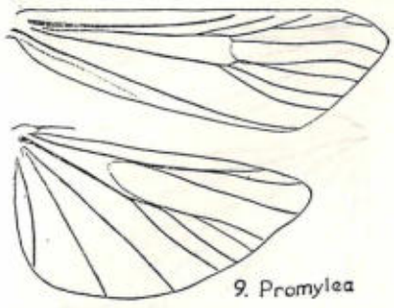
The figures on the following pages are not drawn throughout to any fixed scale, the smaller genitalia being shown in greater enlargement than those of the larger species and the female genitalia on a uniformly smaller scale than the male genitalia. However, for the species of any given genus a uniform scale within the sexes has been attempted.

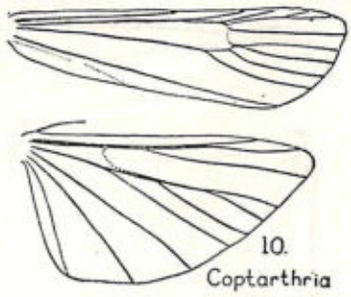
The illustrations of venation in figures 1–53 and 55–130 are of males unless otherwise stated. The illustrations of male genitalia in figures 54, 131–637, and 915 show first under each figure, unless otherwise stated, a ventral view of the genitalia with one harpe and the aedeagus omitted, and this view is usually accompanied by a drawing of the aedeagus and other associated parts. Illustrations of female genitalia are shown in figures 638–914 and 915–1138. For a few species, details of antennae and eyes have been added.

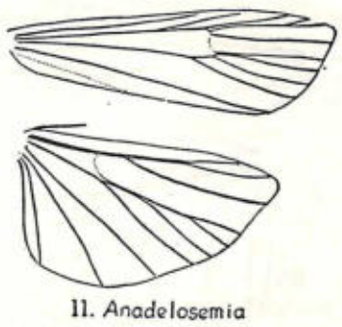
FIGURES 1–8.—VENATION (MALE UNLESS OTHERWISE NOTED).

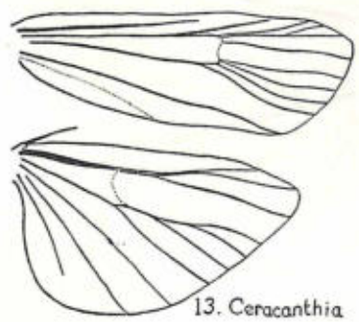
1. *Cryptoblabes gnidiella* (Millière).
2. *Cryptoblabes rutilella* Zeller.
3. *Acrobasis indigenella* (Zeller).
4. *Sematoneura atrovenosella* Ragonot.
5. *Hypsipyla grandella* (Zeller).
6. *Fundella pellucens* Zeller; 6a, underside of anal angle of hind wing with pocket unfolded to show sex-scaling.
7. *Difundella corynophora* Dyar.
8. *Birinus russeolus* Heinrich, new species.

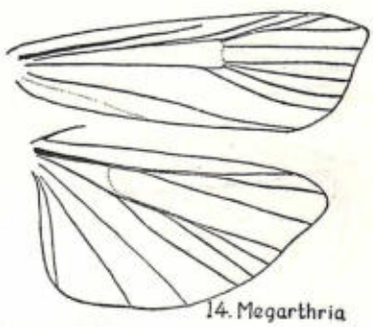


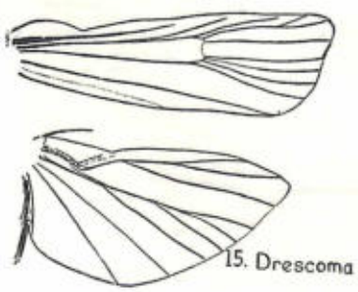


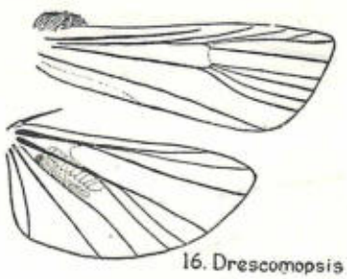










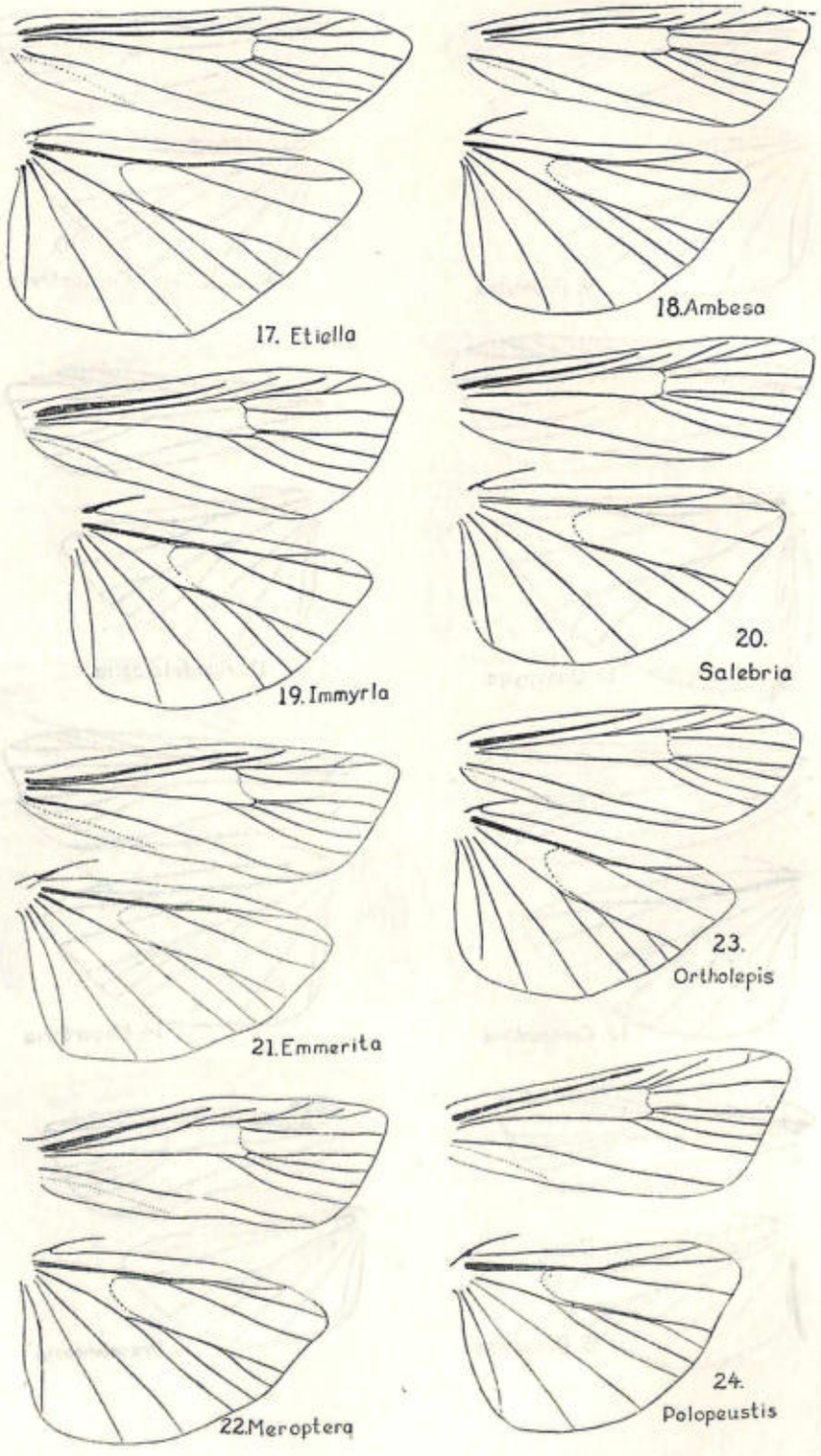


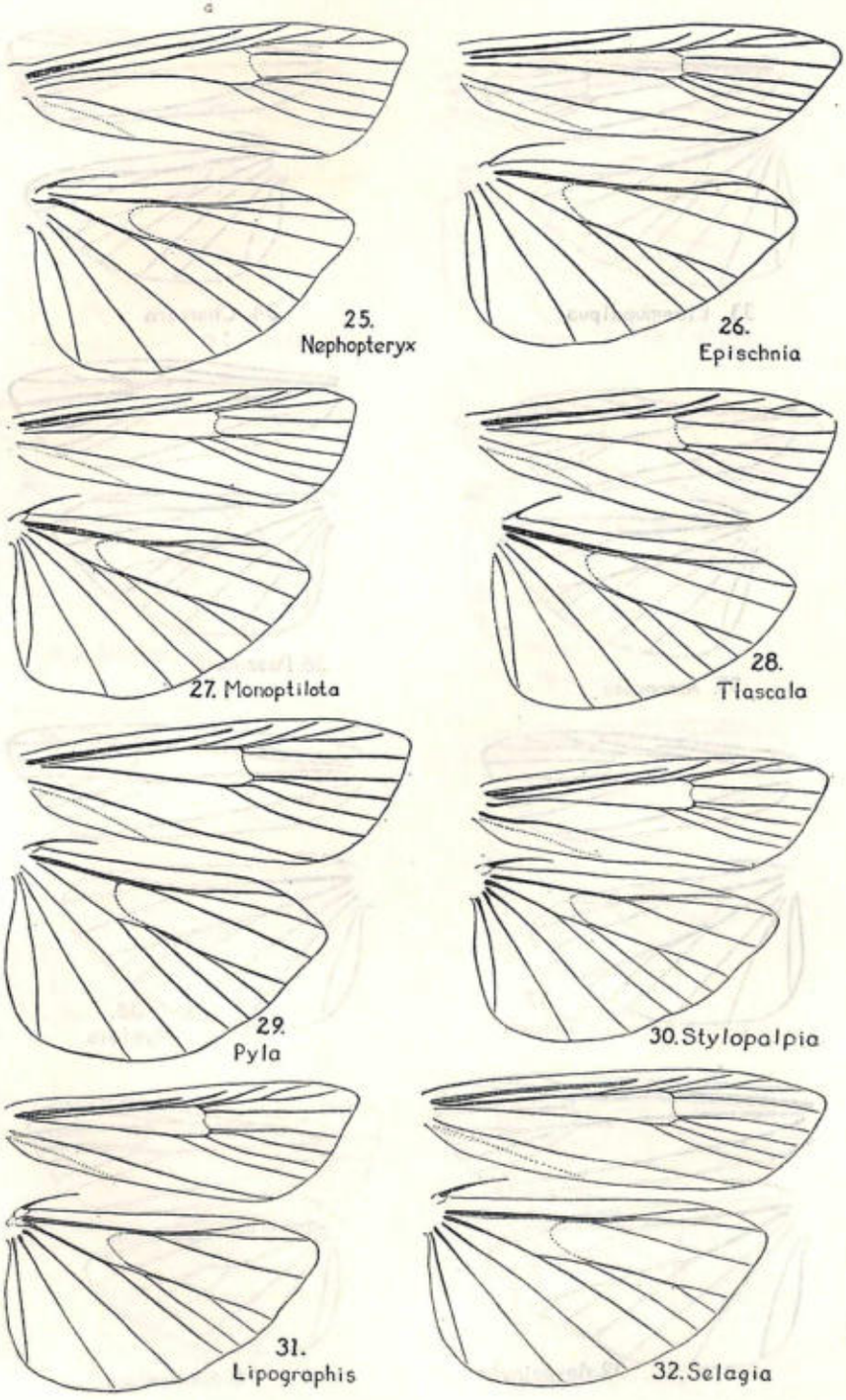
FIGURES 9–16.—VENATION (MALE UNLESS OTHERWISE NOTED).

9. *Promylea lunigerella lunigerella* Ragonot.
10. *Coptarthria dasypyga* (Zeller).
11. *Anadelosemia senesciella* (Schaus).
12. *Dasypyga alternosquamella* Ragonot.
13. *Ceracanthia mamella* (Dyar).
14. *Megarthria peterseni* (Zeller).
15. *Drescoma cyrdipsa* Dyar.
16. *Drescomopsis soraella* (Druce).

FIGURES 17–24.—VENATION (MALE UNLESS OTHERWISE NOTED).

17. *Etiella zinckenella* (Treitschke).
18. *Ambesa laetella* Grote.
19. *Immyrla nigrovittella* Dyar.
20. *Salebria plumbella* (Schiffermüller), type of the genus *Salebria* Zeller, not represented in the American fauna.
21. *Emmerita mirandella* (Ragonot).
22. *Meroptera pravella* (Grote).
23. *Ortholepis jugosella* Ragonot.
24. *Polopeustis annulatella* (Zetterstedt).



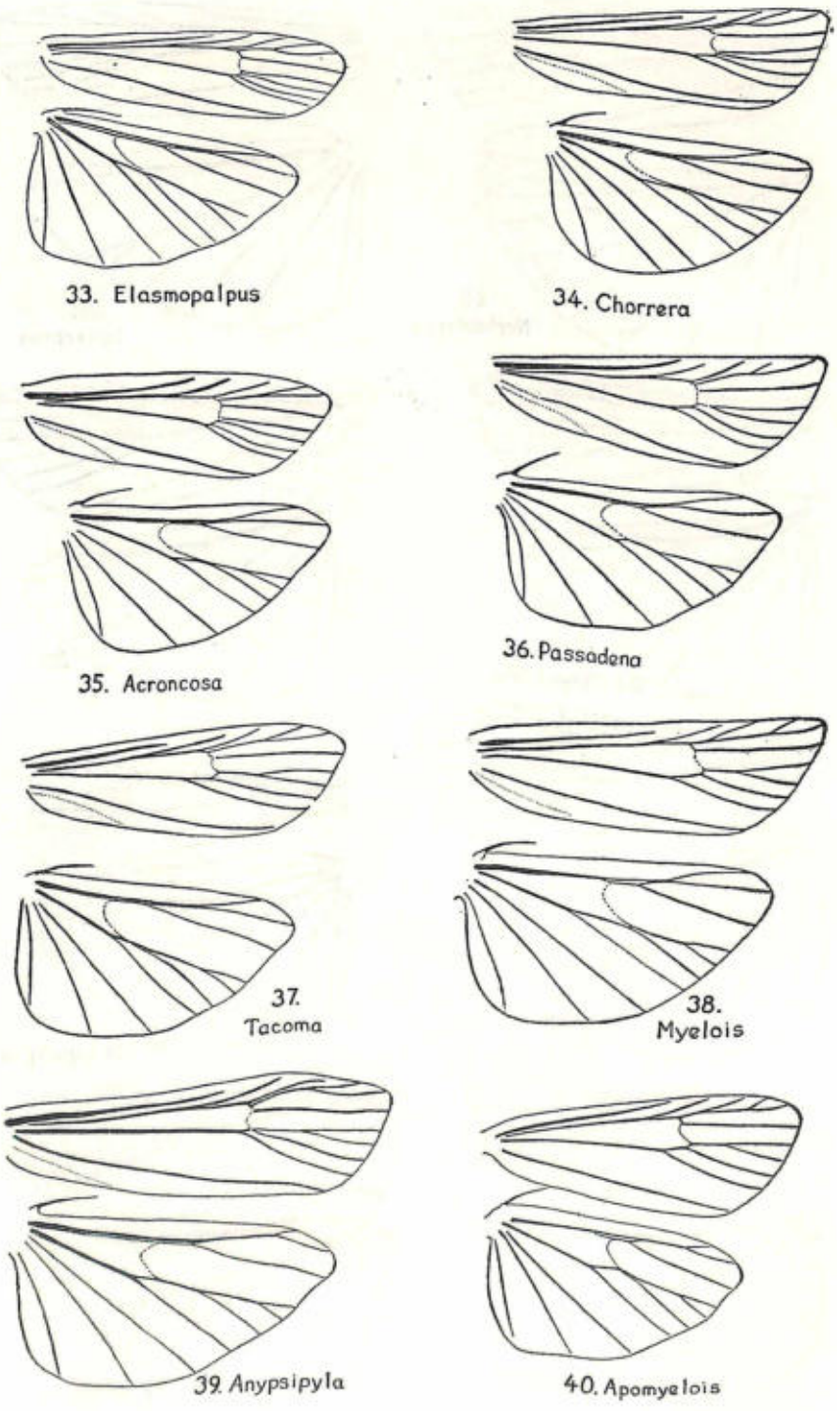


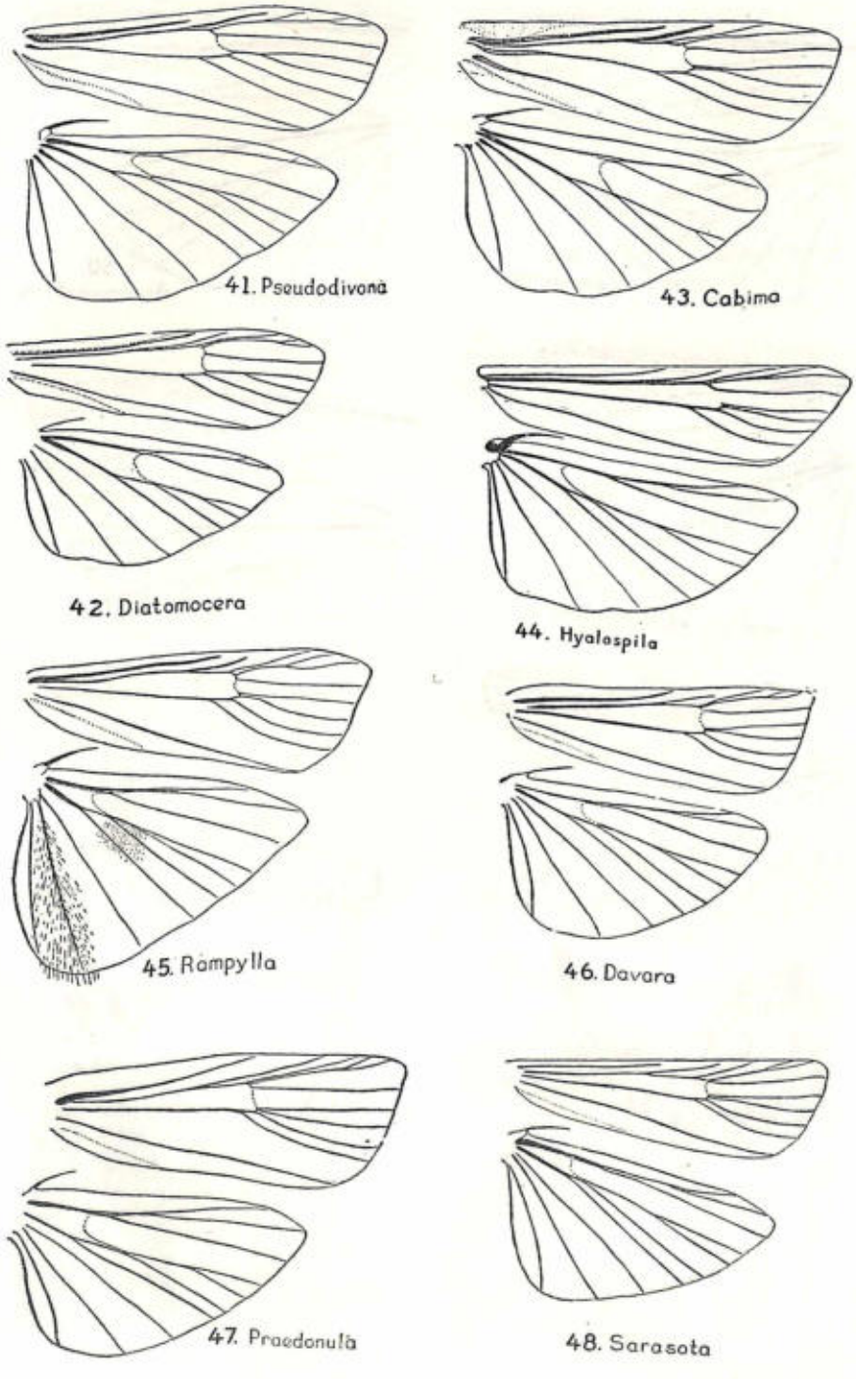
FIGURES 25–32.—VENATION (MALE UNLESS OTHERWISE NOTED).

25. *Nephopteryx rhenella* (Zincken).
26. *Epischnia prodromella* (Hübner).
27. *Monoptilotá pergratialis* (Hulst).
28. *Tlascala reductella* (Walker).
29. *Pyla scintillans* (Grote).
30. *Stylopalpia lunigerella* Hampson.
31. *Lipographis fenestrella* (Packard).
32. *Selagia argyrella* (Schiffermüller). This genus occurs in our lists, but is not represented in the American fauna.

FIGURES 33–40.—VENATION (MALE UNLESS OTHERWISE NOTED).

33. *Elasmopalpus lignosellus* (Zeller).
34. *Chorrera idiotes* Dyar.
35. *Acroncosa albiflavella* Barnes and McDunnough.
36. *Passadena flavidorsella* (Ragonot).
37. *Tacoma feriella* Hulst.
38. *Myelois cribrella* (Hübner), an Old World genus, not represented in the American fauna.
39. *Anypsipyla univitella* Dyar.
40. *Apomyelois bistriatella* (Hulst).



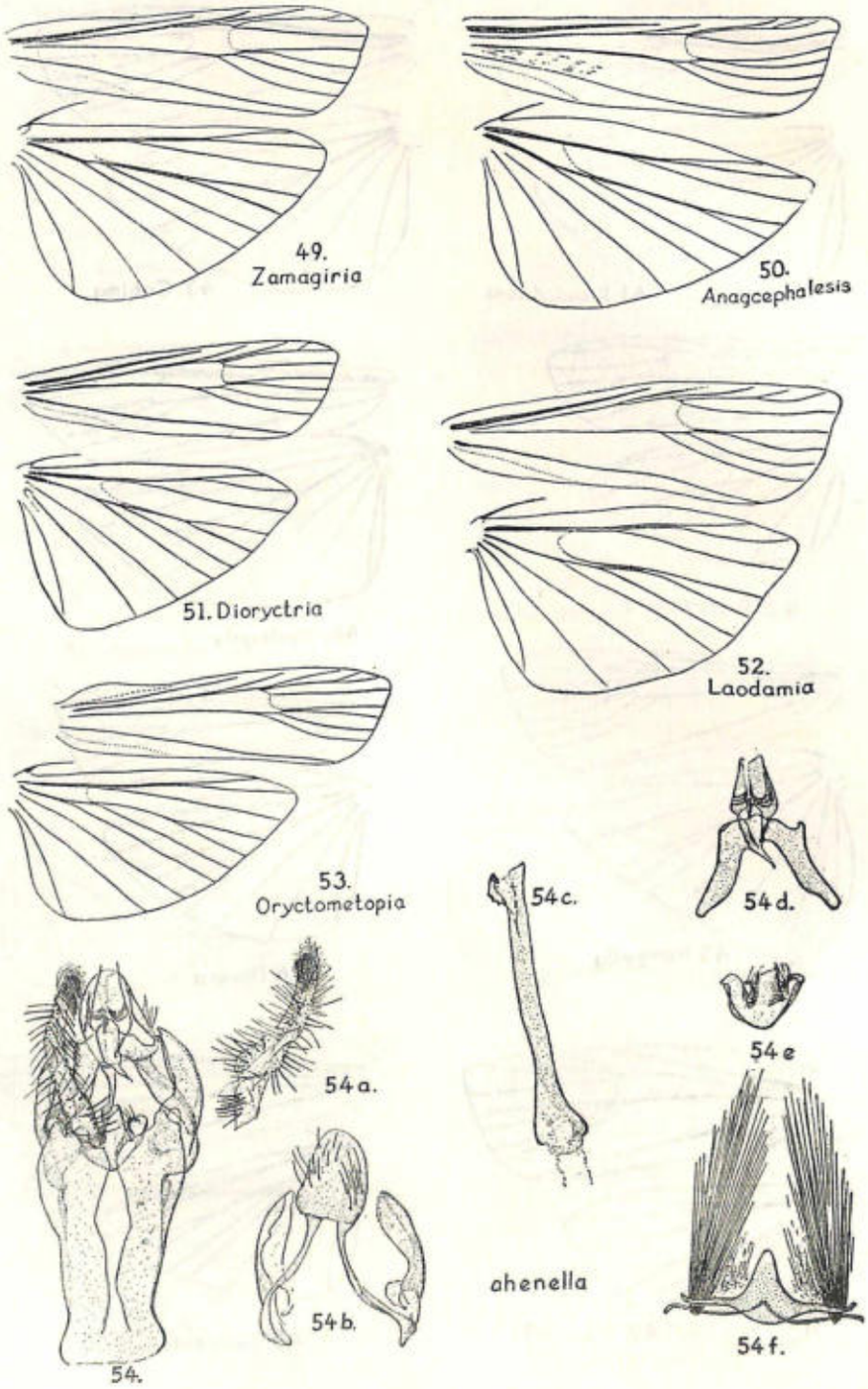


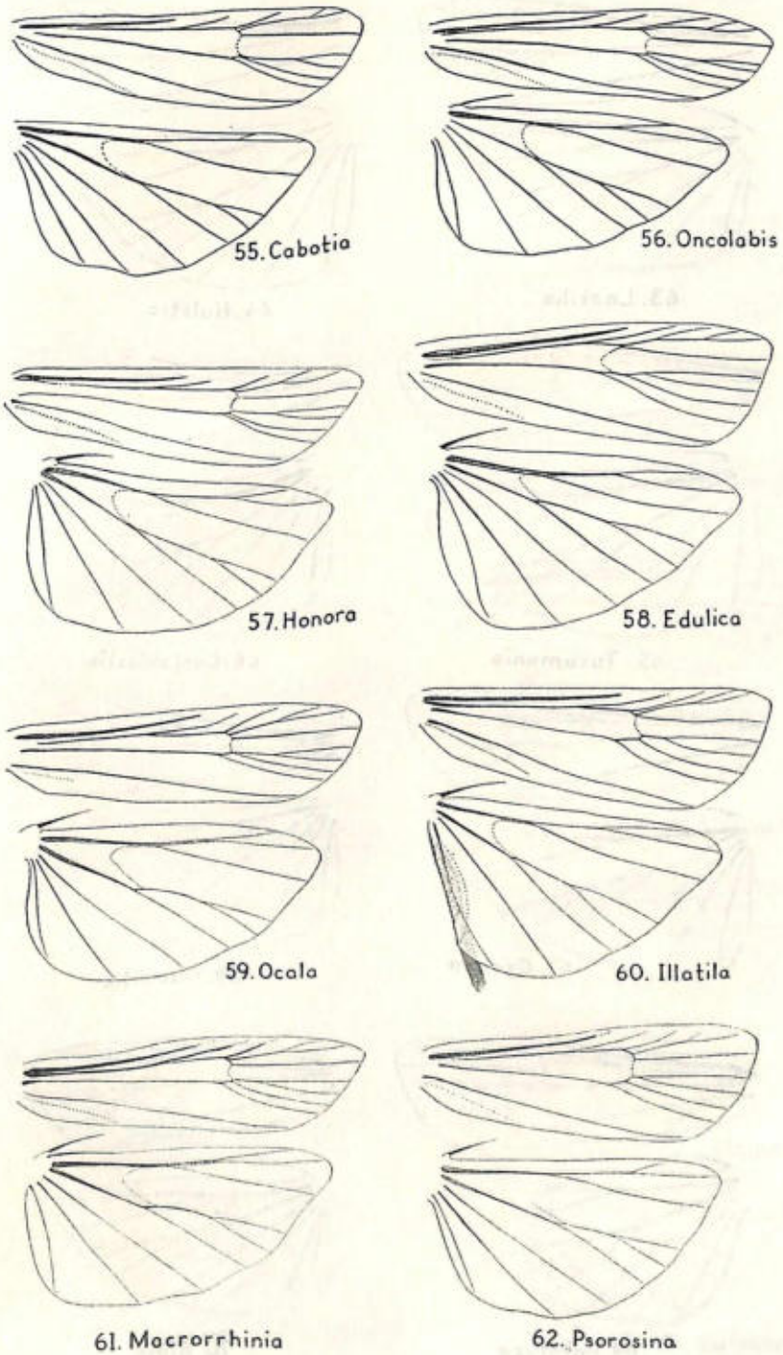
FIGURES 41–48.—VENATION (MALE UNLESS OTHERWISE NOTED) AND MALE GENITALIA.

41. *Pseudodivona commensella* Dyar. Venation.
42. *Diatomocera tenebricosa* (Zeller). Venation.
43. *Cabima dosia* Dyar, venation, type of *Cabima* Dyar, a synonym of *Diatomocera* Ragonot.
44. *Hyalospila stictoneurella* Ragonot. Venation.
45. *Rampylla orio* Dyar. Venation.
46. *Davara caricae* (Dyar). Venation.
47. *Praedonula almonella* (Dyar). Venation.
48. *Sarasota furculella* (Dyar). Venation.

FIGURES 49–54.—VENATION (MALE UNLESS OTHERWISE NOTED).

49. *Zamagiria pogerythrus* Dyar. Venation.
50. *Anegcephalesis arctella* (Ragonot), figured from its synonym, *cathaeretes* Dyar. Venation.
51. *Dioryctria abietella* (Denis and Schiffermüller). Venation.
52. *Laodamia faecella* (Zeller). Venation.
53. *Oryctometopia fossulatella* Ragonot. Venation.
54. *Hypochalcia ahenella* (Schiffermüller), male genitalia; male genitalia 54a, detached harpe in ventral view; 54b, dorsal view of tegumen and uncus; 54c, aedeagus; 54d, gnathos; 54e, anellus; 54f, sternite and tergite of eighth abdominal segment. (Type of an Old World genus not represented in the New World.)



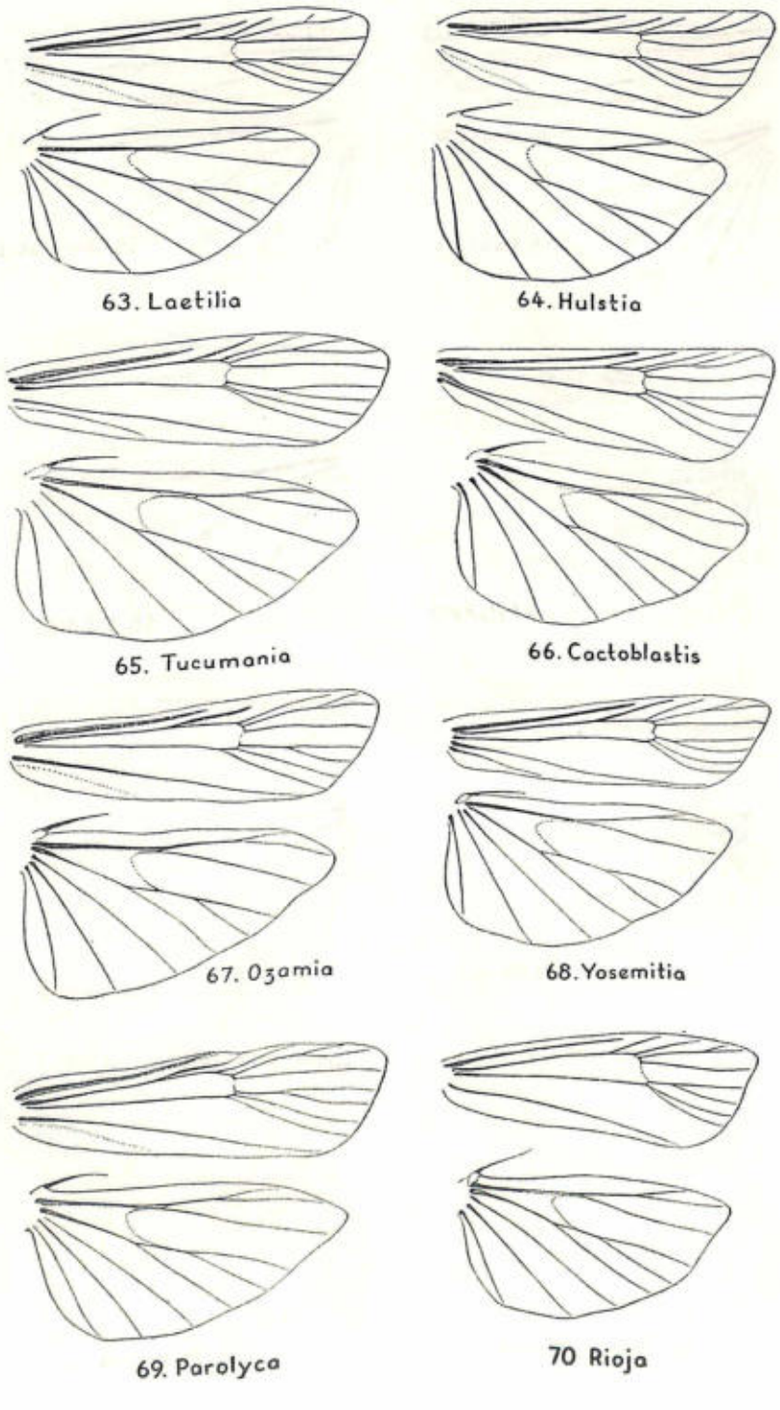


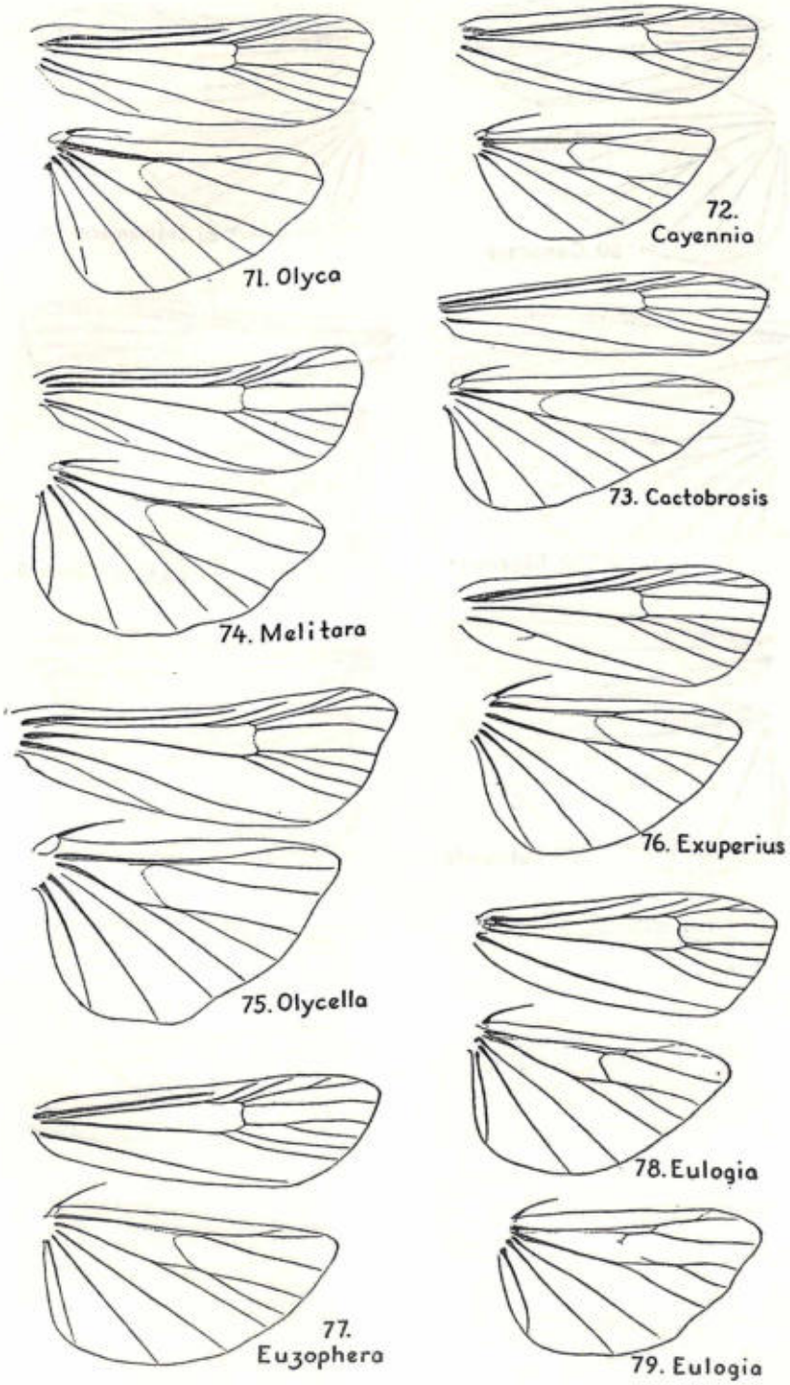
FIGURES 55–62.—VENATION (MALE UNLESS OTHERWISE NOTED).

55. *Cabotia semidiscella* Ragonot.
56. *Oncolabis anticella* Zeller.
57. *Honora mellinella* Grote.
58. *Edulica compedella* (Zeller).
59. *Ocala dryadella* Hulst.
60. *Illatila gurbyris* Dyar.
61. *Macrorrhinia aureofasciella* Ragonot.
62. *Psorosina hammondi* (Riley).

FIGURES 63–70.—VENATION (MALE UNLESS OTHERWISE NOTED).

63. *Laetilia coccidivora* (Comstock).
64. *Hulstia undulatella* (Clemens).
65. *Tucumania tapiacola* Dyar.
66. *Cactoblastis cactorum* (Berg), female.
67. *Ozamia fuscomaculella clarefacta* Dyar.
68. *Yosemitia graciella* (Hulst).
69. *Parolyca asthenosoma* (Dyar).
70. *Rioja nexa* Heinrich, new species.



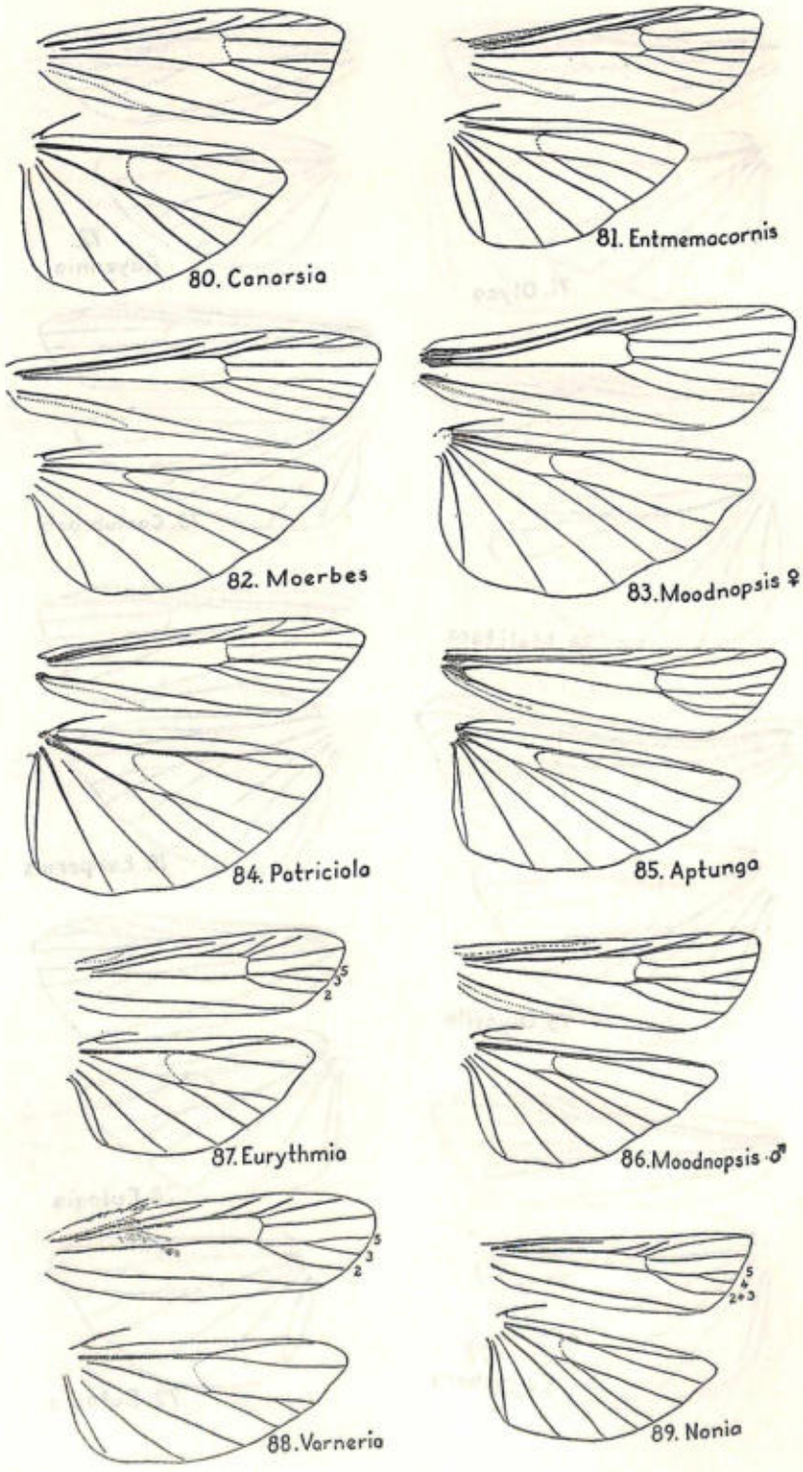


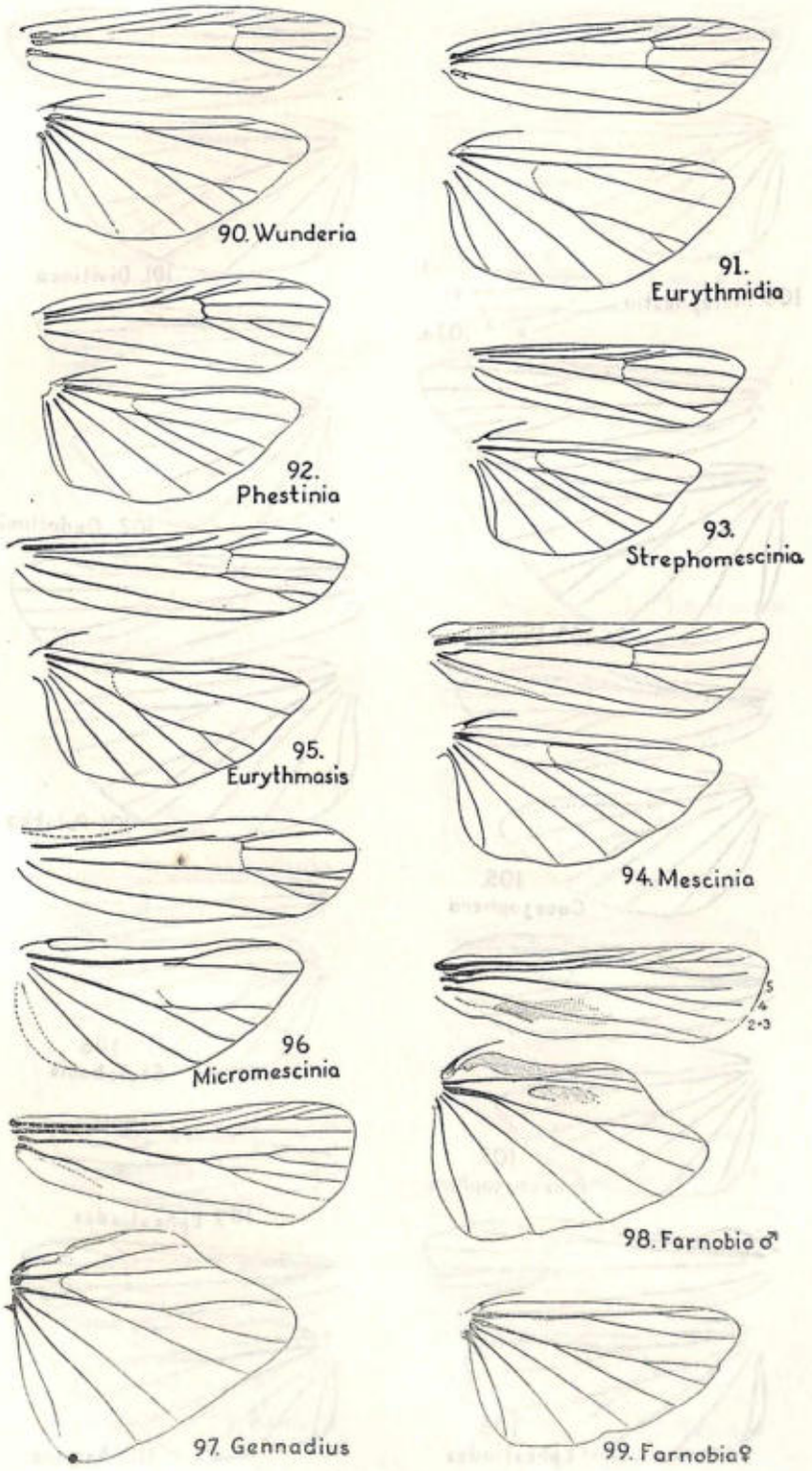
FIGURES 71–79.—VENATION (MALE UNLESS OTHERWISE NOTED).

71. *Olyca phryganoides* Walker.
72. *Cayennia rufiinctalis* Hampson.
73. *Cactobrosis fernaldialis* (Hulst).
74. *Melitara prodenialis* Walker.
75. *Olycella junctolineella* (Hulst).
76. *Exuperius negator* Heinrich.
77. *Euzophera cinerosella* (Zeller).
78. *Eulogia ochrifrontella* (Zeller), female.
79. *Eulogia ochrifrontella* (Zeller), hind wing of female, showing variation in venation.

FIGURES 80–89.—VENATION (MALE UNLESS OTHERWISE NOTED).

80. *Canarsia ulmiarrosorella* (Clemens).
81. *Entmemacornis proselyte:* Dyar.
82. *Moerbes dryopella* (Schaus).
83. *Moodnopsis decipiens* Dyar, female.
84. *Patriciola semicana* Heinrich, new species.
85. *Aptunga macropasa* (Dyar), female.
86. *Moodnopsis inveterella* (Dyar).
87. *Eurythmia hospitella* (Zeller).
88. *Varneria postremella* Dyar.
89. *Nonia exiguella* (Ragonot).



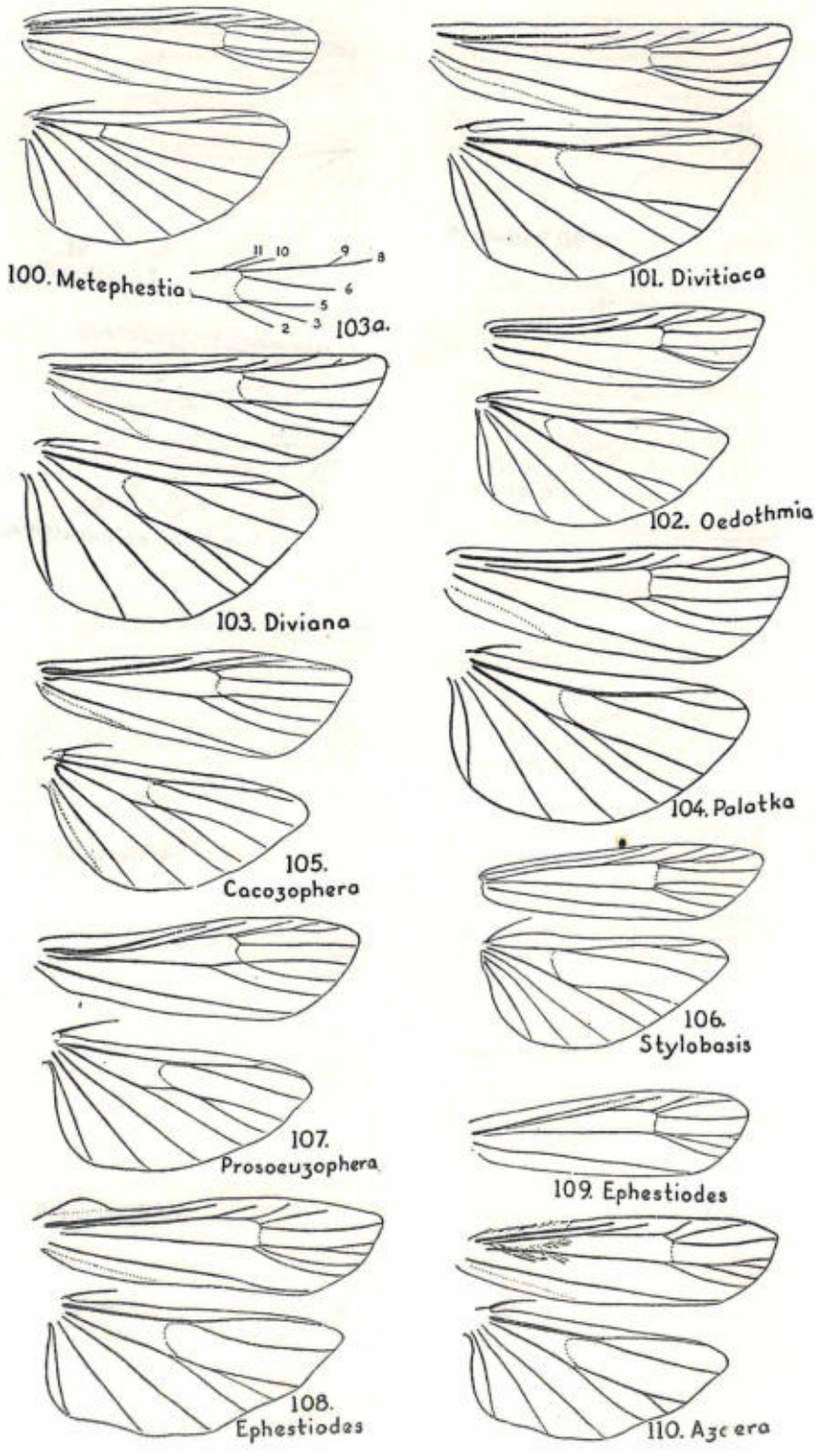


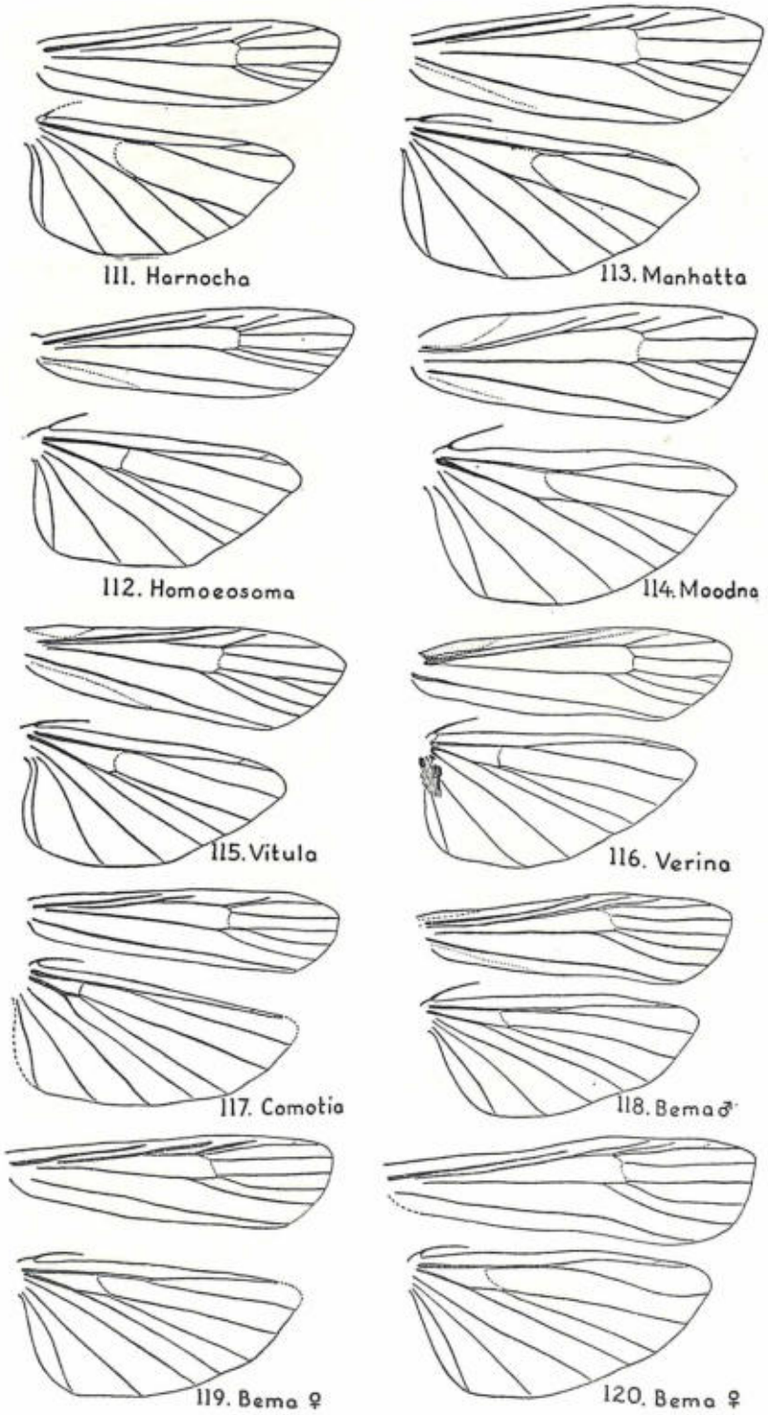
FIGURES 90–99.—VENATION (MALE UNLESS OTHERWISE NOTED).

90. *Wunderia neaeriatella* Grossbeck, female.
91. *Eurythmidia ignidorsella* (Ragonot).
92. *Phestinia costella* Hampson.
93. *Strephomescinia schausella* Dyar.
94. *Mescinia bacerella* Dyar.
95. *Eurythmasis ignifatua* Dyar.
96. *Micromescinia pygmaea* Dyar.
97. *Gennadius junctor* Heinrich, new species.
98. *Farnobia quadripuncta* (Zeller), male.
99. *Farnobia quadripuncta* (Zeller), hind wing of female.

FIGURES 100–110.—VENATION (MALE UNLESS OTHERWISE NOTED).

100. *Metephestia simplicula* (Zeller).
101. *Divitiaca ochrella* Barnes and McDunnough.
102. *Oedothmia endopyrella* Hampson, figured from a sketch, by J. F. G. Clarke, of the type of its synonym *Synothomia bahamasella* Hampson.
103. *Diviana eudoreella* Ragonot; 103a, forewing showing variation in venation.
104. *Palatka nymphaeella* (Hulst).
105. *Cacozophera venosa* Dyar.
106. *Stylobasis rubripurpurea* Hampson.
107. *Prosoeuzophera impletella* (Zeller).
108. *Ephestiodes gilvescentella* Ragonot.
109. *Ephestiodes plorella* Dyar, Forewing of its synonym *Eurythmia vestilla* Dyar.
110. *Azaera muciella* Schaus.





FIGURES 111–120.—VENATION (MALE UNLESS OTHERWISE NOTED).

111. *Harnocha velessa* Dyar.
112. *Homoeosoma sinuellum* (Fabricius).
113. *Manhatta biviella* (Zeller), female.
114. *Moodna ostrinella* (Clemens).
115. *Vitula edmandsae* (Packard).
116. *Verina supplicella* (Dyar).
117. *Comotia torsicornis* Dyar.
118. *Bema neuricella* (Zeller), male.
119, 120. *Bema neuricella* (Zeller), females, showing vestiges of vein 9 in forewings.

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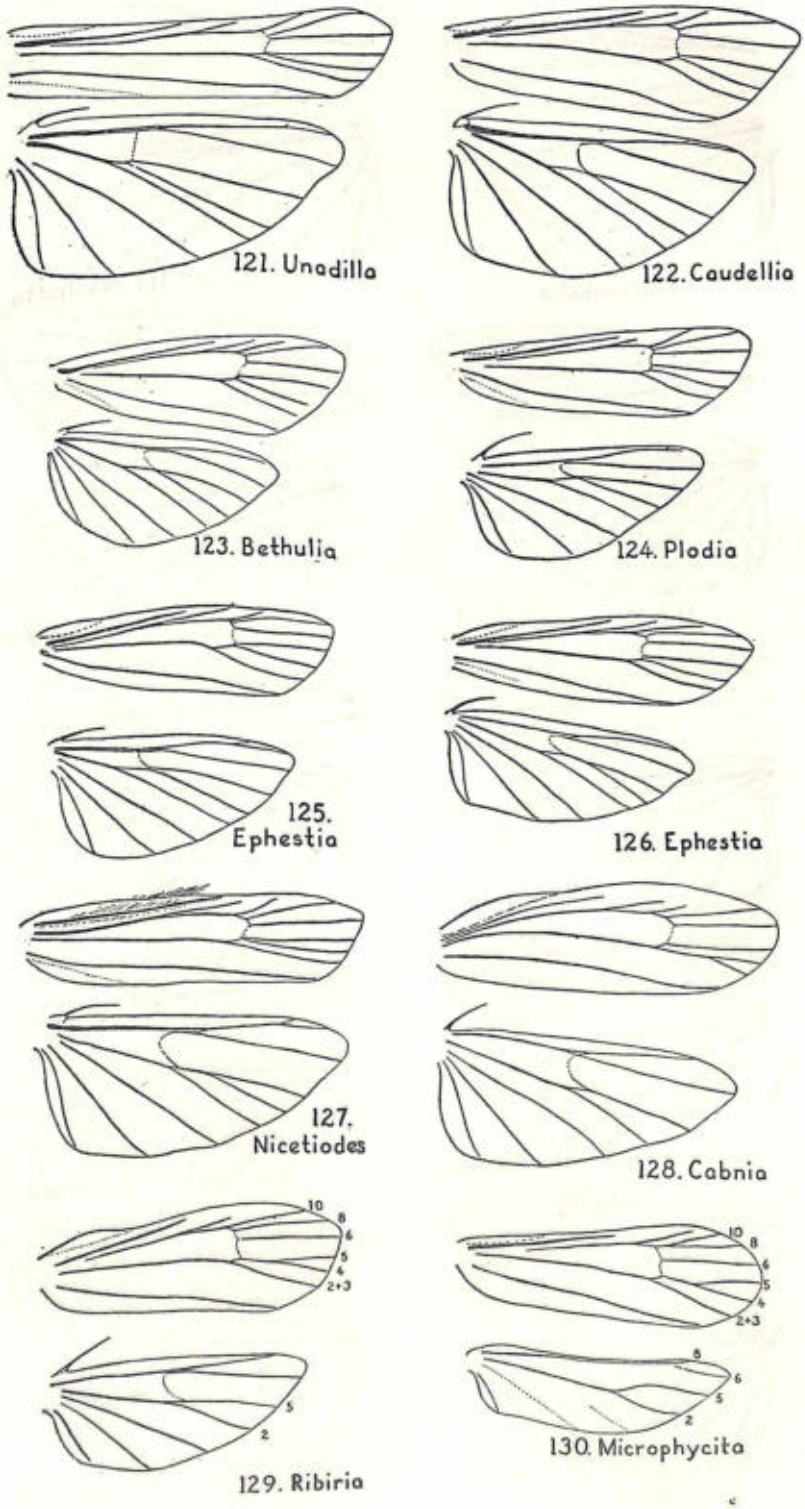
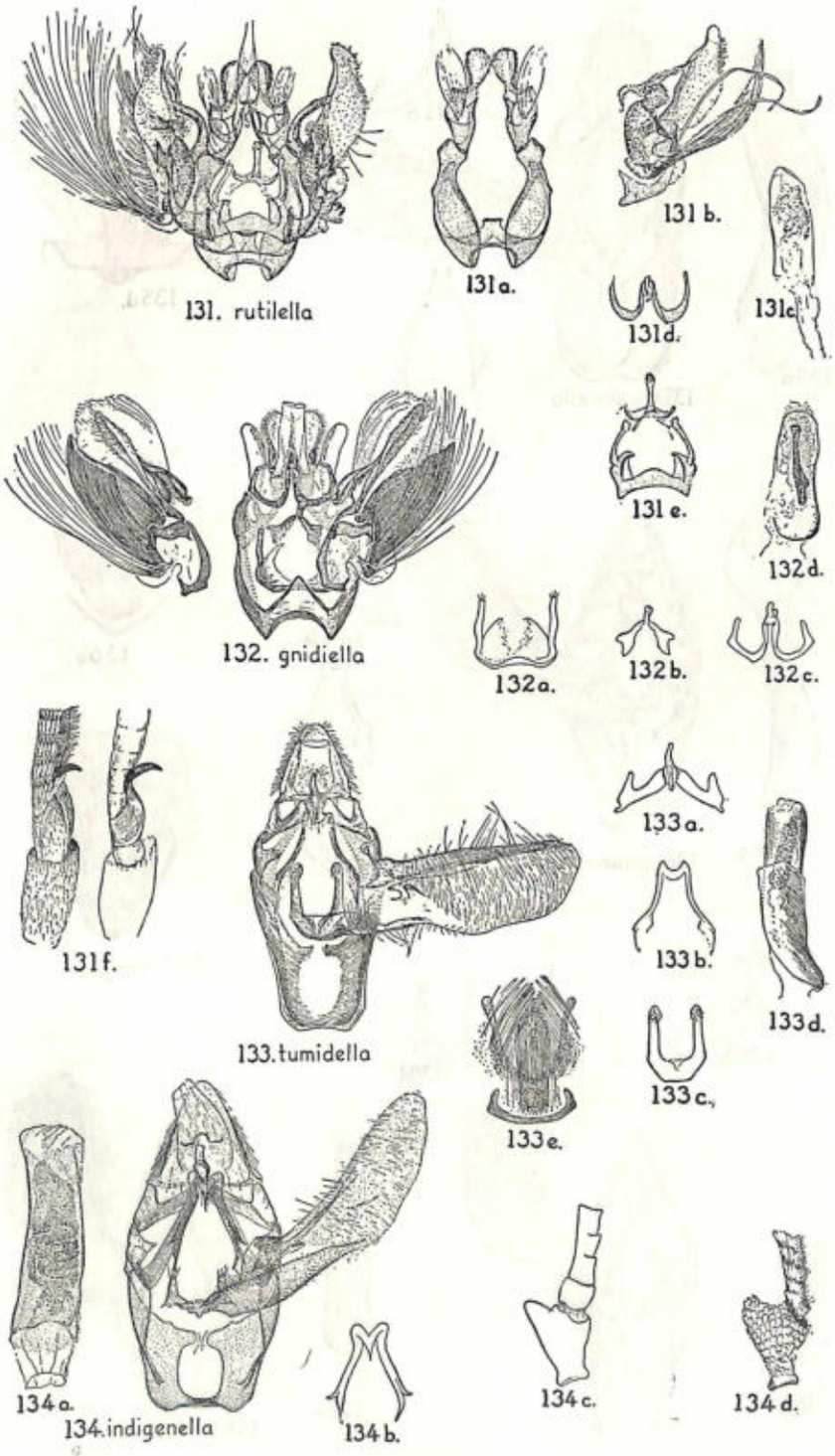
FIGURES 121–130.—VENATION (MALE UNLESS OTHERWISE NOTED).

121. *Unadilla erronella* (Zeller).
122. *Caudellia apyrella* Dyar.
123. *Bethulia championella* Ragonot, female.
124. *Plodia interpunctella* (Hübner).
125. *Ephestia cautella* (Walker).
126. *Ephestia elutella* (Hübner).
127. *Nicetiodes apianella* Schaus.
126. *Cabnia myronella* Dyar.
129. *Ribiria conops* (Dyar).
130. *Microphycita titillella* Dyar.





FIGURES 131–134.—MALES.

131. *Cryptoblabes rutilella* Zeller, right harpe denuded and aedeagus omitted; 131a, vinculum, tegumen, and uncus; 131b, harpe, denuded except for ventral tuft; 131c, aedeagus; 131d, gnathos; 131e, transtilla and anellus; 131f, two views (scaled and denuded) of basal segments of antenna.

132. *Cryptoblabes gnidiella* (Millière), left harpe detached and aedeagus omitted; 132a, anellus; 132b, transtilla; 132c, gnathos; 132d, aedeagus.

133. *Acrobasis tumidella* (Zincken); 133a, gnathos; 133b, transtilla; 133c, anellus; 133d aedeagus; 133e, ventral tuft of eighth abdominal segment.

134. *Acrobasis indigenella* (Zeller); 134a, aedeagus; 134b, transtilla; 134c, d, basal segments of antenna, denuded and scaled.

FIGURES 135–139.—MALES.

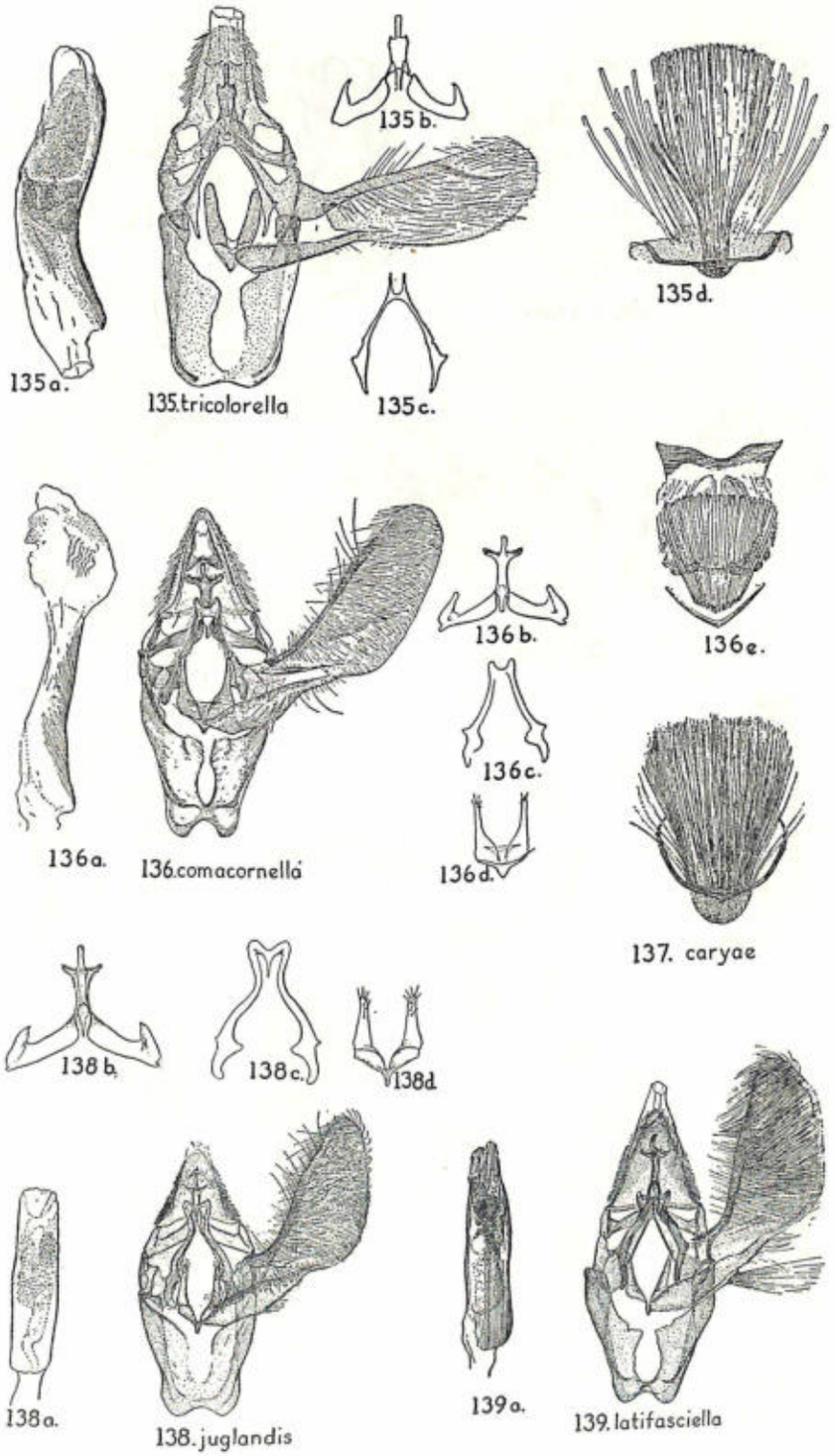
135. *Acrobasis tricolorella* Grote, 135a, aedeagus; 135b, gnathos; 135c, transtilla; 135d, ventral tuft of eighth abdominal segment.

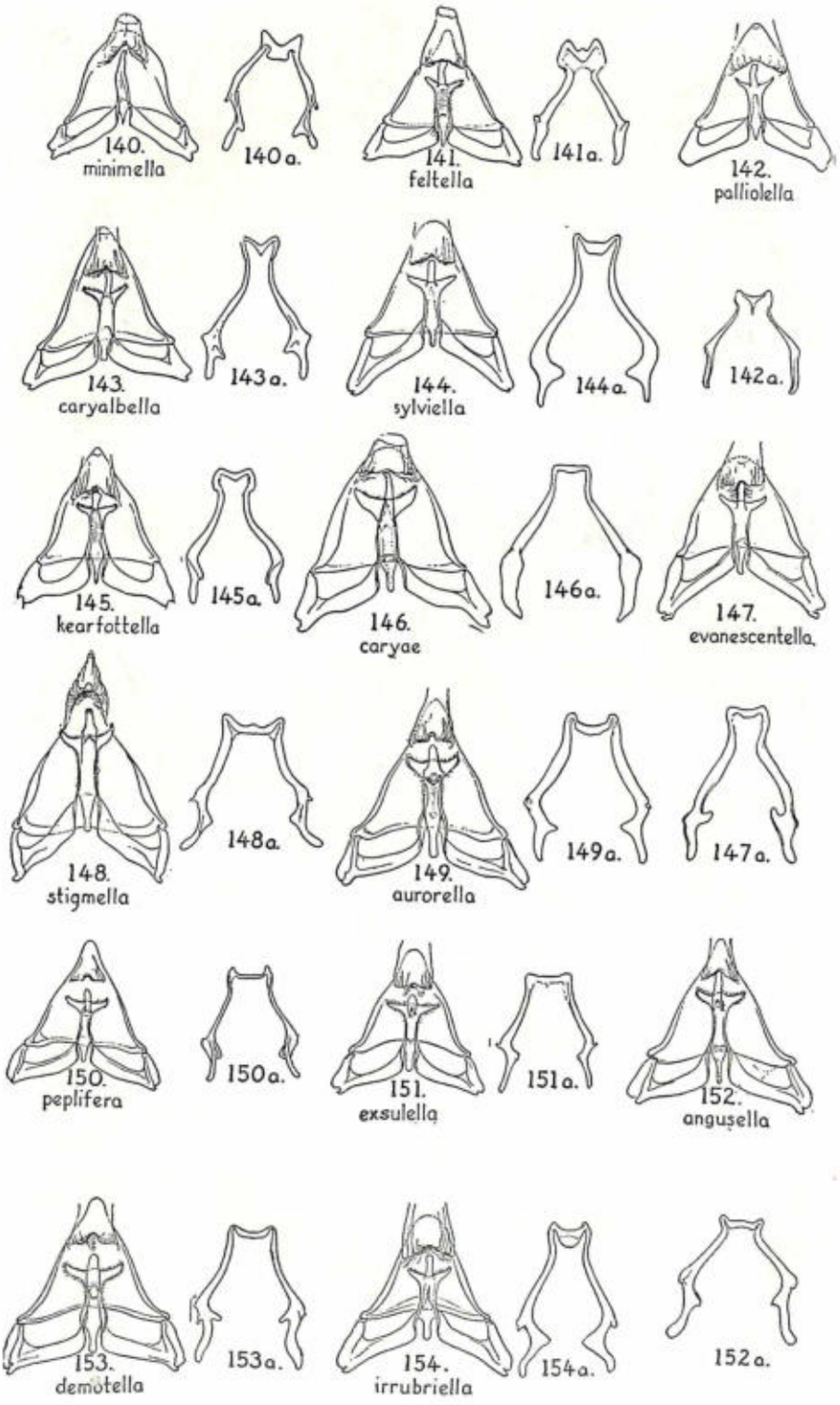
136. *Acrobasis comacornella* (Hulst), type; 136a, aedeagus; 136b, gnathos; 136c, transtilla; 136d, anellus; 136e, ventral tuft of eighth abdominal segment.

137. *Acrobasis caryae* Grote, specimen reared from pecan nut, tuft of eighth abdominal segment.

138. *Acrobasis juglandis* (LeBaron), specimen reared from pecan; 138a, aedeagus; 138b, gnathos; 138c, transtilla; 138d, anellus.

139. *Acrobasis latifasciella* Dyar, type; 139a, aedeagus.



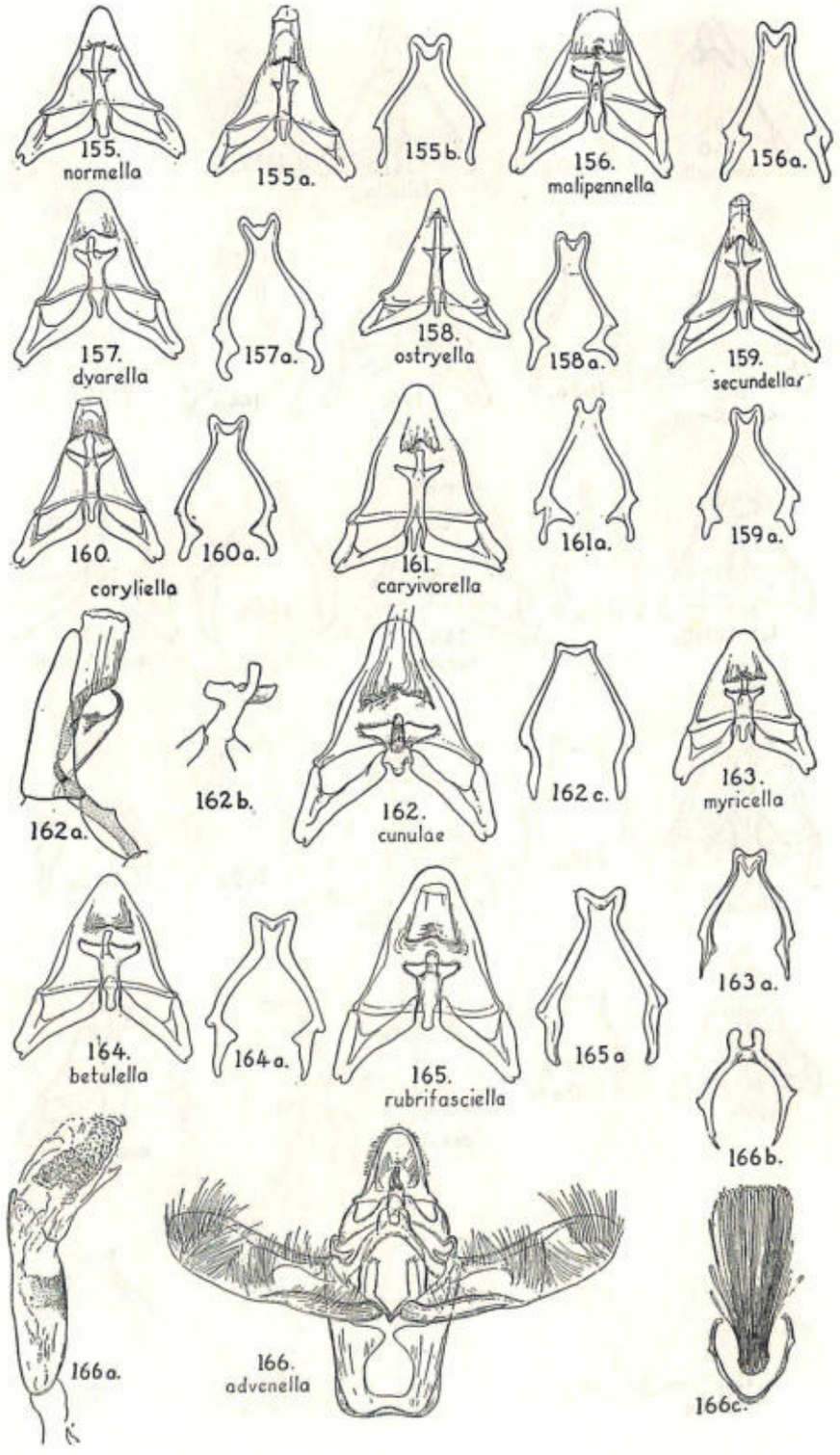


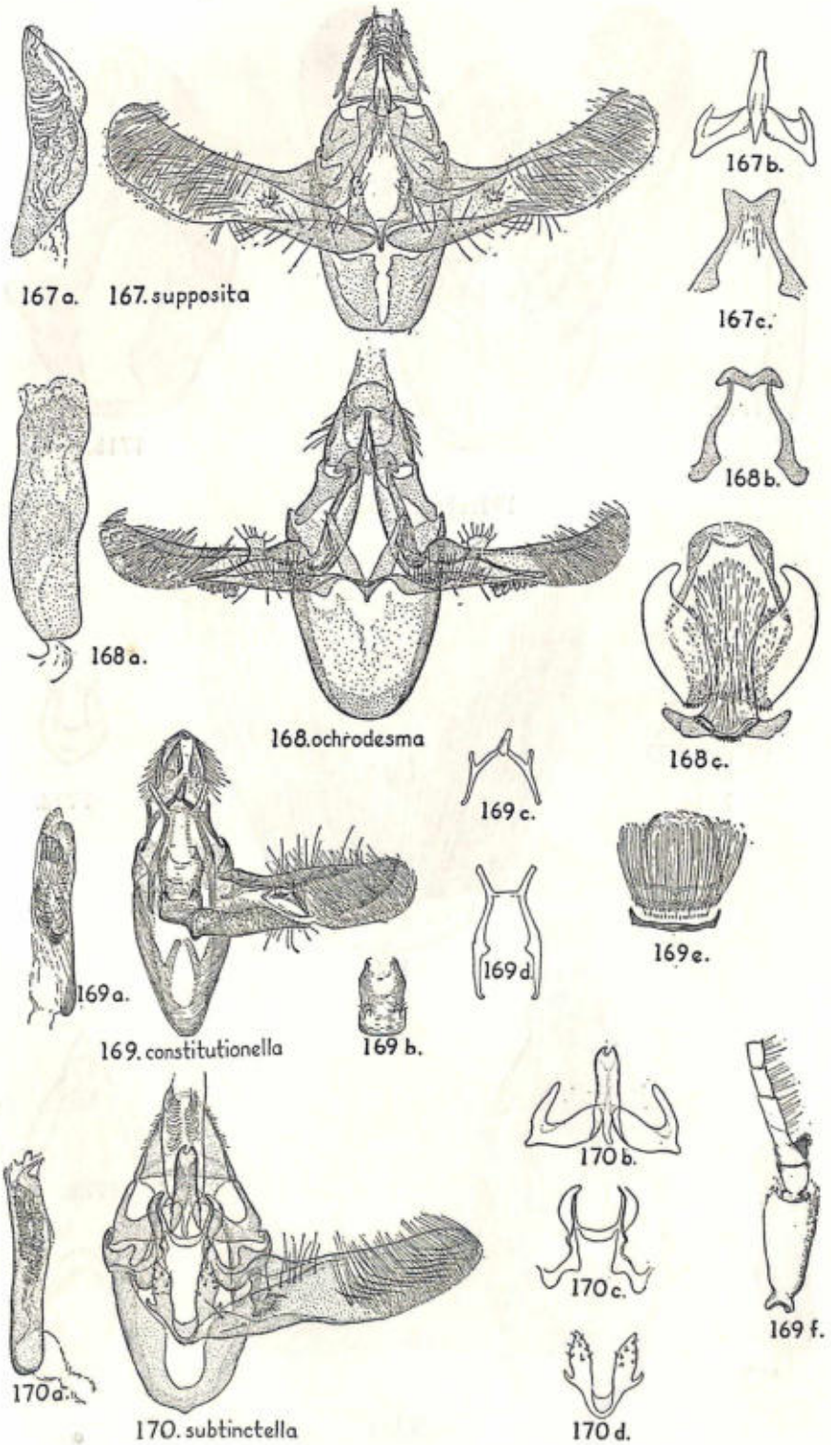
FIGURES 140–154.—MALES OF ACROBASIS SPECIES: UNCUS AND GNATHOS AND (a) TRANSTILLA:

140. *Acrobasis minimella* Ragonot, figured from type of its synonym *A. nigrosignella* Hulst.
141. *Acrobasis feltella* Dyar, type.
142. *Acrobasis palliolella* Ragonot, male from Chicago, Ill.
143. *Acrobasis caryalbella* Ely, type.
144. *Acrobasis sylviella* Ely.
145. *Acrobasis kearfottella* Dyar, type.
146. *Acrobasis caryae* Grote, southern male, reared from pecan nut.
147. *Acrobasis evanescentella* Dyar.
148. *Acrobasis stigmella* Dyar, reared specimen from Falls Church, Va. (Hopk. U. S. No. 12121d).
149. *Acrobasis aurorella* Ely, type.
150. *Acrobasis peplifera* Dyar, type.
151. *Acrobasis exsulella* (Zeller).
152. *Acrobasis angusella* Grote, figured from type of its synonym *A. eliella*, Dyar.
153. *Acrobasis demotella* Grote, specimen from New Brighton, Pa.
154. *Acrobasis irrubriella* Ely, type.

FIGURES 155–166.—MALES.

155. *Acrobasis normella* Dyar, type, uncus and gnathos; 155a, another male, showing variation in apical process of gnathos; 155b, type, transtilla.
156. *Acrobasis malipennella* Dyar, type, uncus and gnathos; 156a, transtilla.
157. *Acrobasis dyarella* Ely, type, uncus and gnathos; 157a, transtilla.
158. *Acrobasis ostryella* Ely, type, uncus and gnathos; 158a, transtilla.
159. *Acrobasis secundella* Ely, type, uncus and gnathos; 159a, transtilla.
160. *Acrobasis coryliella* Dyar, type, uncus and gnathos; 160a, transtilla.
161. *Acrobasis caryivorella* Ragonot, specimen reared on pecan at Austin, Tex. uncus and gnathos; 161a, transtilla.
162. *Acrobasis cunulae* Dyar and Heinrich: 162–162a, Ventral and lateral views of uncus and gnathos; 162b, apical process of gnathos from a male showing the broadest development in this structure; 162c, transtilla.
163. *Acrobasis myricella* Barnes and McDunnough, type, uncus and gnathos; 163a, transtilla.
164. *Acrobasis betulella* Hulst, uncus and gnathos; 164a, transtilla.
165. *Acrobasis rubrifasciella* Packard, reared male from New York, uncus and gnathos; 165a, transtilla.
166. *Rhodophaea advenella* (Zincken), aedeagus omitted; 166a, aedeagus; 166b, transtilla; 166c, ventral tuft on eighth abdominal segment.





FIGURES 167–170.—MALES.

167. *Rhodophaea supposita* (Heinrich), aedeagus omitted; 167a; aedeagus; 167b, gnathos; 167c, transtilla.

168. *Anabasis ochrodesma* (Zeller), aedeagus omitted; 168a, aedeagus; 168b, transtilla; 168c, sternite and tergite of eighth abdominal segment, showing ventral tufts.

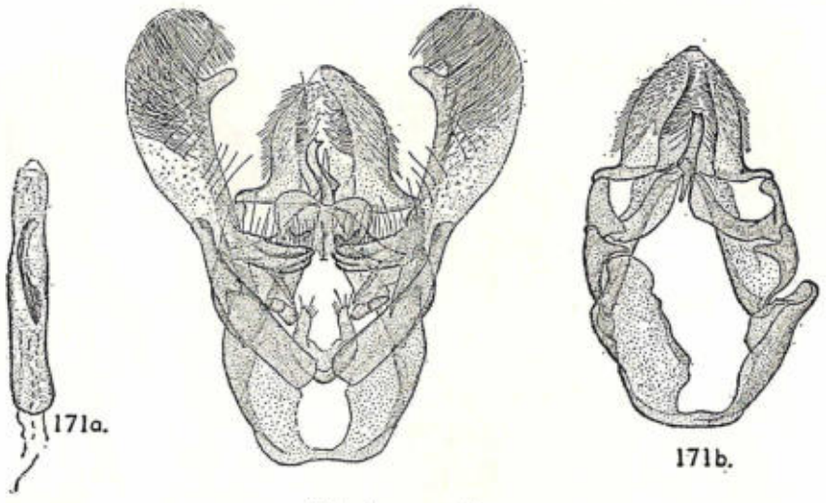
169. *Mildrixia constitutionella* Dyar; 169a, aedeagus; 169b, anellus; 169c, gnathos; 169d, transtilla; 169e, sternite and tergite of eighth abdominal segment, showing ventral tuft; 169f, basal segments of antenna, partially denuded.

170. *Cuniberta subtinctella* (Ragonot); 170a, aedeagus; 170b, gnathos; 170c, transtilla; 170d, anellus.

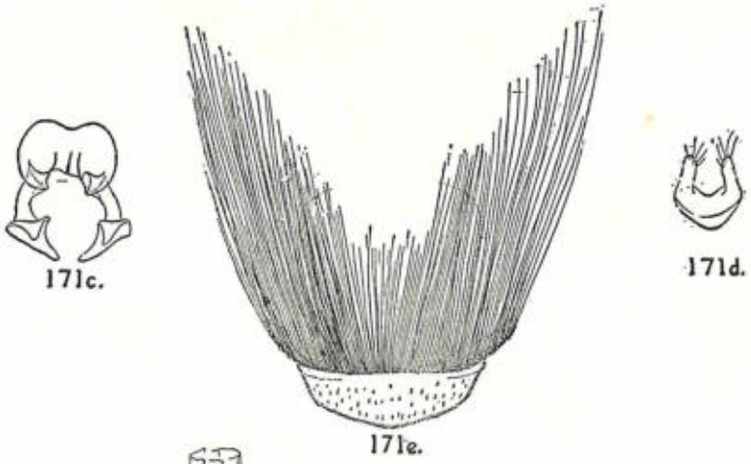
FIGURES 171, 172.—MALES.

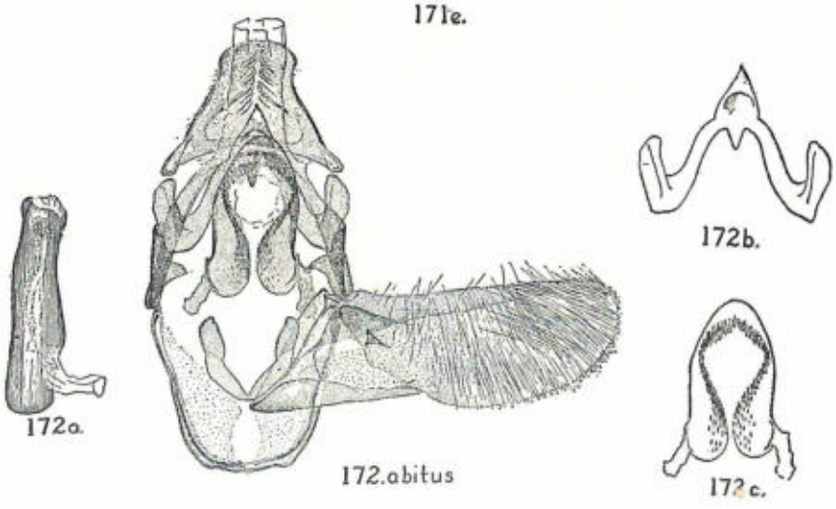
171. *Sematoneura atrovenosella* Ragonot, aedeagus omitted; 171a, aedeagus: 171b, vinculum, tegumen, gnathos and uncus, ventral view; 171c, transtilla; 171d, anellus; 171e, ventral hair tuft of eighth abdominal segment.

172. *Sematoneura abitus* Heinrich, new species, type; 172a, aedeagus; 172b, gnathos; 172c, transtilla.

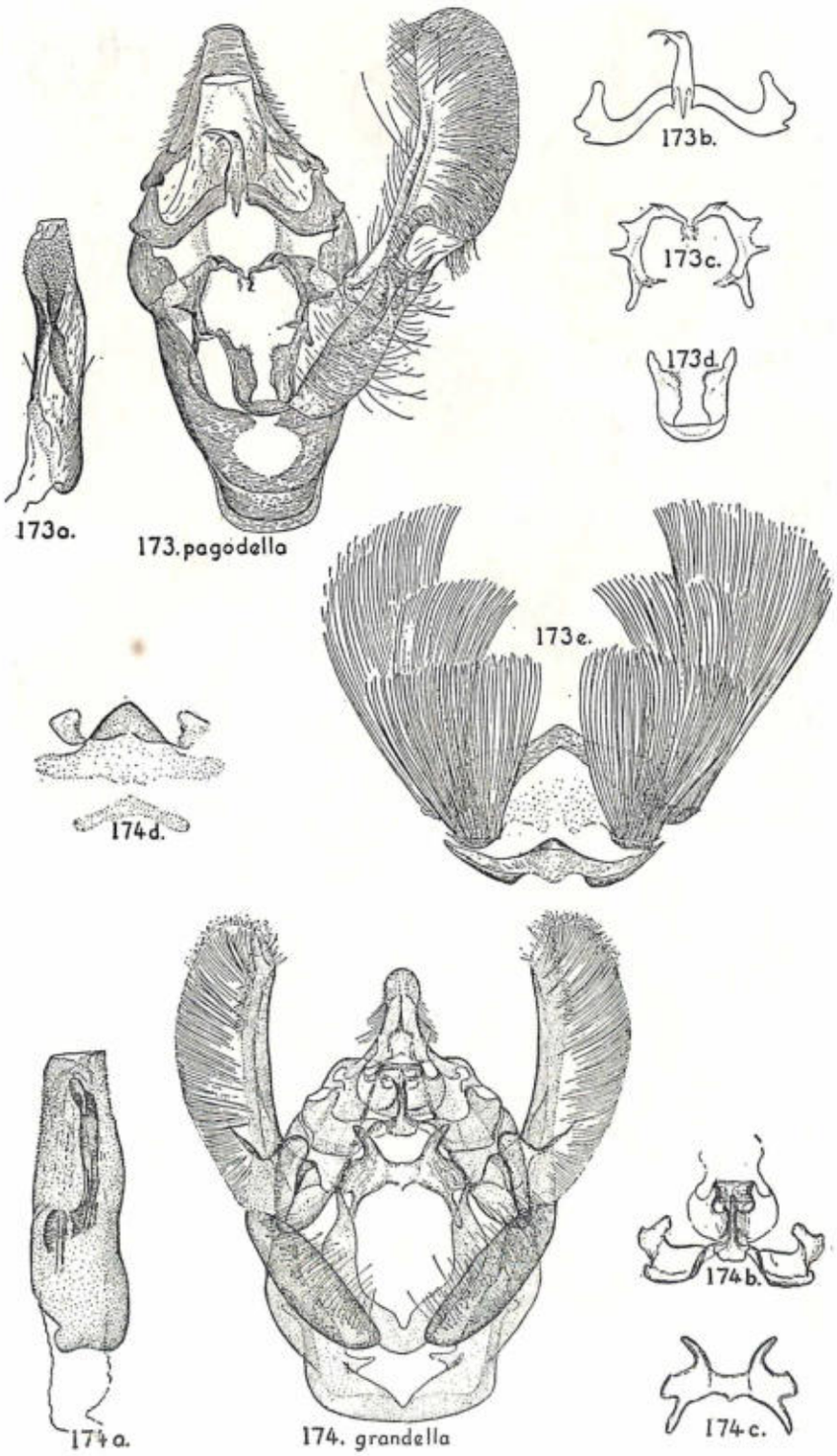


171. atrovenosello





172. abitus



FIGURES 173, 174.—MALES.

173. *Hypsipyla pagodella* Ragonot; 173a, aedeagus; 173b, gnathos; 173c, transtilla; 172d, anellus; 173e, sternite, tergite and ventrolateral tufts of eighth abdominal segment.

174. *Hypsipyla grandella* (Zeller), aedeagus omitted; 174a, aedeagus; 174b, gnathos; 174c, transtilla; 174d, sternite and tergite of eighth abdominal segment.

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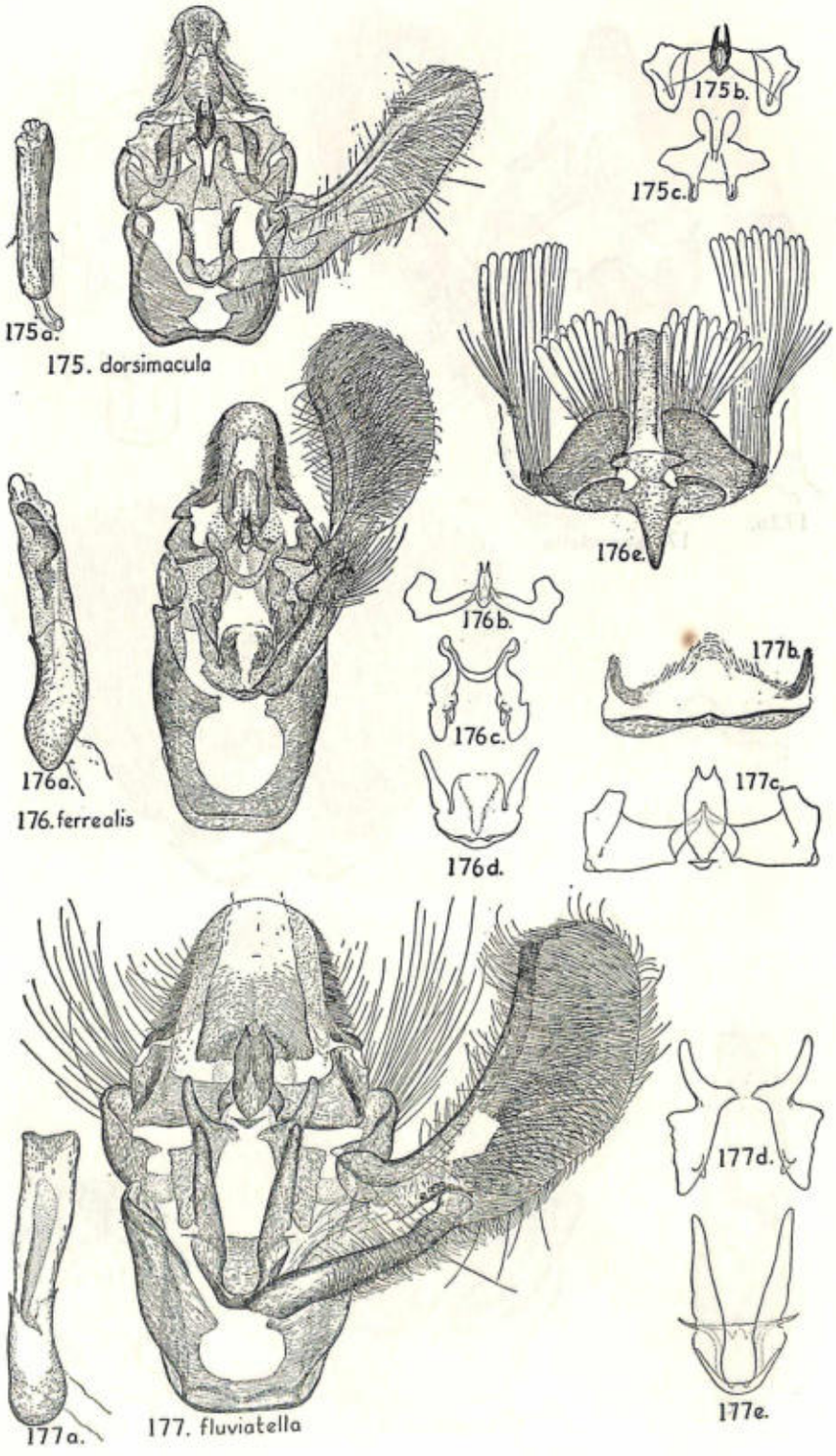
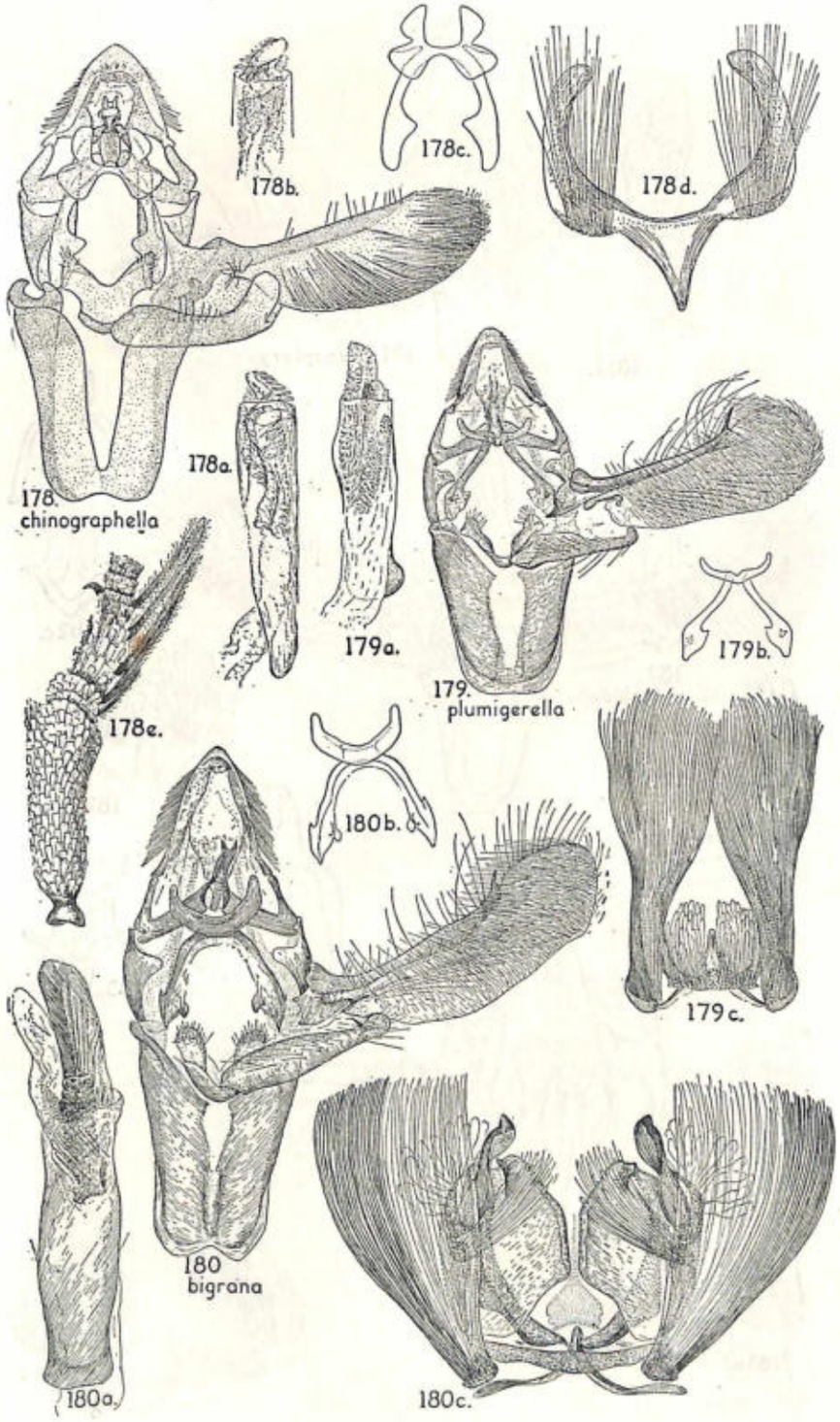
FIGURES 175–177.—MALES.

175. *Hypsipyla dorsimacula* (Schaus); 175a, aedeagus; 175b, gnathos; 175c, transtilla.

176. *Hypsipyla ferrealis* (Hampson); 176a, aedeagus; 176b, gnathos; 176c, transtilla; 176d, anellus; 176e, eighth abdominal segment, showing tufts and modifications of sternite and tergite.

177. *Hypsipyla fluviatella* Schaus; 177a, aedeagus; 177b, sternite and tergite of eighth abdominal segment; 177c, gnathos; 177d, transtilla; 177e, anellus.





FIGURES 178–180.—MALES.

178. *Hemiptilocera chinographella* Ragonot; 178a, aedeagus; 178b, apex of aedeagus, showing bent and spined cornutus in another view; 178c, transtilla; 178d, modified sternite and hair tufts of eighth abdominal segment; 178e, basal segments of antenna.

179. *Hemiptilocera plumigerella* (Ragonot), type; 179a, aedeagus; 179b, transtilla; 179c, sternite and tufts of eighth abdominal segment.

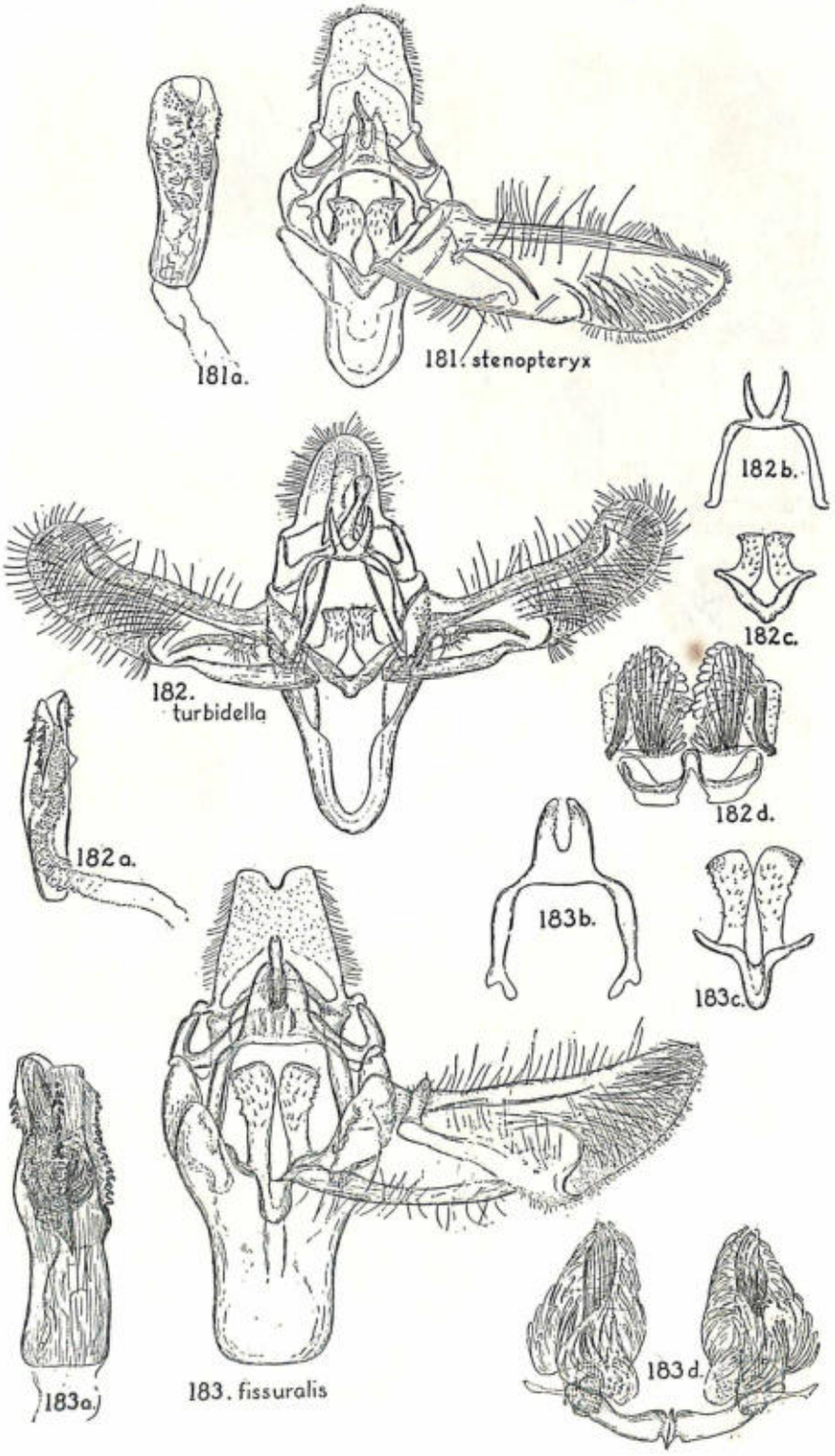
180. *Hemiptilocera bigrana* (Zeller); 180a, aedeagus; 180b, transtilla; 180c, tufts and modified sternal plates of eighth abdominal segment.

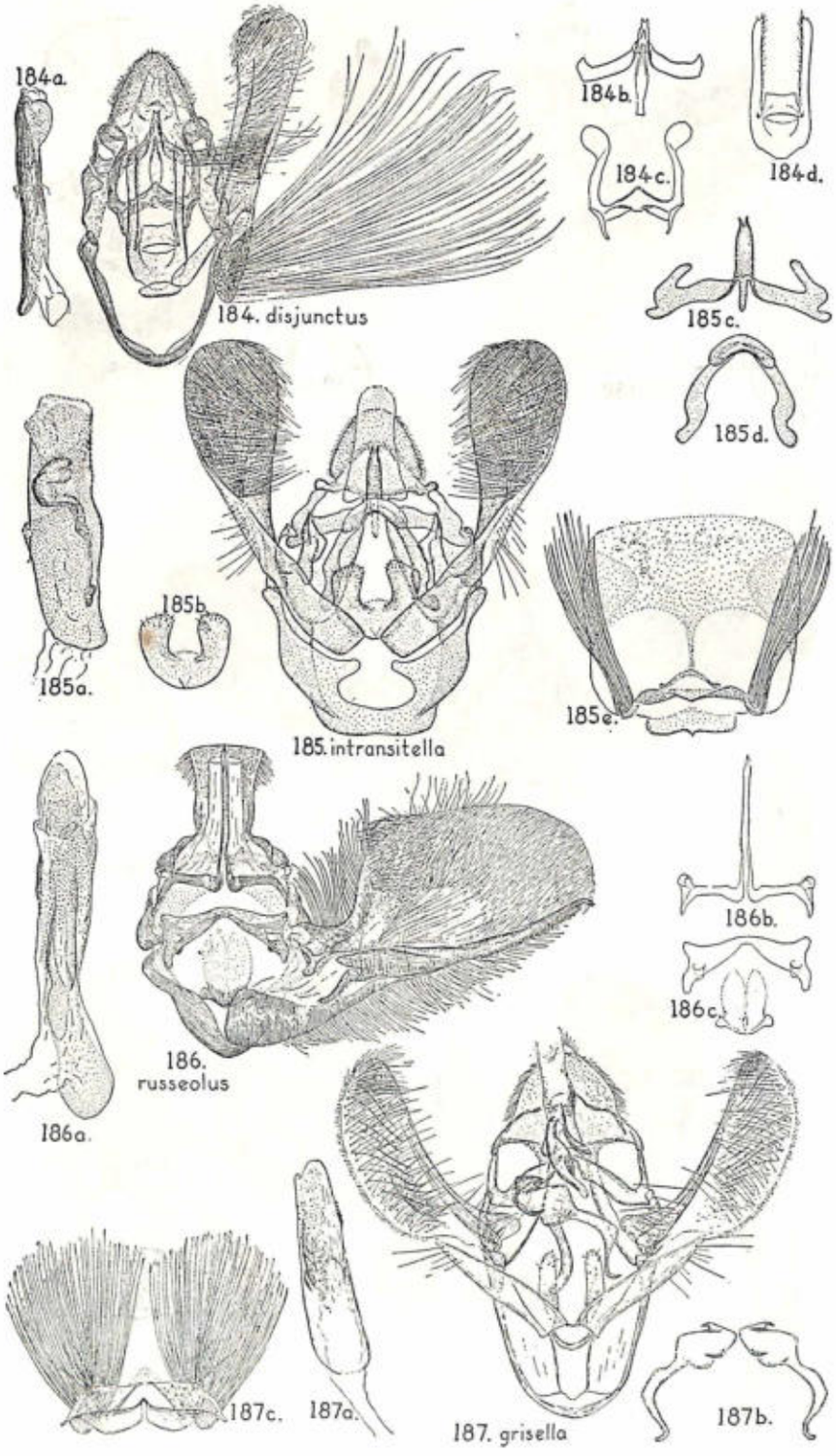
FIGURES 181–183.—MALES.

181. *Crocidomera stenopteryx* (Dyar), type; 181a, aedeagus.

182. *Crocidomera turbidella* Zeller, specimen from Cuba, aedeagus omitted; 182a, aedeagus; 182b, transtilla; 182c, anellus; 182d, scale and hair tufts of eighth abdominal segment.

183. *Crocidomera fissuralis* (Walker), specimen from Puerto Rico (in Cornell); 183a, aedeagus; 183b, transtilla; 183c, anellus; 183d, scale and hair tufts of eighth abdominal segment.





FIGURES 184–187.—MALES.

184. *Heras disjunctus* Heinrich, new species, type; 184a, aedeagus; 184b, gnathos; 184c, transtilla; 184d, anellus.

185. *Adanarsa intransitella* (Dyar), aedeagus omitted; 185a, aedeagus; 185b, anellus; 185c, gnathos; 185d, transtilla; 185e, tufts on eighth abdominal segment.

186. *Birinus russeolus* Heinrich, new species, type; 186a, aedeagus; 186b, gnathos; 186c, transtilla and anellus.

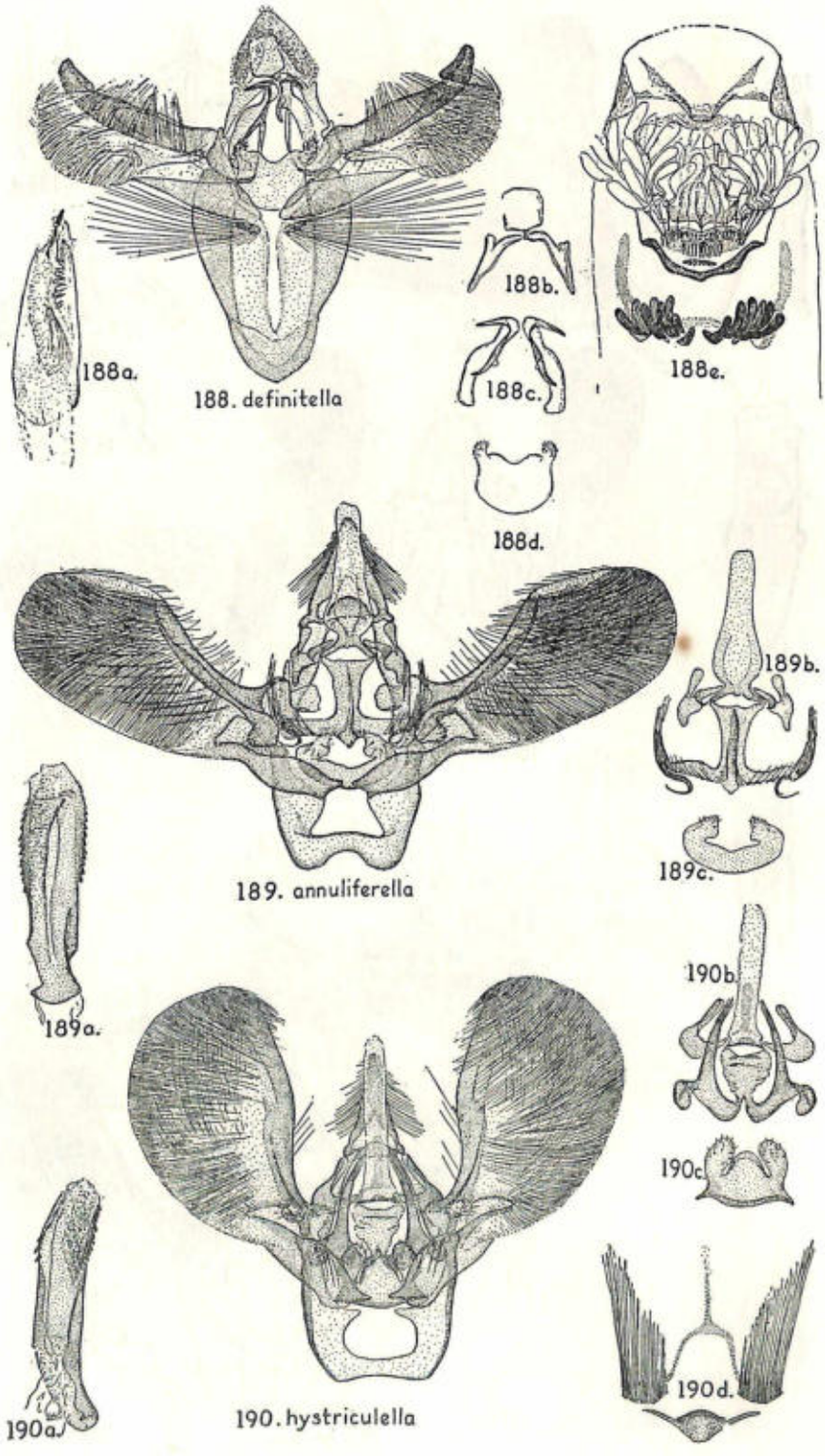
187. *Bertelia grisella* Barnes and McDunnough, type, aedeagus omitted; 187a, aedeagus; 187b, transtilla; 187c, tufts on eighth abdominal segment.

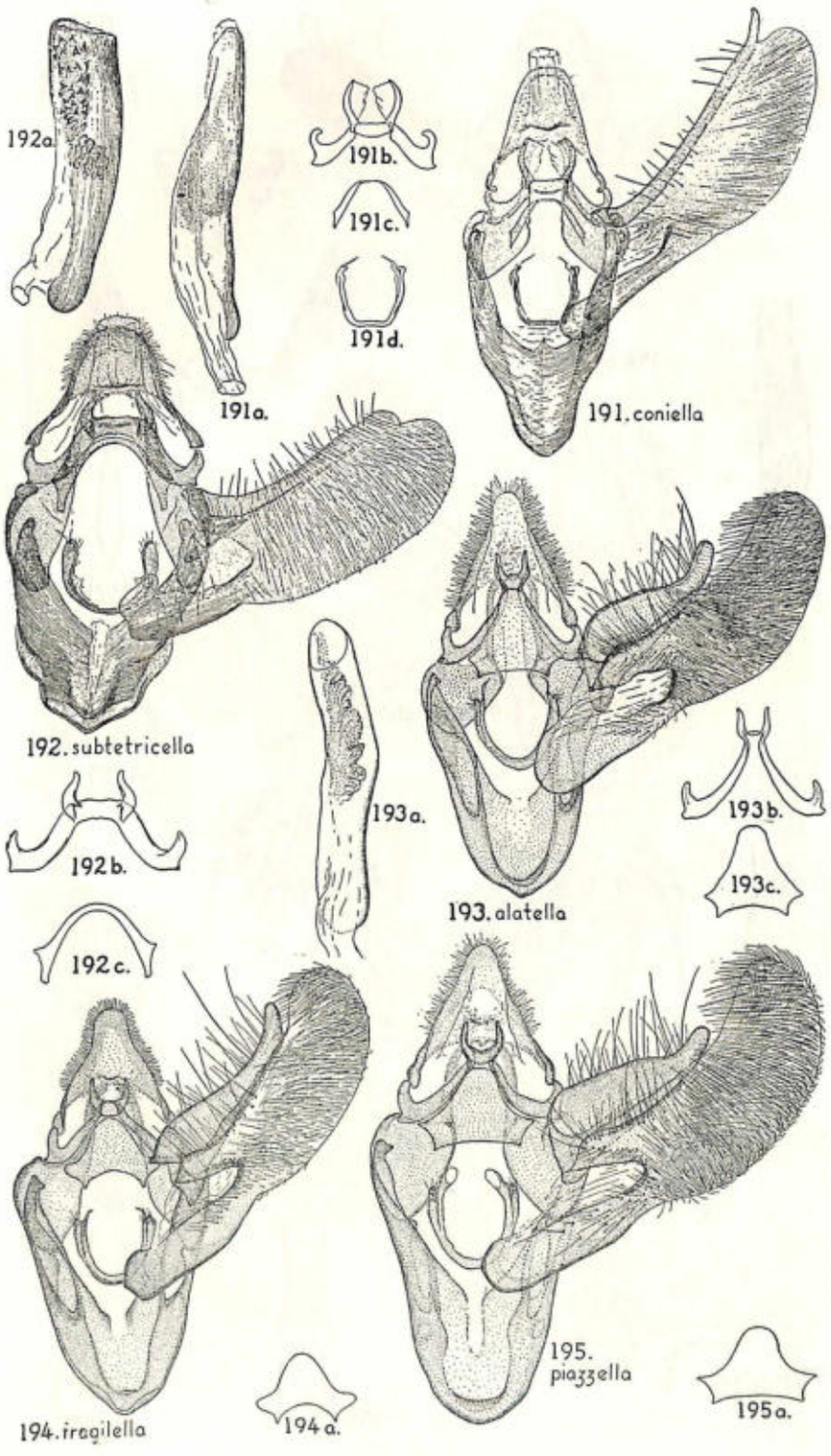
FIGURES 188–190.—MALES.

188. *Hypargyria definitella* (Zeller), aedeagus omitted; 188a, aedeagus; 188b, gnathos; 188c, transtilla; 188d, anellus; 188e, eighth abdominal segment, showing ventral scale tufts.

189. *Chararica annuliferella* (Dyar), aedeagus omitted; 189a, aedeagus; 189b, partially fused gnathos and transtilla; 189c, anellus.

190. *Chararica hystriculella* (Hulst), aedeagus omitted; 190a, aedeagus; 190b, partially fused gnathos and transtilla; 190c, anellus; 190d, hair tufts on eighth abdominal segment.



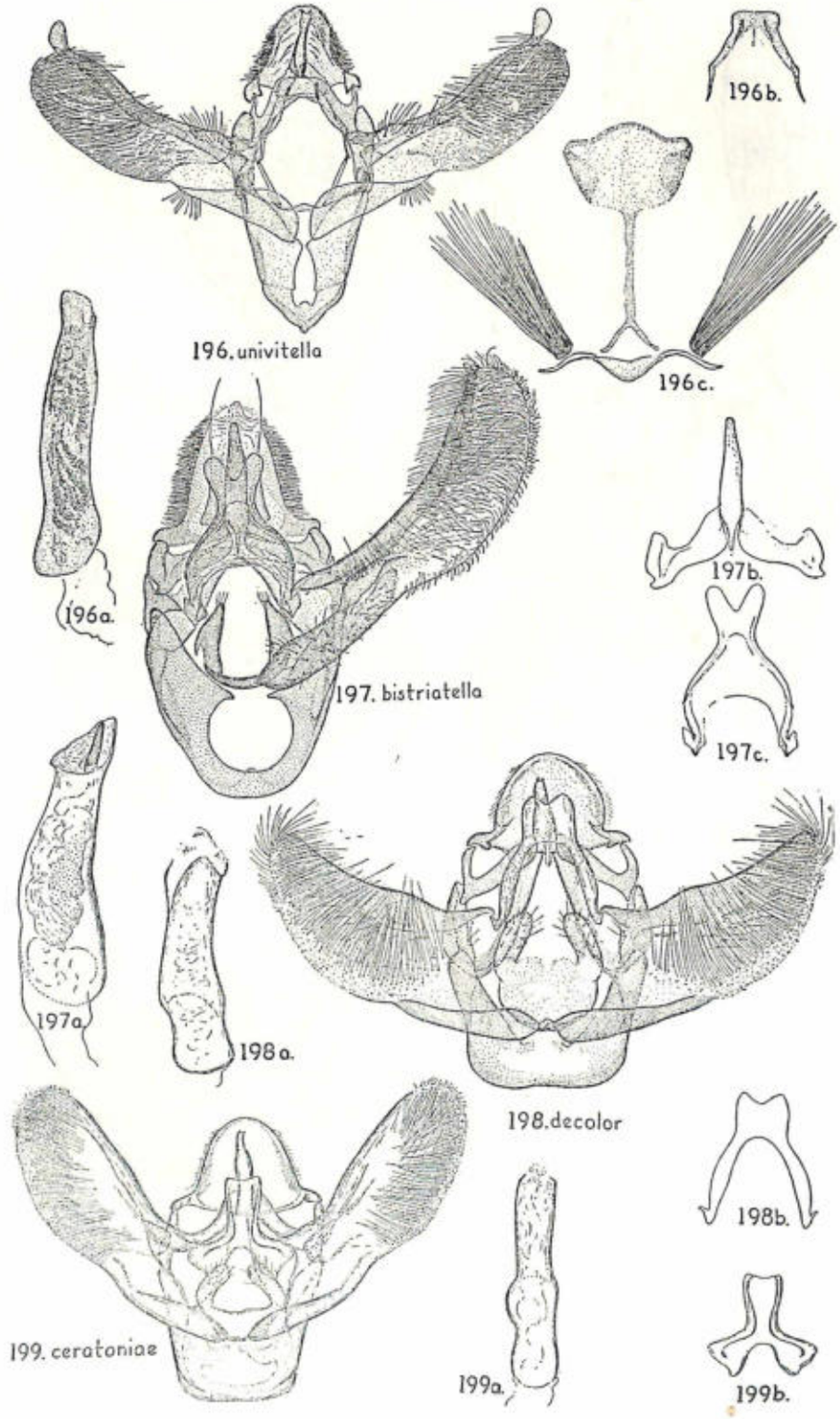


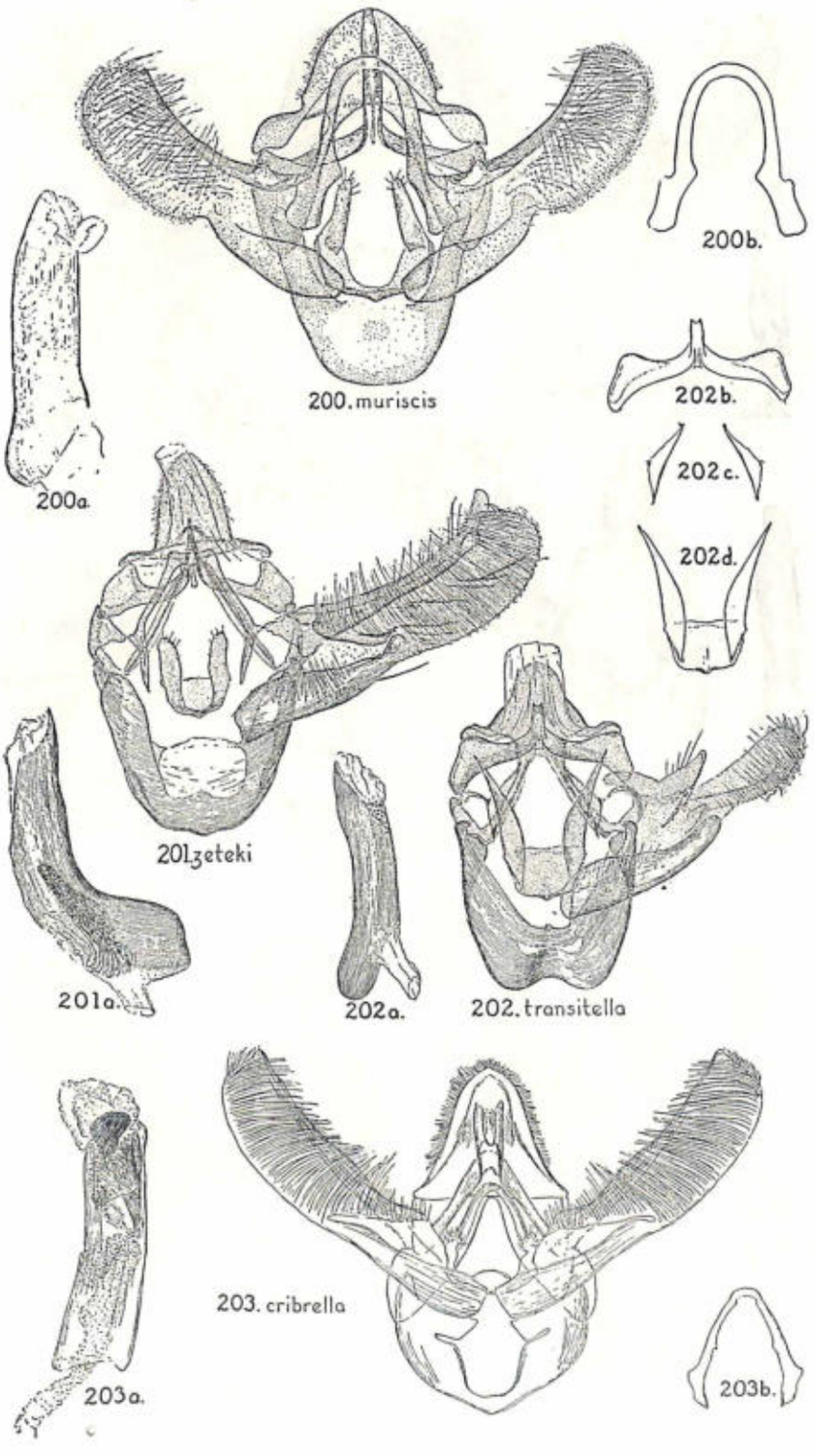
FIGURES 191–195.—MALES.

191. *Myelopsis coniella* (Ragonot); 191a, aedeagus; 191b, gnathos; 191c, transtilla; 191d, anellus.
192. *Myelopsis subtetricella* (Ragonot); 192a, aedeagus; 192b, gnathos; 192c, transtilla.
193. *Myelopsis alatella* (Hulst); 193a, aedeagus; 193b, gnathos; 193c, transtilla.
194. *Myelopsis fragilella* (Dyar), type, a synonym of *M. alatella* (Hulst); 194a, transtilla.
195. *Myelopsis piazzella* (Dyar), type, a synonym of *M. alatella* (Hulst); 195a, transtilla.

FIGURES 196–199.—MALES.

196. *Anypsipyla univitella* Dyar, aedeagus omitted; 196a, aedeagus, 196b; transtilla; 196c, ventrolateral tufts on eighth abdominal segment.
197. *Apomyelois bistriatella* (Hulst); 197a, aedeagus; 197b, gnathos; 197c, transtilla.
198. *Ectomyelois decolor* (Zeller), aedeagus omitted; 198a, aedeagus; 198b, transtilla.
199. *Ectomyelois ceratoniae* (Zeller), aedeagus omitted; 199a, aedeagus; 199b, transtilla.





FIGURES 200–203.—MALES.

200. *Ectomyelois muriscis* (Dyar), aedeagus omitted; 200a, aedeagus; 200b, transtilla.

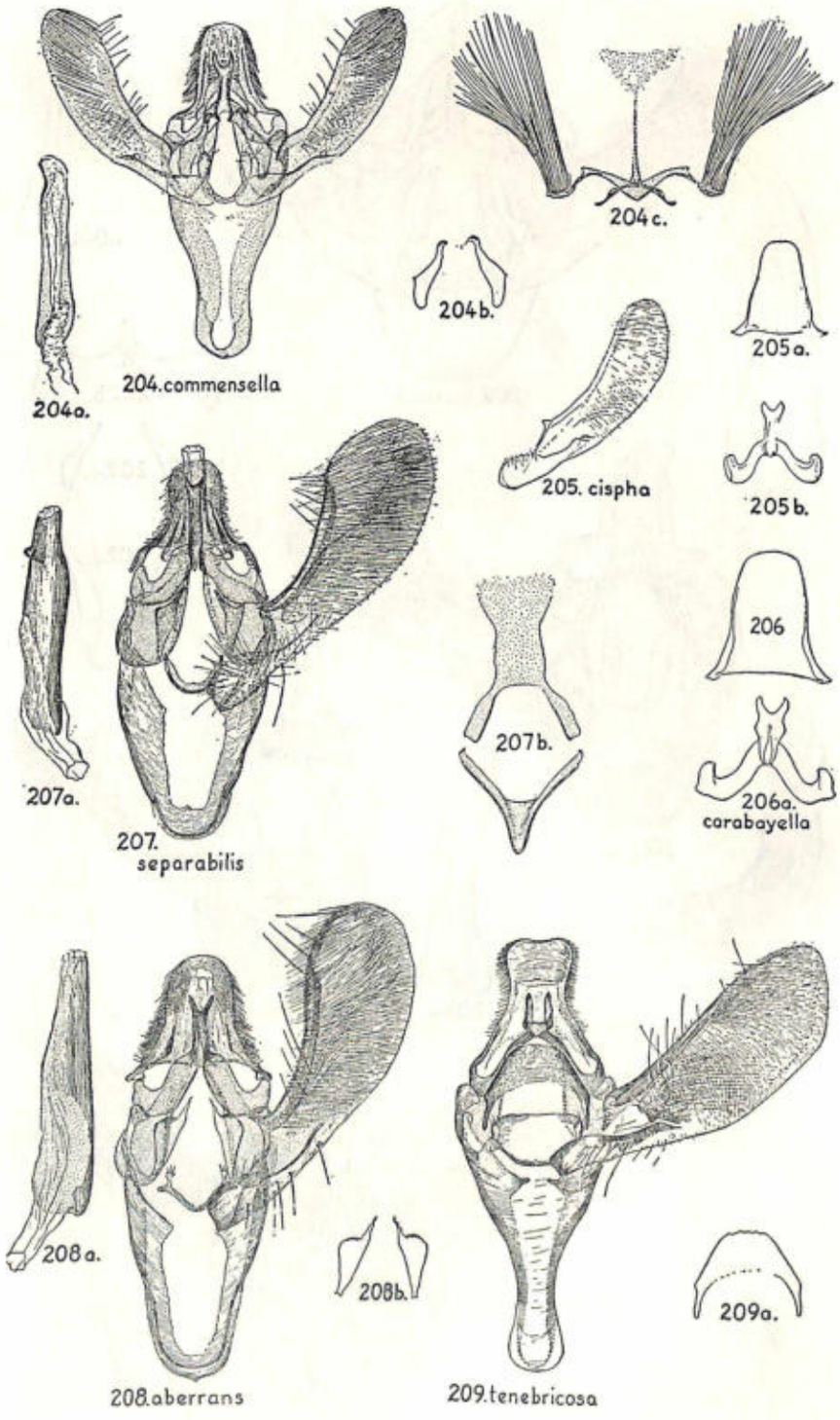
201. *Ectomyelois zeteki* Heinrich, new species, type; 201a, aedeagus.

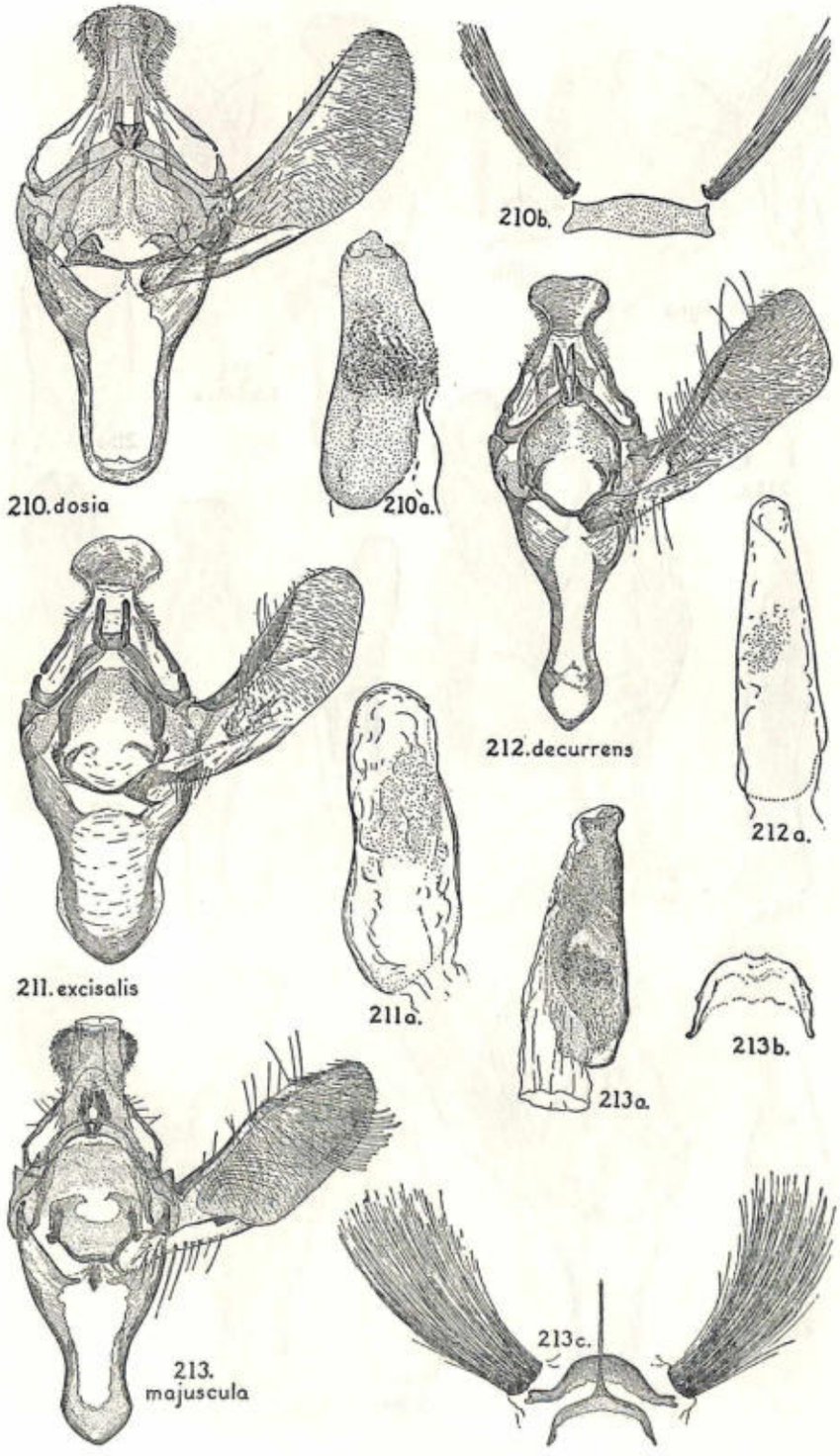
202. *Paramyelois transitella* (Walker); 202a, aedeagus; 202b, gnathos; 202c, elements of divided transtilla; 202d, anellus.

203. *Myelois cribrella* (Hübner), aedeagus omitted; 203a, aedeagus; 203b, transtilla.

FIGURES 204–209.—MALES.

204. *Pseudodivona commensella* Dyar, type, aedeagus omitted; 204a, aedeagus; 204b, elements of transtilla; 204c, tergite, sternite, and ventrolateral tufts of eighth abdominal segment.
205. *Pseudodivona cispha* Dyar, type, harpe; 205a, uncus; 205b, gnathos.
206. *Pseudodivona carabayella* Dyar, type, uncus; 206a, specimen from Incachaca, Bolivia, gnathos.
207. *Protomoerbes separabilis* Heinrich, new species, type; 207a, aedeagus; 207b, tergite and sternite of eighth abdominal segment.
208. *Protomoerbes aberrans* Heinrich, new species, type; 208a, aedeagus; 208b, elements of transtilla.
209. *Diatomocera tenebricosa* (Zeller); 209a, transtilla. (See also fig. 565.)





FIGURES 210–213.—MALES.

210. *Diatomocera dosia* (Dyar), type; 210a, aedeagus; 210b, hair tufts of eighth abdominal segment.

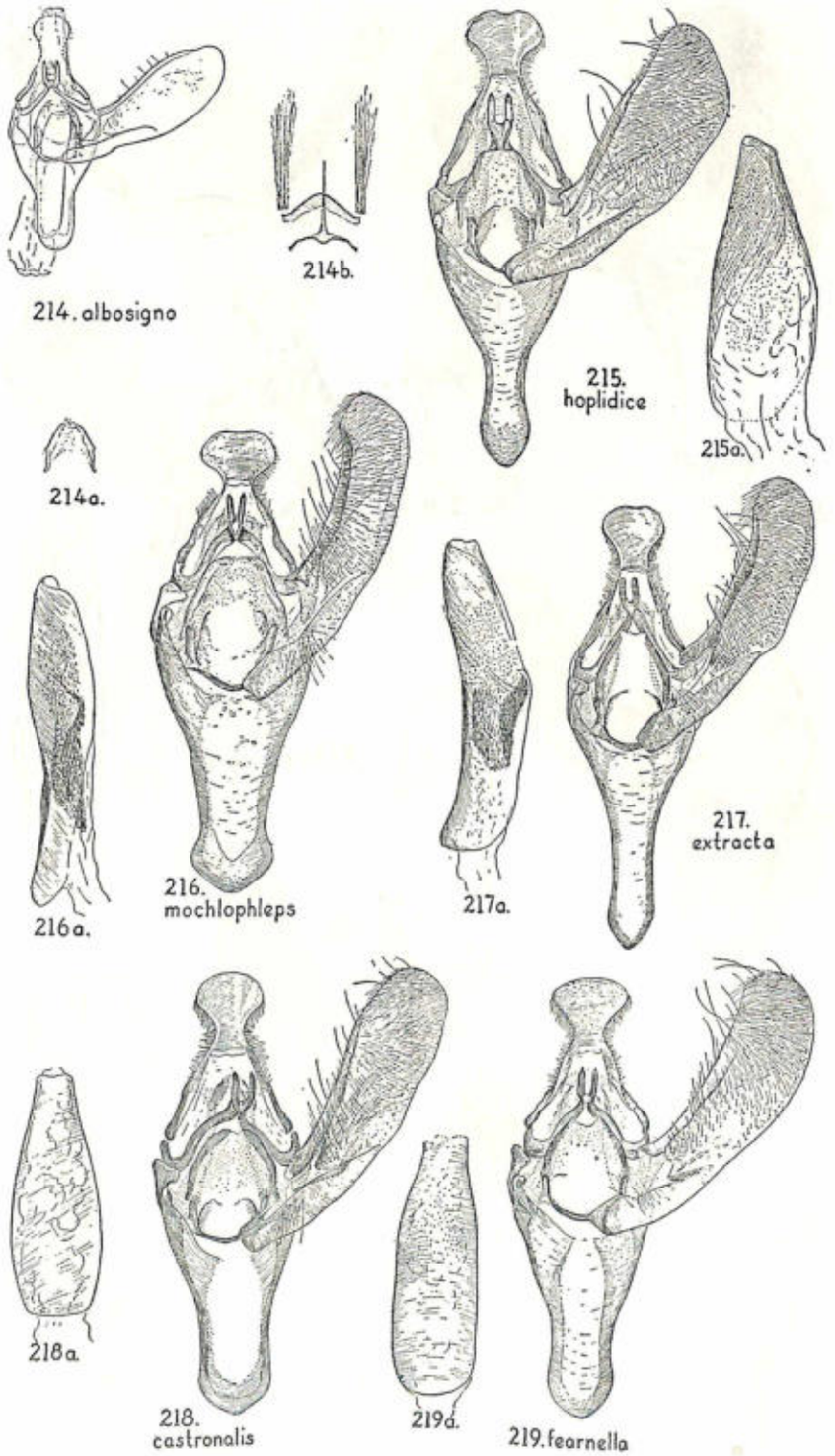
211. *Diatomocera excisalis* (Hampson), specimen from St. Laurent Maroni, French Guiana (in USNM); 211a, aedeagus.

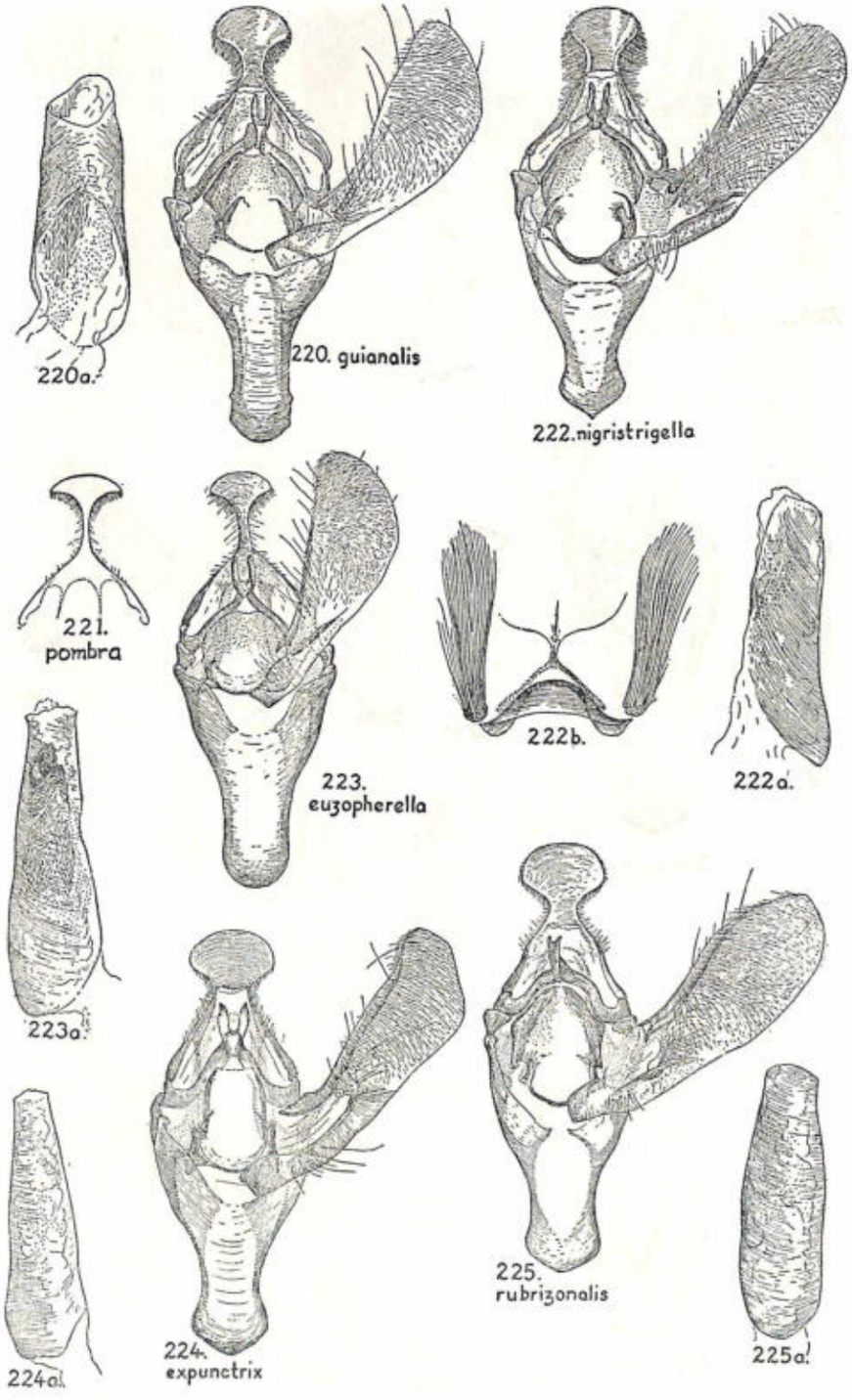
212. *Diatomocera decurrens* (Dyar), type; 212a, aedeagus.

213. *Diatomocera majuscula* Heinrich, new species, type; 213a, aedeagus; 213b, transtilla; 213c, tergite, sternite, and tufts of eighth abdominal segment.

FIGURES 214–219.—MALES.

214. *Diatomocera albosigno* Heinrich, new species, type, one harpe omitted; 214a, transtilla; 214b, tergite, sternite, and hair tufts of eighth abdominal segment.
215. *Diatomocera hoplidice* (Dyar), type; 215a, aedeagus.
216. *Diatomocera mochlophleps* (Dyar), type; 216a, aedeagus.
217. *Diatomocera extracta* Heinrich, new species, type; 217a, aedeagus.
218. *Pseudocabima castronalis* Heinrich, new species, type; 218a, aedeagus.
219. *Pseudocabima fearnella* (Schaus), type; 219a, aedeagus.





FIGURES 220–225.—MALES.

220. *Pseudocabima guianalis* Heinrich, new species, type; 220a, aedeagus.
221. *Pseudocabima pombra* (Dyar), type, uncus.
222. *Pseudocabima nigristrigella* (Ragonot), type; 222a, aedeagus; 222b, tergite, sternite, and hair tufts of eighth abdominal segment.
223. *Pseudocabima euzopherella* (Dyar); 223a, aedeagus.
224. *Pseudocabima expunctrix* Dyar and Heinrich, type; 224a, aedeagus.
225. *Pseudocabima rubrizonalis* (Hampson), "cotype" (in USNM) from Cayenne, French Guiana; 225a, aedeagus.

FIGURES 226–230—MALES.

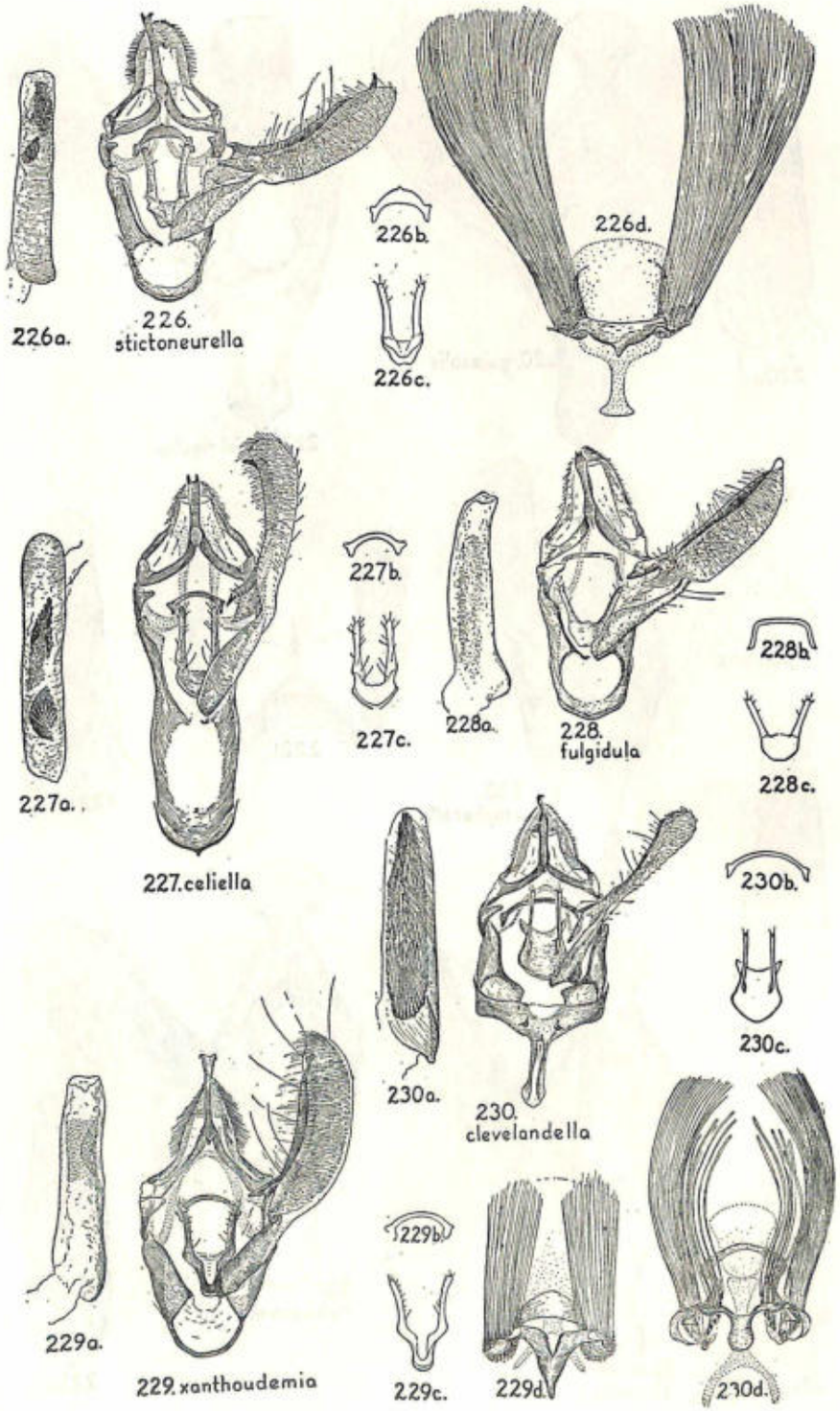
226. *Hyalospila stictoneurella* Ragonot; 226a, aedeagus; 226b, transtilla; 226c, anellus; 226d, tergite, sternite, and hair tufts of eighth abdominal segment.

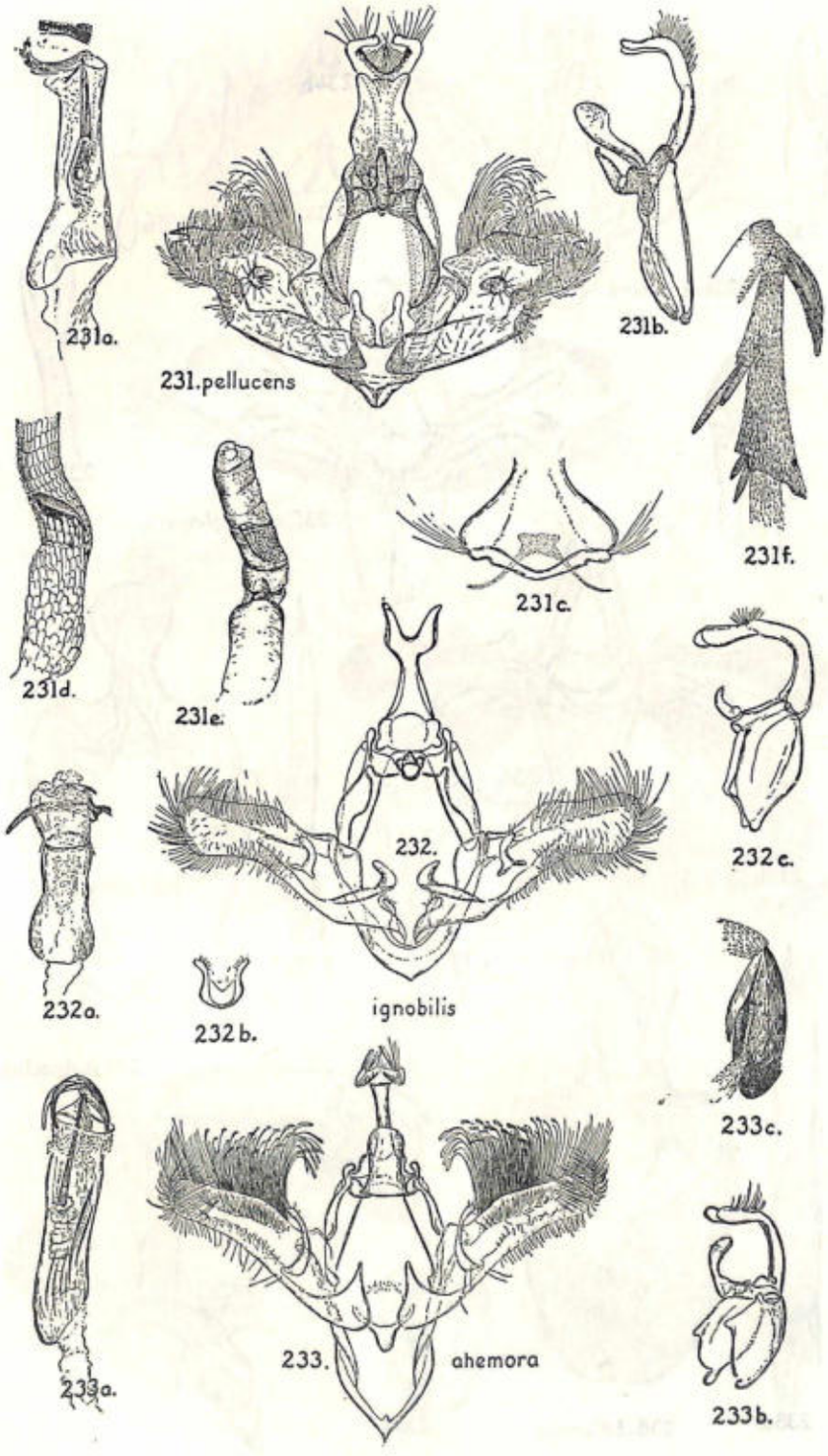
227. *Hyalospila celiella* Schaus, type; 227a, aedeagus; 227b, transtilla; 227c, anellus.

228. *Hyalospila fulgidula* Heinrich, new species, type; 228a, aedeagus; 228b, transtilla; 228c, anellus.

229. *Hyalospila xanthoudemia* (Dyar), type; 229a, aedeagus; 229b, transtilla; 229c, anellus; 229d, tergite, sternite, and hair tufts of eighth abdominal segment.

230. *Hyalospila clevelandella* (Dyar), type; 230a, aedeagus; 230b, transtilla; 230c, anellus; 230d, tergite, sternite, and hair tufts of eighth abdominal segment.





FIGURES 231–233.—MALES.

231. *Fundella pellucens* Zeller, aedeagus omitted; 231a, aedeagus; 231b, lateral view of uncus, gnathos, and tegumen; 231c, tergite, sternite, and hair tufts of eighth abdominal segment; 231d, basal segments of antenna, scaled; 231e, basal segments of male antenna, denuded; 231f, hind tibia, showing hair tuft.

232. *Fundella ignobilis* Heinrich, new species, aedeagus omitted; 232a, aedeagus; 232b, anellus; 232c, lateral view of uncus, gnathos, and tegumen.

233. *Fundella ahemora* Dyar, aedeagus omitted; 233a, aedeagus; 233b, lateral view of uncus, gnathos, and tegumen; 233c, foretibia, showing hair tuft.

FIGURES 234–238.—MALES.

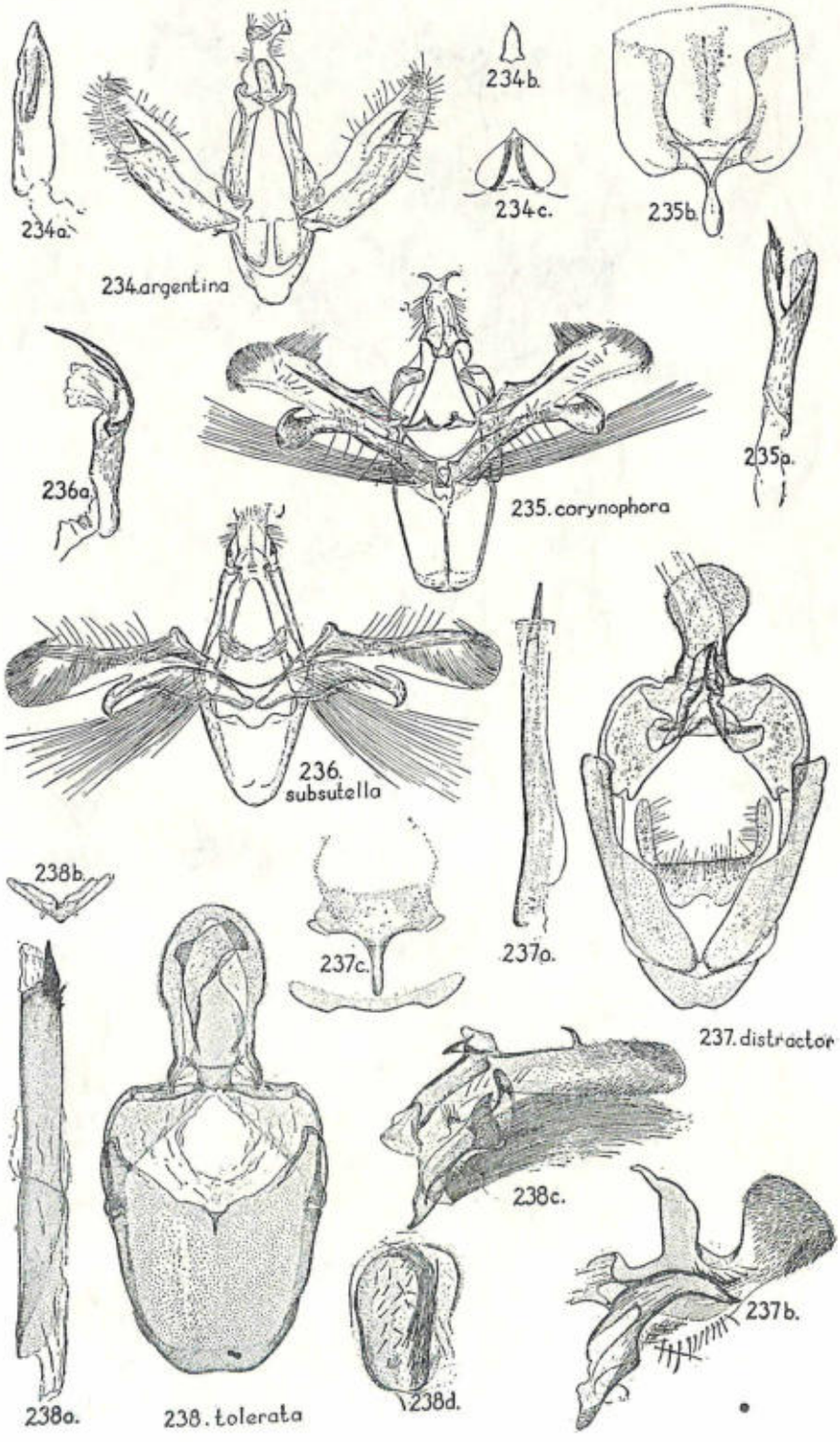
234. *Fundella argentina* Dyar, aedeagus omitted; 234a, aedeagus; 234b, apical projection of gnathos, showing the extreme of variability in this structure; 234c, hair tufts on eighth abdominal segment.

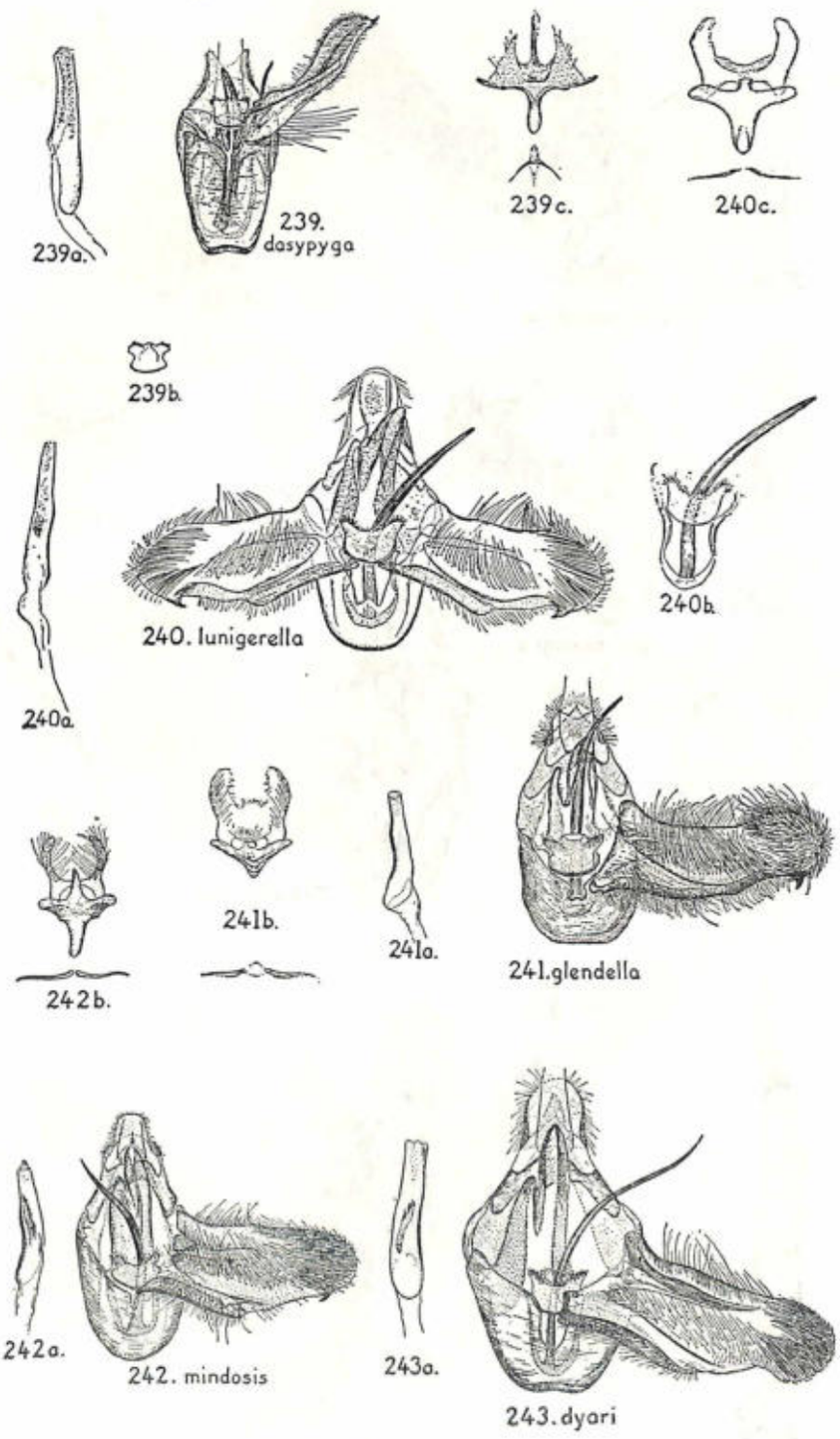
235. *Difundella corynophora* Dyar, aedeagus omitted; 235a, aedeagus; 235b, eighth abdominal segment, showing sclerotized pocket developed from sternite.

236. *Difundella subsutella* (Schaus), type, aedeagus omitted; 236a, aedeagus.

237. *Difundella distractor* Heinrich, new species, both harpes and aedeagus omitted; 237a, aedeagus; 237b, harpe, 237c, sclerotized parts of eighth abdominal segment, showing sclerotized pocket of sternite.

238. *Difundella tolerata* Heinrich, new species, type, both harpes, anellus, and aedeagus omitted; 238a, aedeagus; 238b, anellus; 238c, harpe; 238d, scaled pocket between second and third segments of abdomen.





FIGURES 239–243.—MALES.

239. *Coptarthria dasypyga* (Zeller); 239a, aedeagus; 239b, anellus; 239c, sclerotizations of eighth abdominal segment, showing development from sternite.

240. *Promylea lunigerella* Ragonot, specimen from Duncans, Vancouver Island, aedeagus omitted; 240a, aedeagus; 240b, anellus; 240c, sclerotizations of eighth abdominal segment.

241. *Promylea lunigerella glendella* (Dyar); 241a, aedeagus; 241b, sclerotizations of eighth abdominal segment.

242. *Promylea mindosis* Dyar, type; 242a, aedeagus; 242b, sclerotizations of eighth abdominal segment.

243. *Promylea dyari* Heinrich, type; 243a, aedeagus.

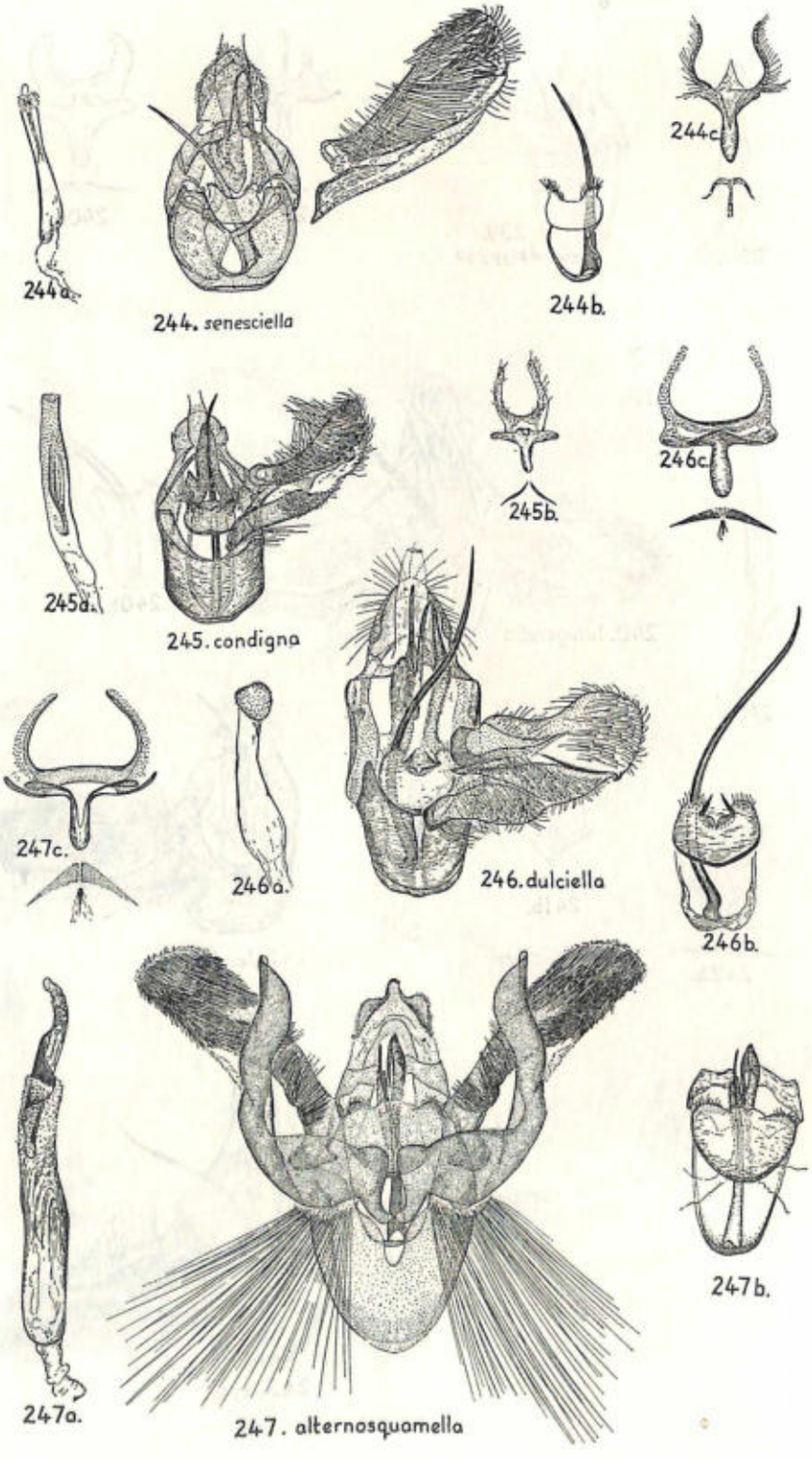
FIGURES 244–247.—MALES.

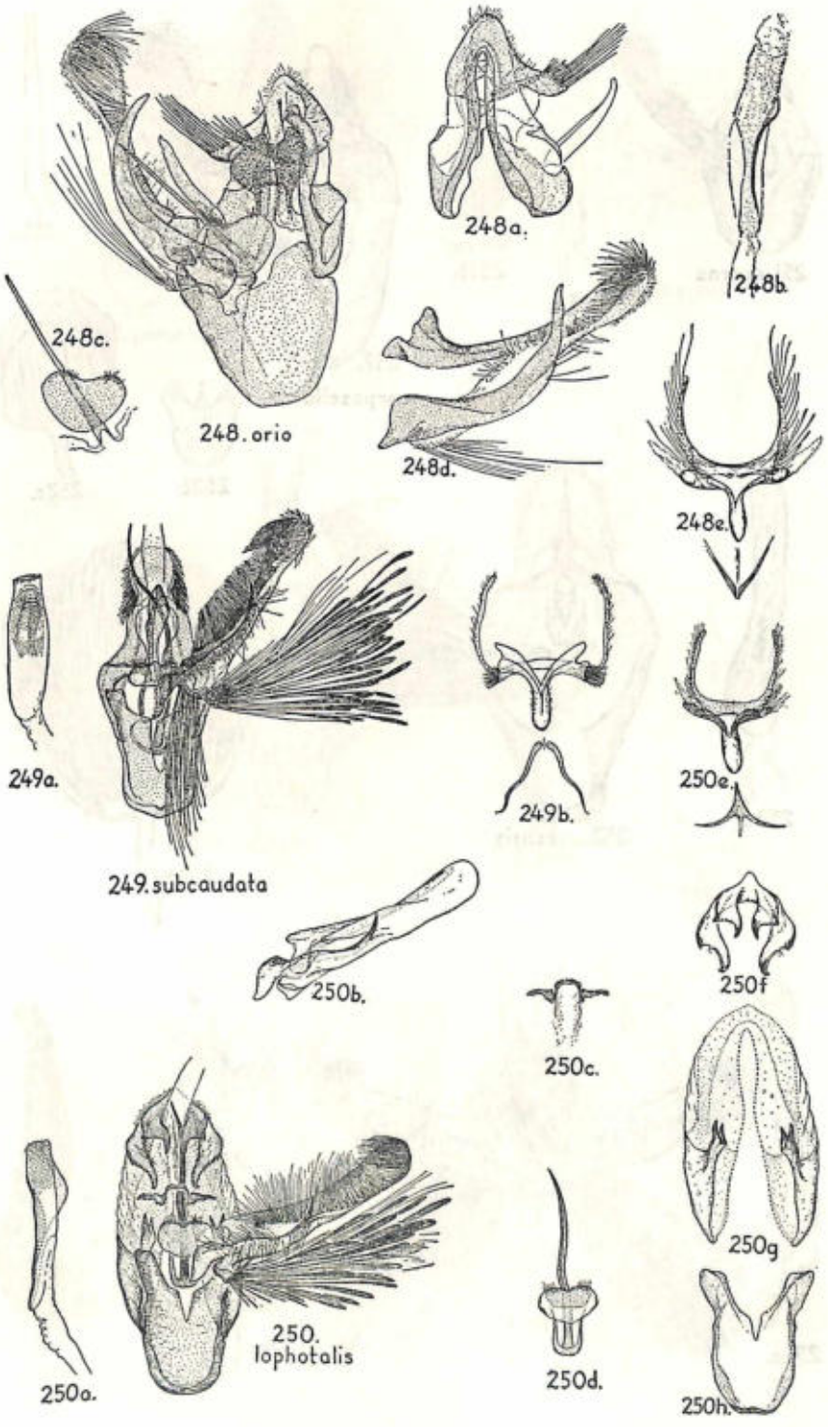
244. *Anadelosemia senesciella* (Schaus), type, one harpe and aedeagus omitted and one harpe detached; 244a, aedeagus; 244b, anellus; 244c, sclerotization of eighth abdominal segment.

245. *Anadelosemia condigna* Heinrich, new species, type; 245a, aedeagus; 245b, sclerotization of eighth abdominal segment.

246. *Anadelosemia dulciella* (Hulst); a synonym of *A. texanella*; 246a, aedeagus; 246b, anellus; 246c, sclerotization of eighth abdominal segment.

247. *Dasypyga alternosquamella* Ragonot, aedeagus omitted; 247a, aedeagus; 247b, combined gnathos and anellus; 247c, sclerotization of eighth abdominal segment.





FIGURES 248–250.—MALES.

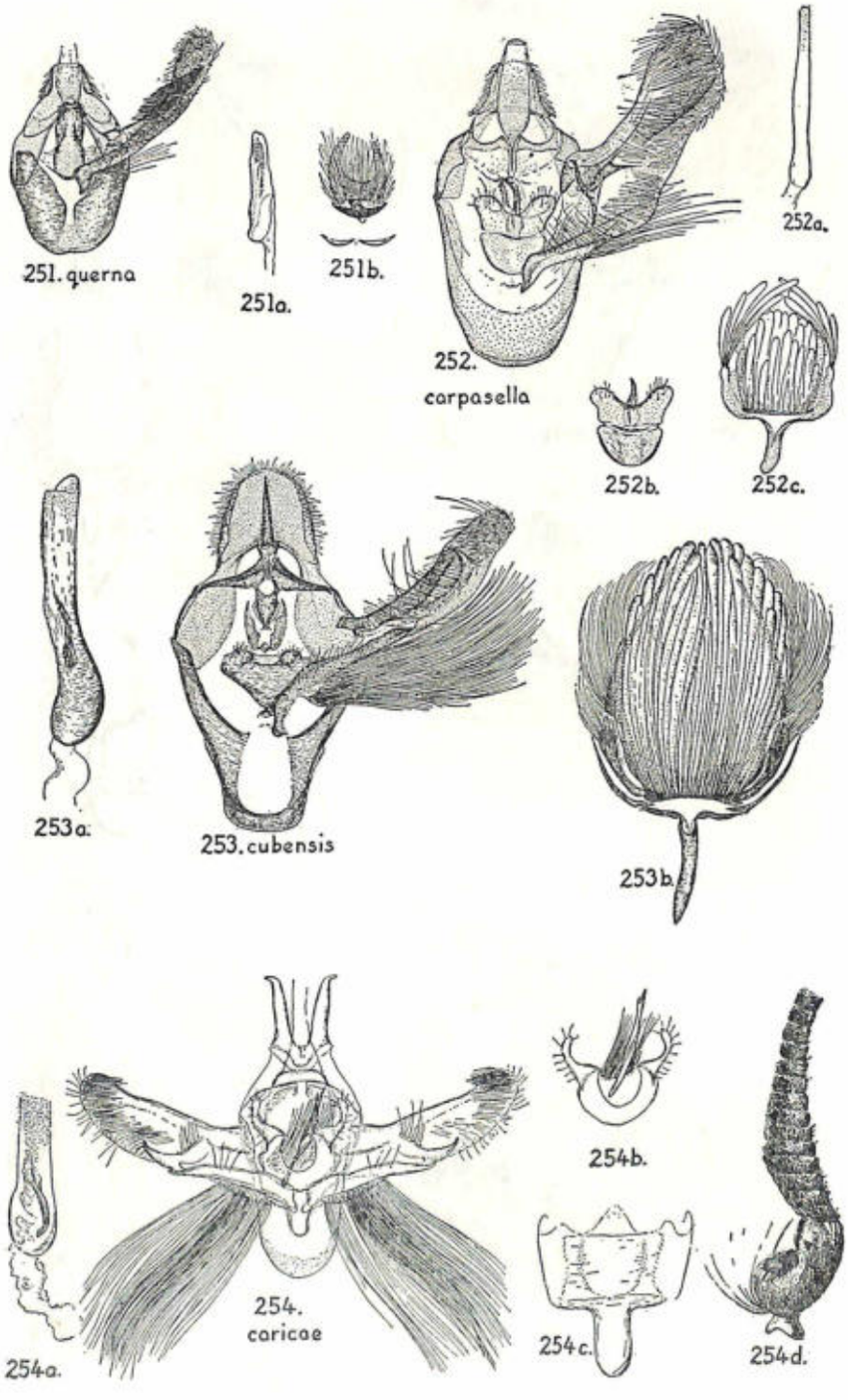
248. *Rampylla orio* Dyar, type; 248a, dorsal view of uncus, gnathos and tegumen; 248b, aedeagus; 248c, anellus; 248d, harpe; 248e, sclerotization of eighth abdominal segment.

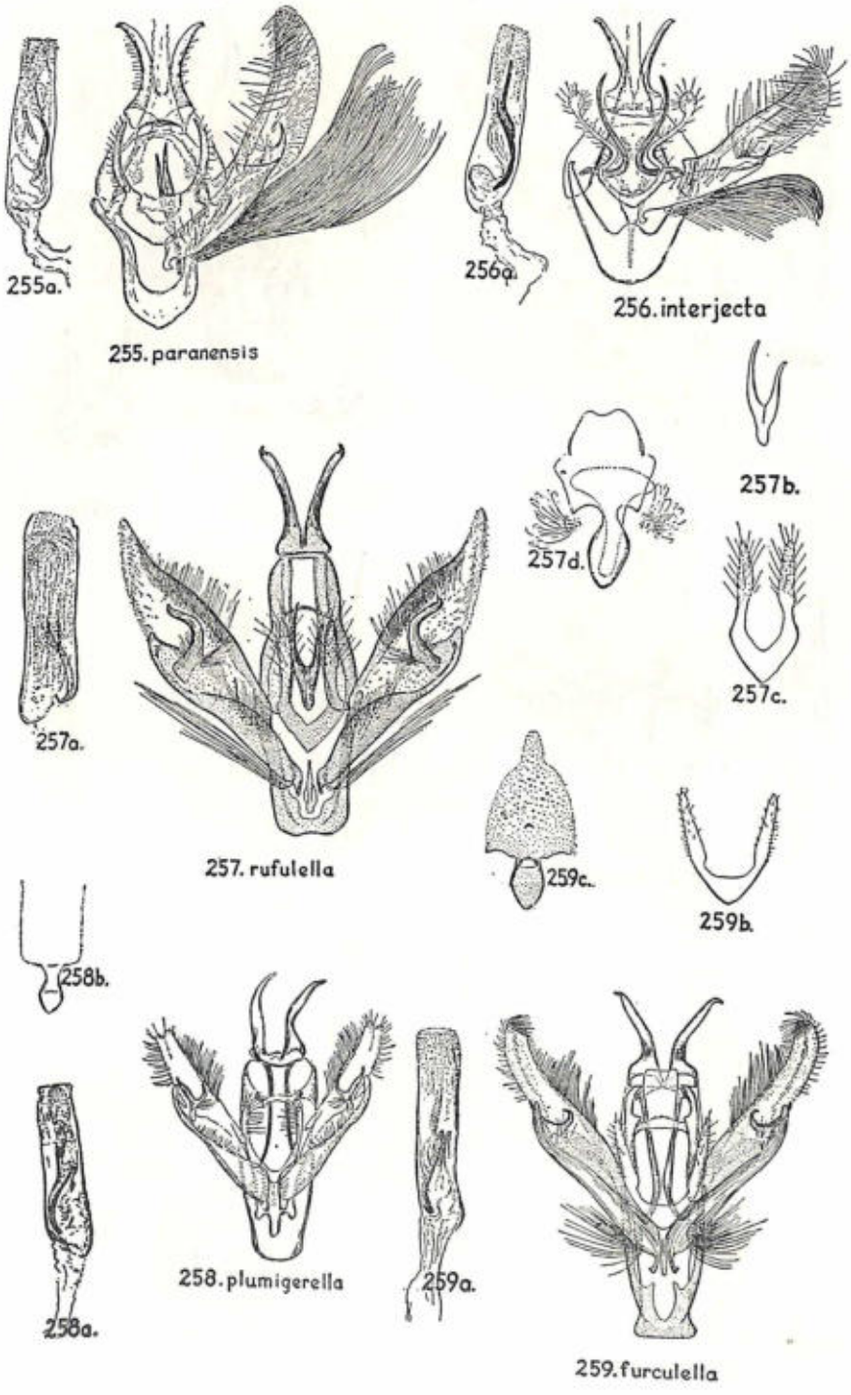
249. *Rampylla subcaudata* (Dyar), type; 249a, aedeagus; 249b, sclerotization of eighth abdominal segment.

250. *Rampylla lophotalis* Heinrich, new species; 250a, aedeagus; 250b, harpe; 250c, transtilla; 250d, anellus; 250e, sclerotization of eighth abdominal segment; 250f, uncus; 250g, tegumen; 250h, vinculum.

FIGURES 251–254.—MALES.

251. *Fulrada querna* (Dyar), type; 251a, aedeagus; 251b, sclerotization and tuft of eighth abdominal segment.
252. *Fulrada carpasella* (Schaus), type; 252a, aedeagus; 252b, anellus; 252c, scale tufts and sclerotization of sternite of eighth abdominal segment.
253. *Scorylus cubensis* Heinrich, new species; 253a, aedeagus; 253b, sternite and tufts of eighth abdominal segment.
254. *Davara caricase* (Dyar), aedeagus omitted; 254a, aedeagus; 254b, anellus; 254c, sternite of eighth abdominal segment; 254d, basal segments of antenna.



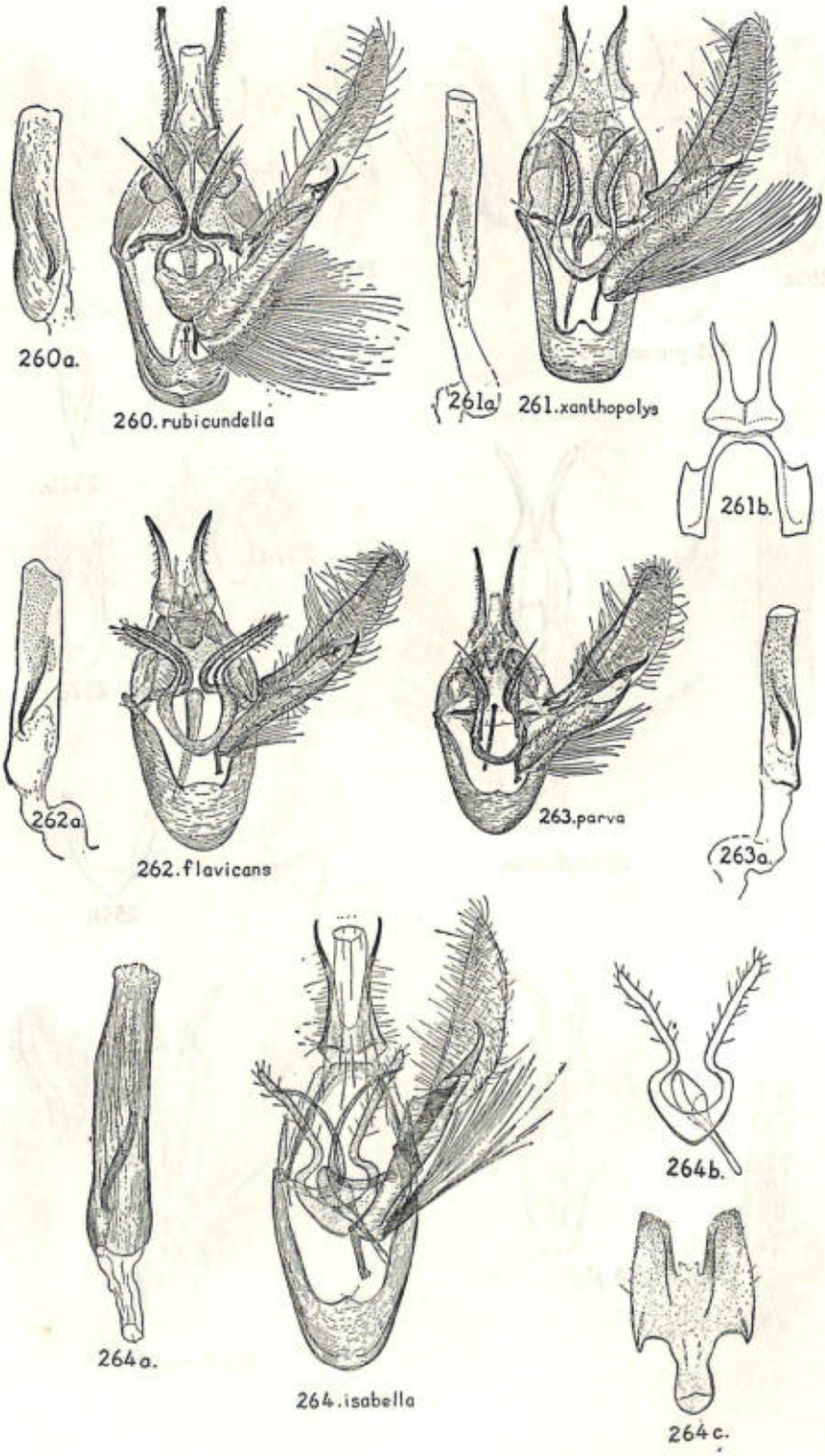


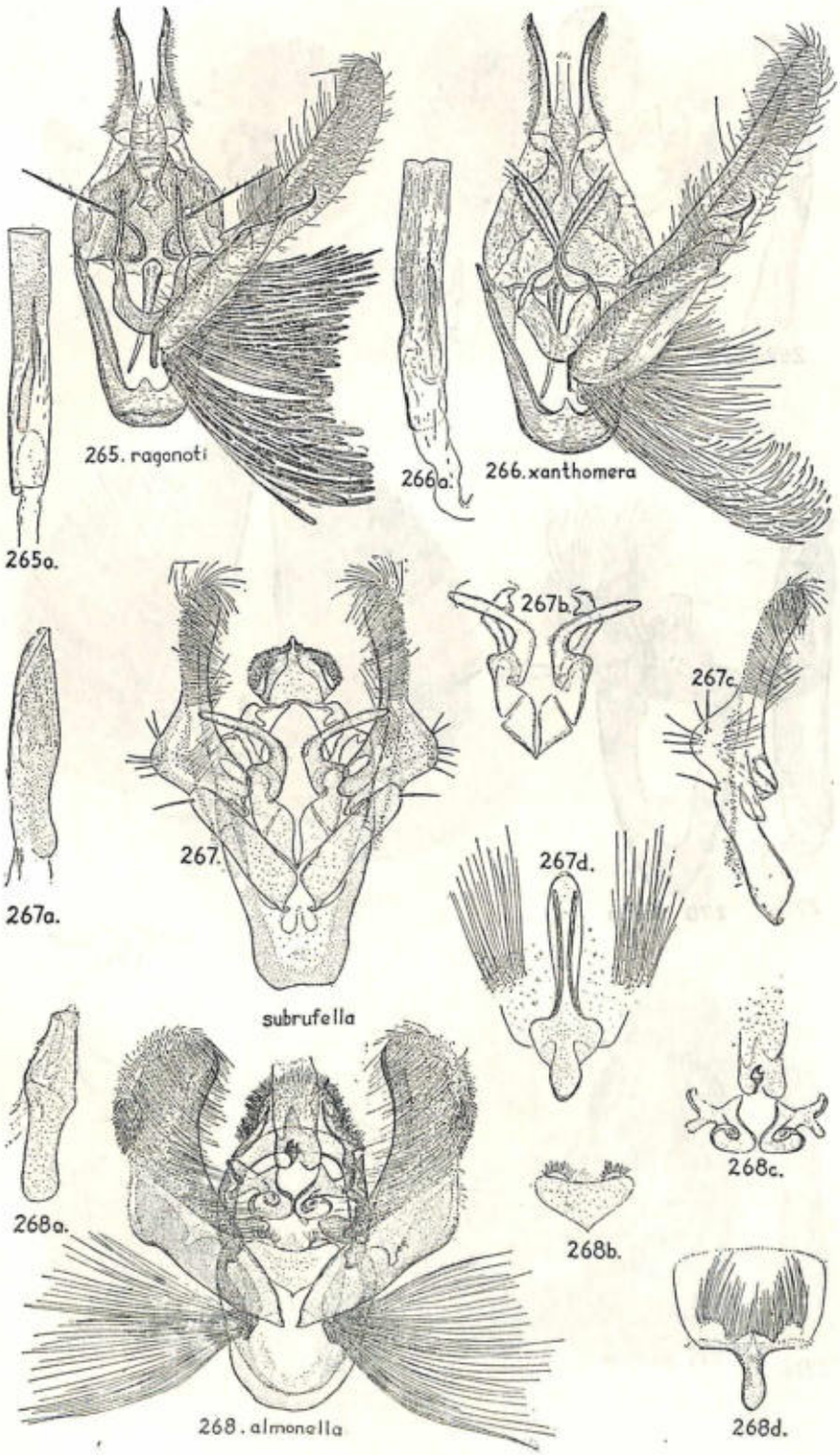
FIGURES 255–259.—MALES.

255. *Davara paranensis* (Dyar), type; 255a, aedeagus.
256. *Davara interjecta* Heinrich, new species; 256a, aedeagus.
257. *Davara rufulella* (Ragonot), aedeagus omitted; 257a, aedeagus; 257b, forked spine associated with anellus; 257c, anellus; 257d, sternite and tufts of eighth abdominal segment.
258. *Sarasota plumigerella* Hulst, type, aedeagus omitted; 258a, aedeagus; 258b, sternite of eighth abdominal segment.
259. *Sarasota furculella* (Dyar), aedeagus omitted; 259a, aedeagus; 259b, anellus; 259c, sternite of eighth abdominal segment.

FIGURES 260–264.—MALES.

260. *Piesmopoda rubicundella* Zeller, type; 260a, aedeagus.
261. *Piesmopoda xanthopolys* Dyar, specimen from La Chorrera, Panamá; 261a, aedeagus; 261b, dorsal view of uncus and tegumen.
262. *Piesmopoda flavicans* (Zeller), figured from type of its synonym *P. fratella*; 262a, aedeagus.
263. *Piesmopoda parva* Heinrich, new species, type; 263a, aedeagus.
264. *Piesmopoda isabella* (Dyar), type; 264a, aedeagus; 264b, anellus; 264c, sternite of eighth abdominal segment.





FIGURES 265–268.—MALES.

265. *Piesmopoda ragonoti* (Dyar), type; 265a, aedeagus.

266. *Piesmopoda xanthomera* Dyar, figured from the type of its synonym *P. xanthozona* Dyar; 266a, aedeagus.

267. *Atheloca subrufella* (Hulst), figured from type of its synonym *Hyalospila ptychis* Dyar, aedeagus omitted; 267a, aedeagus; 267b, anellus and fusing arms of gnathos; 267c, harpe; 267d, sternite of eighth abdominal segment.

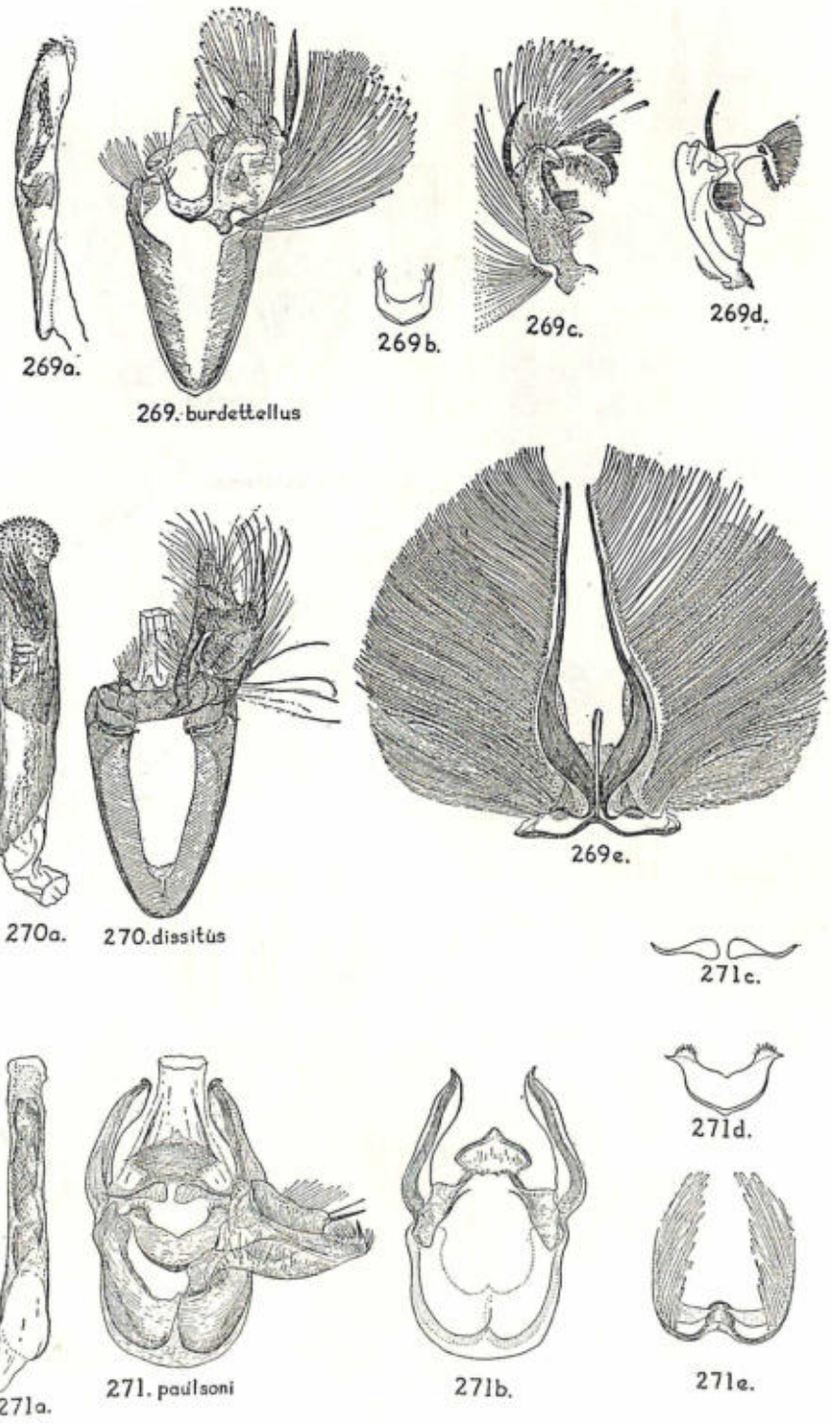
268. *Praedonula almonella* (Dyar), type, aedeagus omitted; 268a, aedeagus; 268b, anellus; 268c, transtilla and gnathos; 268d, sternite of eighth abdominal segment.

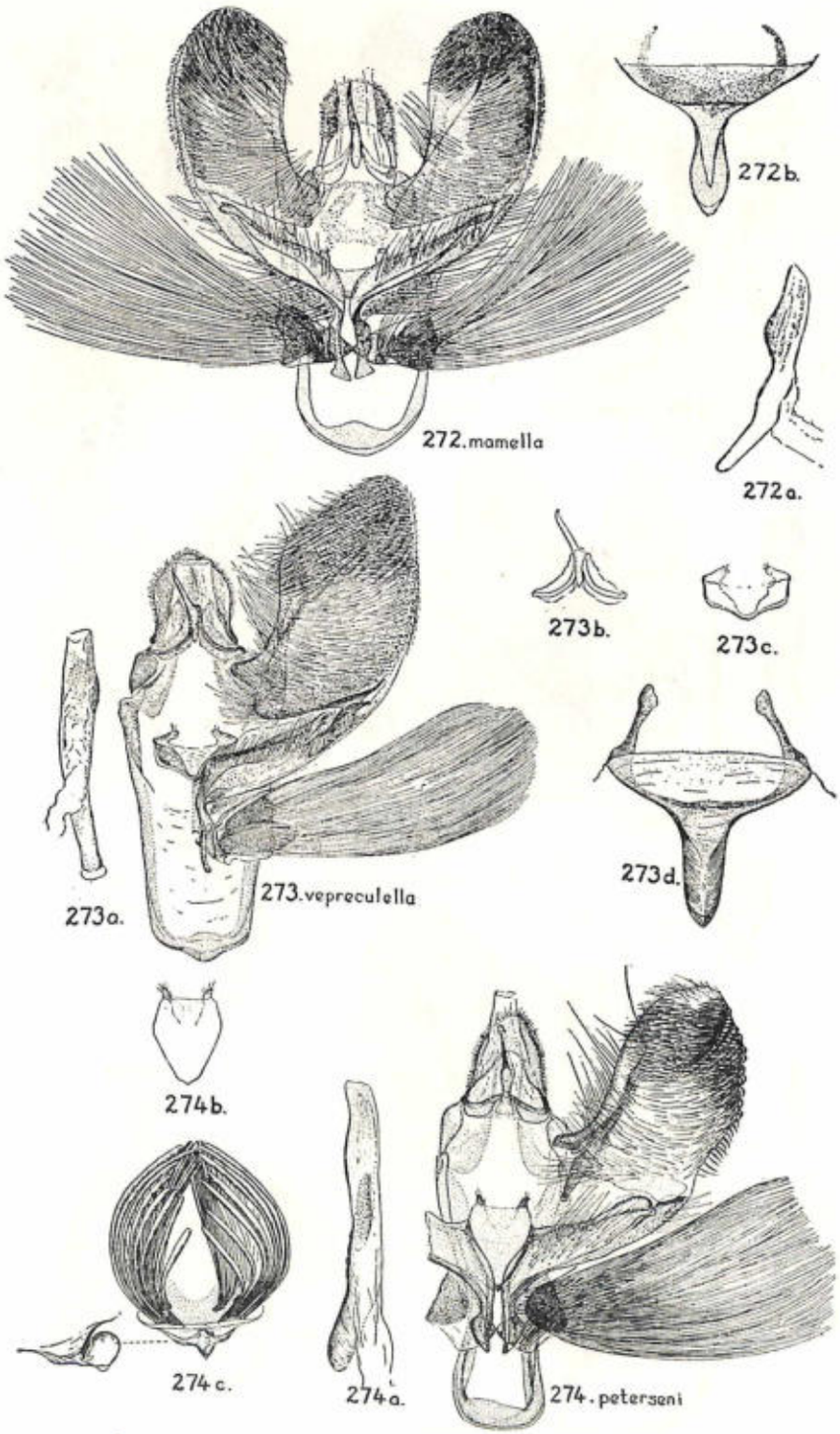
FIGURES 269–271.—MALES.

269. *Peadus burdettellus* (Schaus), type; 269a, aedeagus; 269b, anellus; 269c, ventral view of (detached) left harpe; 269d, ventral view of left harpe, denuded; 269e, sternite and tuft of eighth abdominal segment.

270. *Peadus dissitus* Heinrich, new species, type; 270a, aedeagus.

271. *Gabinius paulsoni* (Ragonot), type; 271a, aedeagus; 271b, dorsal view of uncus, tegumen, and vinculum; 271c, transtilla; 271d, anellus; 271e, sternite of eighth abdominal segment.





FIGURES 272–274.—MALES.

272. *Ceracanthia mamella* (Dyar), specimen from type locality, aedeagus omitted; 272a, aedeagus; 272b, sternite of eighth abdominal segment.

273. *Ceracanthia vepreculella* Ragonot, type; 273a, aedeagus; 273b, gnathos; 273c, anellus; 273d, sternite of eighth abdominal segment.

274. *Megarthria peterseni* (Zeller), specimen from Guatemala; 274a, aedeagus; 274b, anellus; 274c, ventrolateral tufts and sternite of eighth abdominal segment, showing two views of the bent, digitate pocket of sternite.

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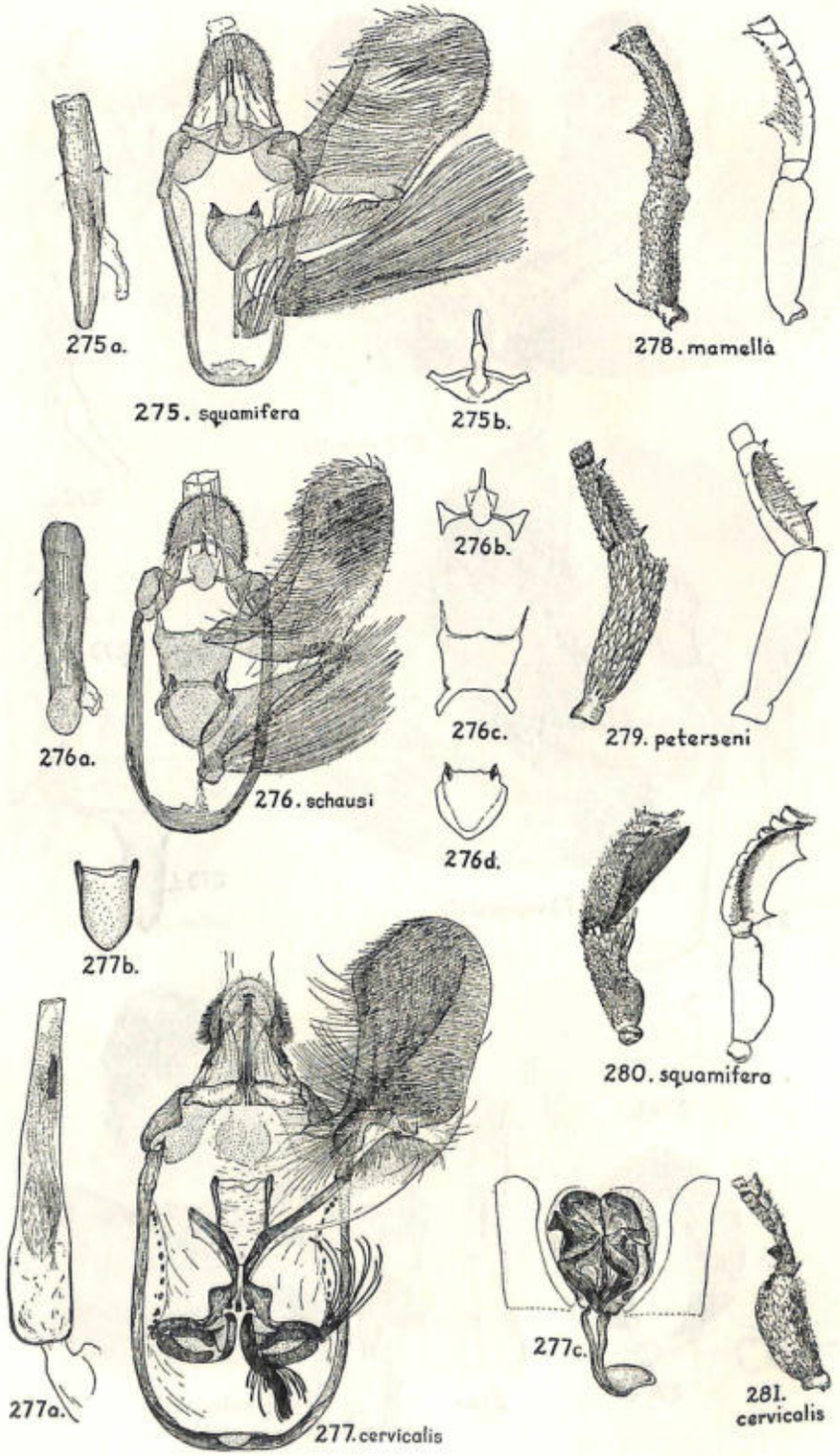
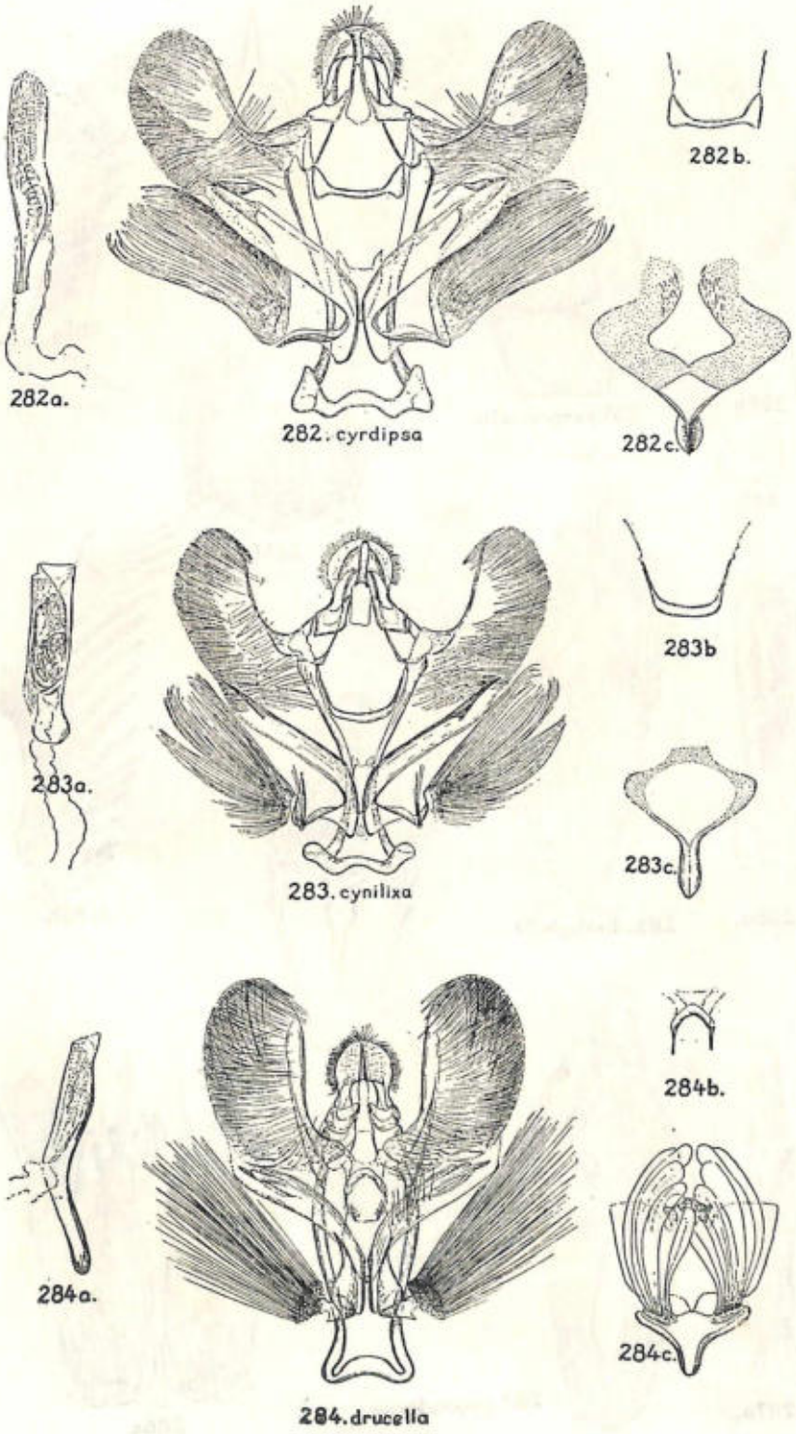
FIGURES 275–281.—MALES.

275. *Megarthria squamifera* Heinrich, new species; 275a, aedeagus; 275b, gnathos.
276. *Megarthria schausi* Heinrich, new species; 276a, aedeagus; 276b, gnathos; 276c, transtilla; 276d, anellus.
277. *Megarthria cervicalis* Dyar, type; 277a, aedeagus; 277b, anellus; 277c, sternite and ventral tuft of eighth abdominal segment.
278. *Ceracanthia mamella* (Dyar), basal segments of antenna, scaled and denuded.
279. *Megarthria peterseni* (Zeller), basal segments of antenna, scaled and denuded.
280. *Megarthria squamifera* Heinrich, new species, basal segments of antenna, scaled and denuded.
281. *Megarthria cervicalis* Dyar, type, basal segments of antenna, scaled.





FIGURES 282–284.—MALES.

282. *Drescoma cyrdipsa* Dyar, type, aedeagus omitted; 282a, aedeagus; 282b, transtilla; 282c, sternite of eighth abdominal segment.

283. *Drescoma cinilixa* Dyar, type, aedeagus omitted; 283a, aedeagus; 283b, transtilla; 283c, sternite of eighth abdominal segment.

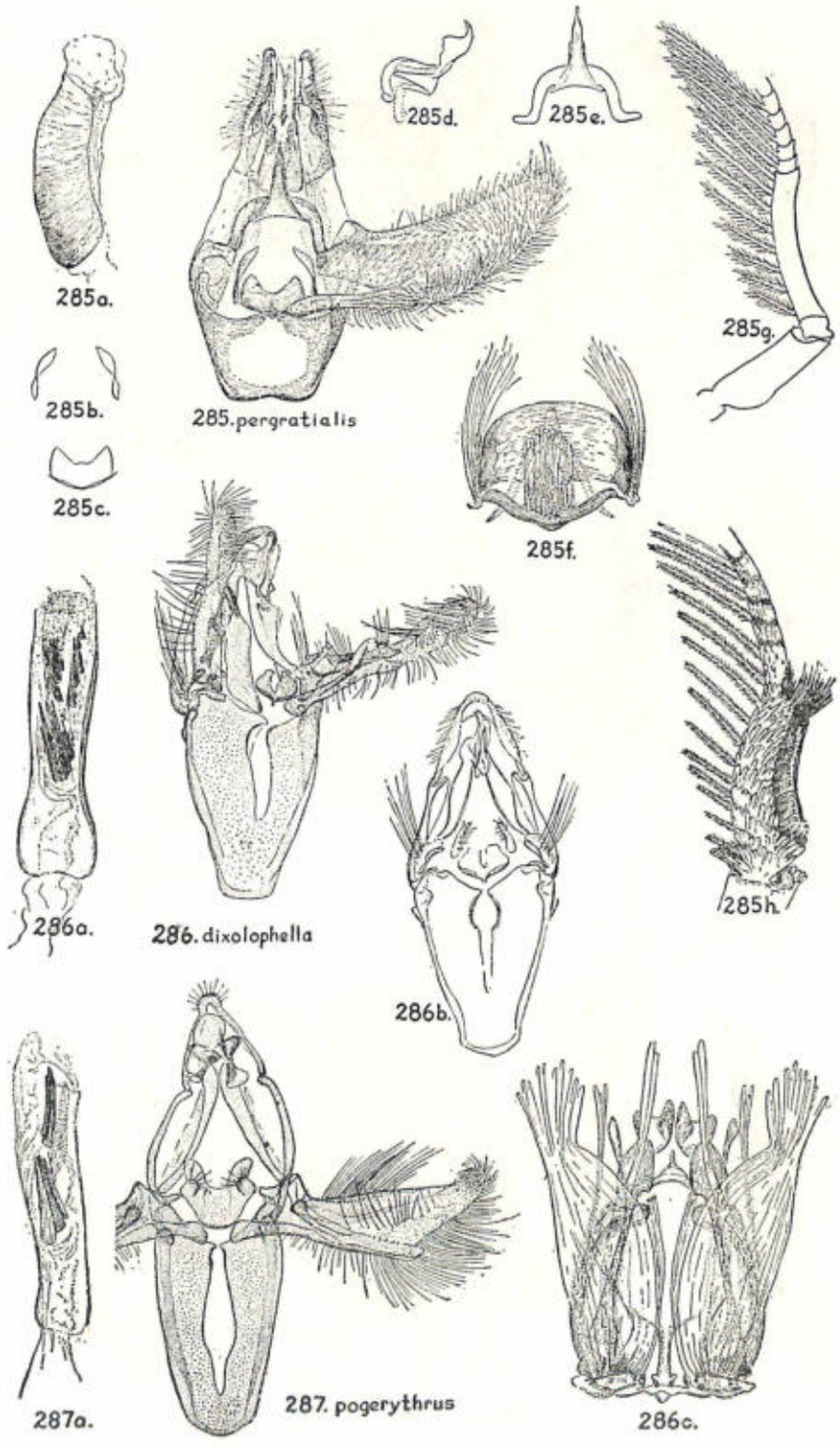
284. *Drescoma drucella* Dyar, a synonym of *Drescomopsis soraella* (Druce), aedeagus omitted; 284a, aedeagus; 284b, transtilla; 284c, sternite and scale tufts of eighth abdominal segment.

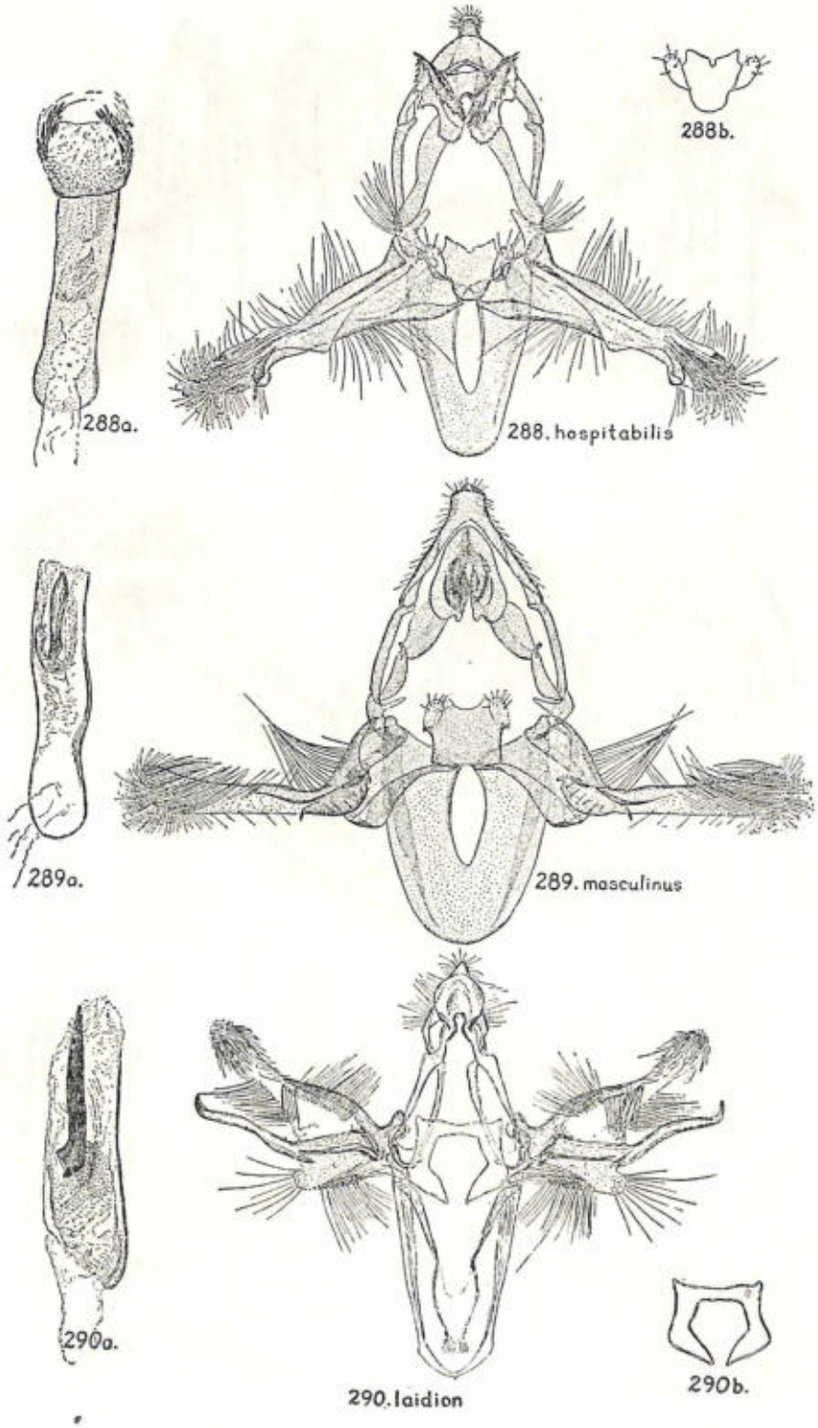
FIGURES 285–287.—MALES.

285. *Monoptilota pergratialis* (Hulst), genitalia figured from type of its synonym *M. nubilella* Hulst; 285a, aedeagus; 285b, elements of transtilla; 285c, anellus; 285d, lateral view of gnathos; 285e, ventral view of gnathos; 285f, sclerotization and tuftings of eighth abdominal segment of male; 285g, basal segments of male antenna, denuded; 285h, basal segments of male antenna, scaled.

286. *Zamagiria dixolophella* Dyar, type, aedeagus omitted and tegumen, uncus, and gnathos slightly turned to show them in ventrolateral view; 286a, aedeagus; 286b, male genitalia shown in full ventral view with both harpes and aedeagus omitted; 286c, compound tufts of eighth abdominal segment of abdomen.

287. *Zamagiria pogerythrus* Dyar; 287a, aedeagus.





FIGURES 288–290.—MALES.

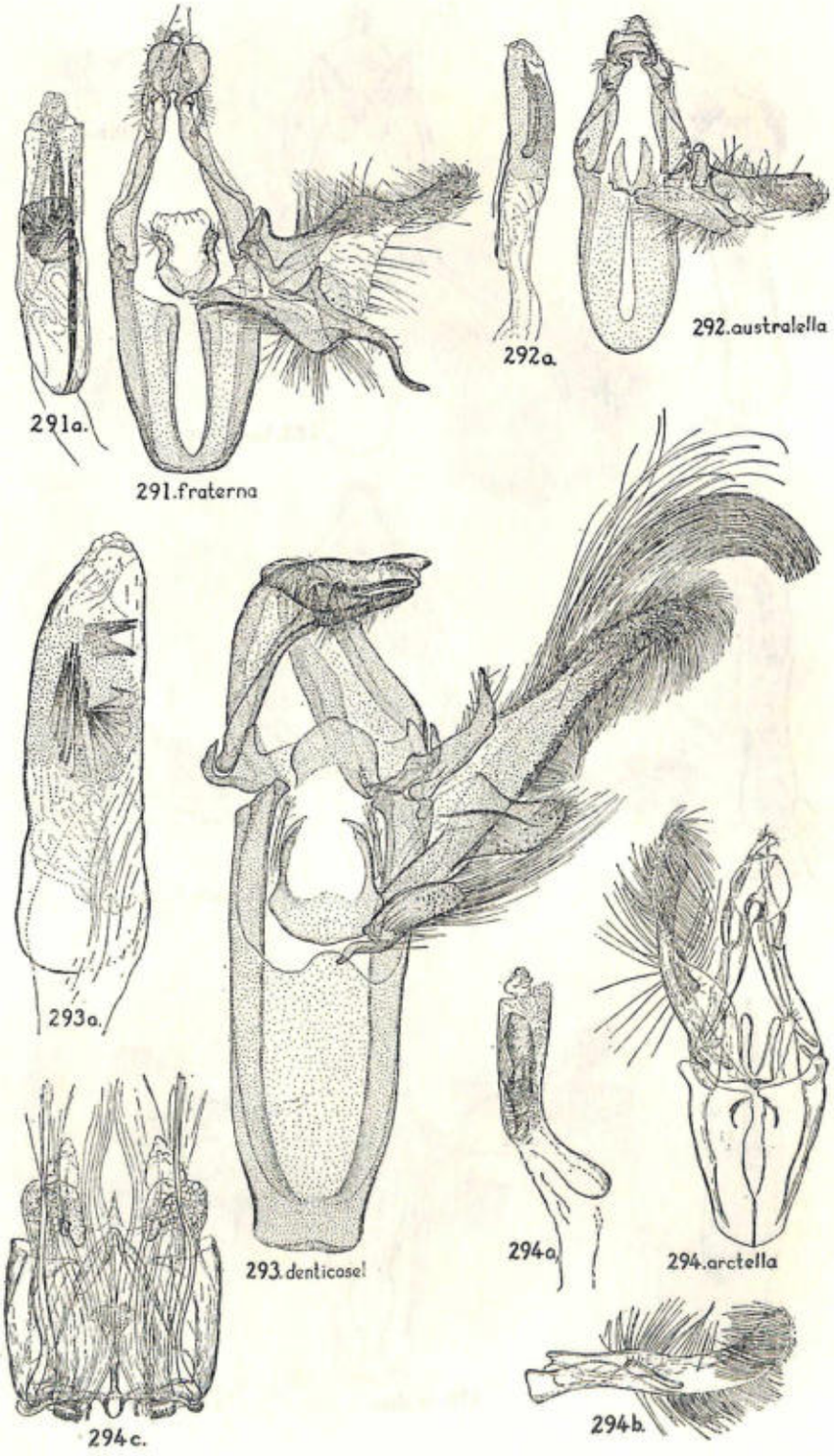
288. *Zamagiria hospitabilis* Dyar, type, aedeagus omitted; 288a, aedeagus; 288b, anellus.

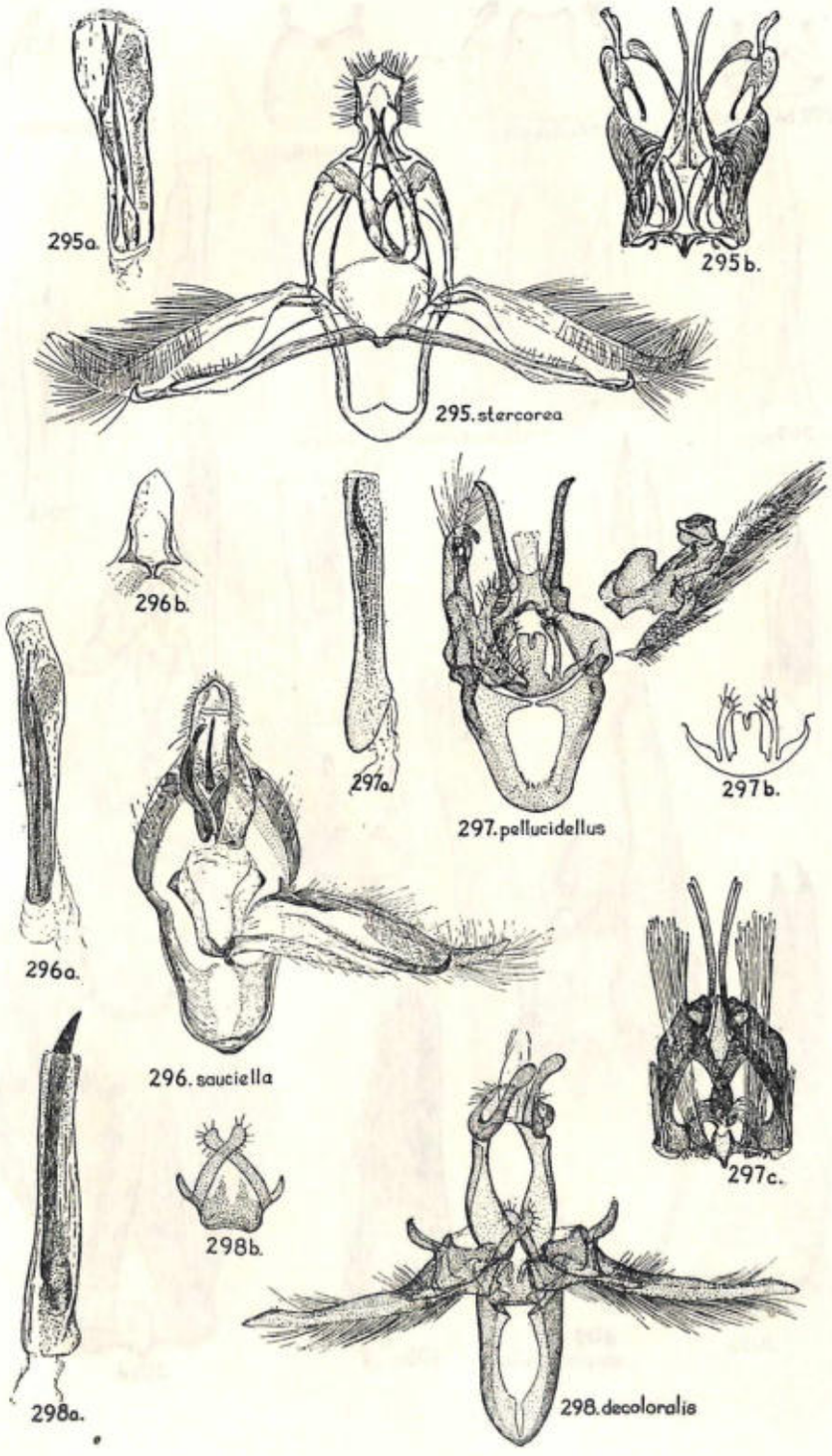
289. *Zamagiria masculinus* Dyar, type, aedeagus omitted; 289a, aedeagus.

290. *Zamagiria laidion* (Zeller), aedeagus omitted; 290a, aedeagus; 290b, anellus.

FIGURES 291–294.—MALES.

291. *Zamagiria fraterna* Heinrich, new species; 291a, aedeagus.
292. *Zamagiria australella* (Hulst); 292a, aedeagus.
293. *Magiriopsis denticosella* (Dyar), one harpe and aedeagus omitted and uncus and gnathos bent to show lateral view; 293a, aedeagus.
294. *Anegcephalesis arctella* (Ragonot); 294a, aedeagus; 294b, harpe, ventral view; 294c, compound tufts of eighth abdominal segment.





FIGURES 295–298.—MALES.

295. *Ancylostomia stercorea* (Zeller), aedeagus omitted; 295a, aedeagus; 295b, compound tufts of eighth abdominal segment.

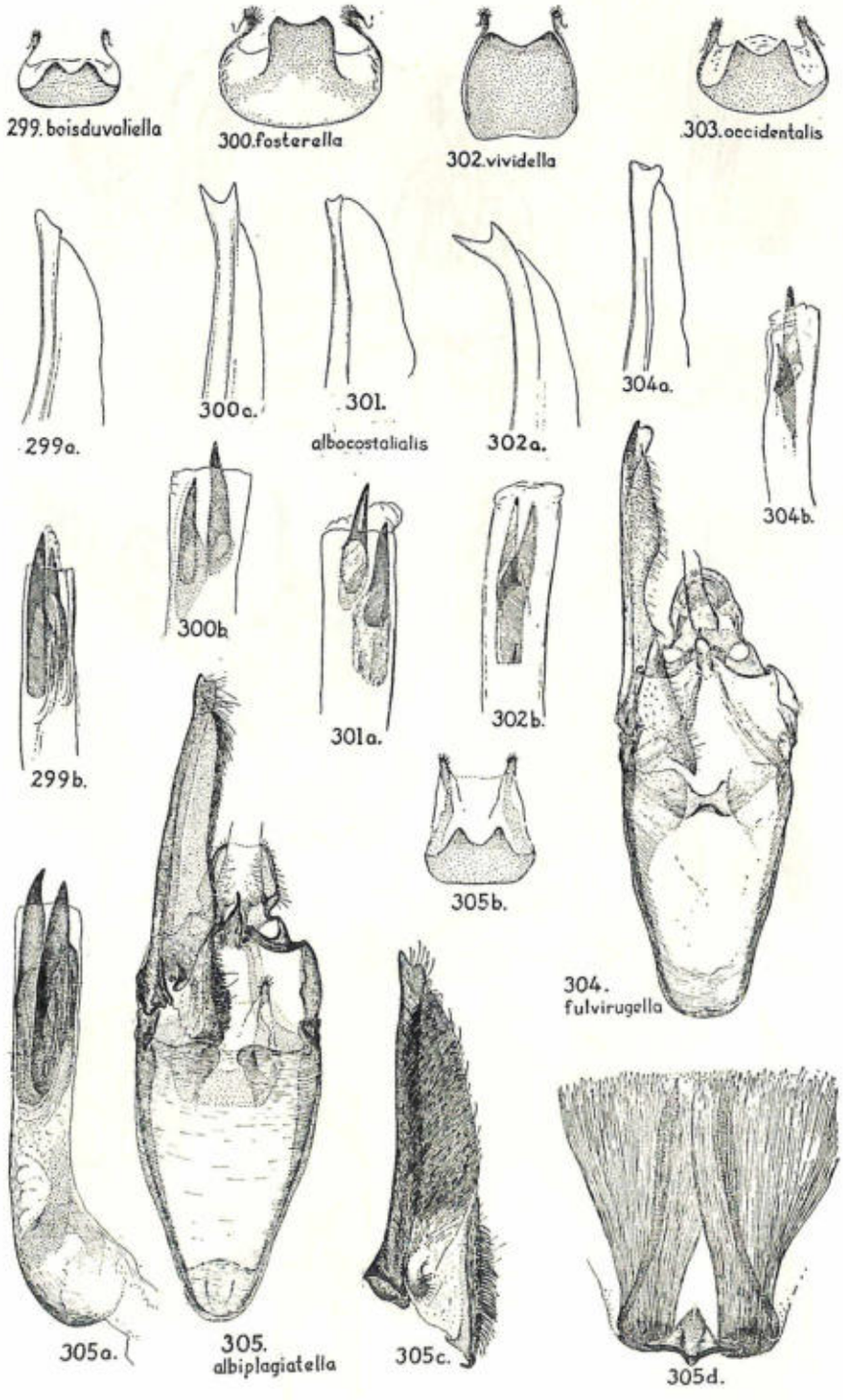
296. *Ancylostomia sauciella* (Zeller), type; 296a, aedeagus; 296b, dorsal view of uncus.

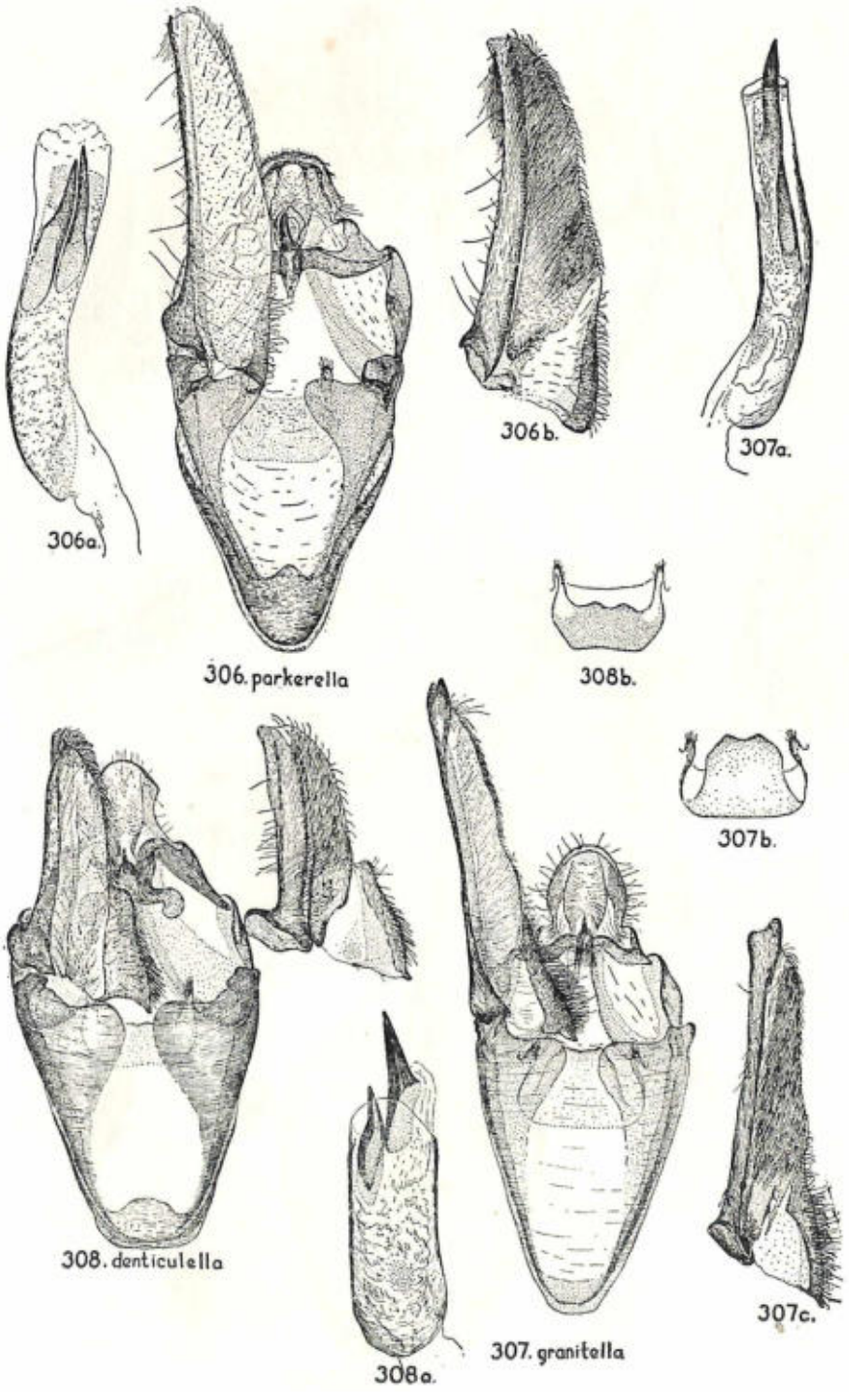
297. *Caristanius pellucidellus* (Ragonot), aedeagus omitted and right harpe detached; 297a, aedeagus; 297b, anellus; 297c, compound tufts of eighth abdominal segment.

298. *Caristanius decoloralis* (Walker), aedeagus omitted; 298a, aedeagus; 298b, anellus.

FIGURES 299–305.—MALES.

299. *Pima boisduvaliella* (Guénée), anellus; 299a, apical portion of harpe; 299b, cornuti.
300. *Pima fosterella* Hulst, anellus; 300a, apical portion of harpe; 300b, cornuti.
301. *Pima albocostalialis* (Hulst), apical portion of harpe; 301a, cornuti.
302. *Pima vividella* (McDunnough), paratype from Saskatoon, Saskatchewan (in USNM); anellus; 302a, apical portion of harpe; 302b, cornuti.
303. *Pima albiplagiatella occidentalis* Heinrich: New race, anellus.
304. *Pima fulvirugella* (Ragonot), type; 304a, apical portion of harpe; 304b, cornuti.
305. *Pima albiplagiatella* (Packard); 305a, aedeagus; 305b, anellus; 305c, ventral view of right harpe; 305d, tufts of eighth abdominal segment.





FIGURES 306–308.—MALES.

306. *Pima parkerella* (Schaus), type; 306a, aedeagus; 306b, ventral view of harpe.
307. *Pima granitella* (Ragonot), figured from type of its synonym *Megasis piperella* Dyar; 307a, aedeagus; 307b, anellus; 307c, ventral view of right harpe.
308. *Interjectio denticulella* (Ragonot), specimen from British Columbia, aedeagus omitted and right harpe detached and shown in ventral view; 308a, aedeagus; 308b, anellus.

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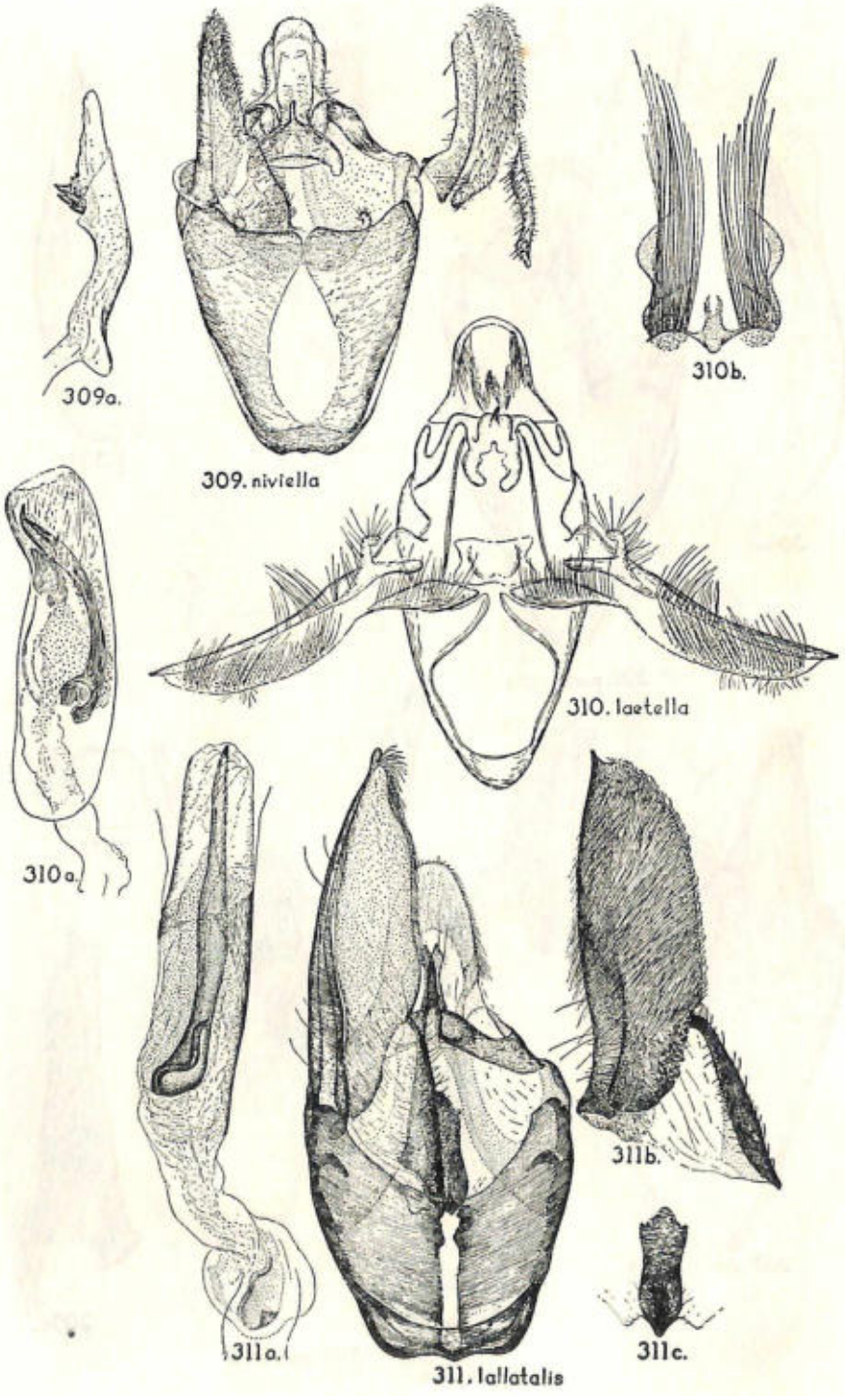
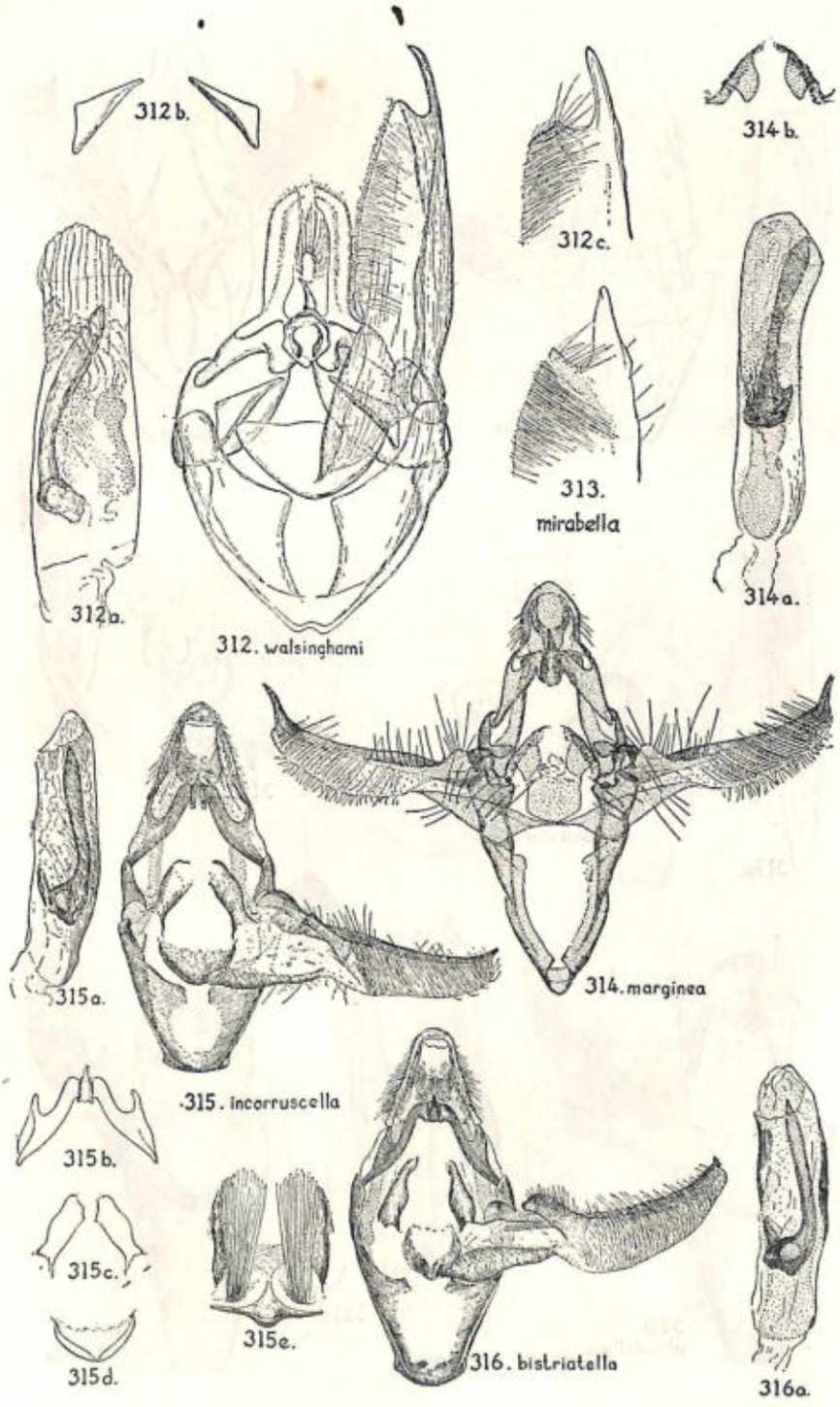
FIGURES 309–311.—MALES.

309. *Interjectio niviella* (Hulst), aedeagus omitted and right harpe detached and shown in ventral view; 309a, aedeagus.
310. *Ambesa laetella* Grote, aedeagus omitted; 310a, aedeagus; 310b, tufts of eighth abdominal segment.
311. *Ambesa lallatalis* (Hulst); 311a, aedeagus; 311b, ventral view of right harpe; 311c, anellus.





FIGURES 312–316.—MALES.

312. *Ambesa walsinghami* (Ragonot), specimen from Plumas County, Calif.; 312a, aedeagus; 312b, elements of transtilla; 312c, apical portion of harpe.

313. *Ambesa walsinghami mirabella* Dyar, apical portion of harpe.

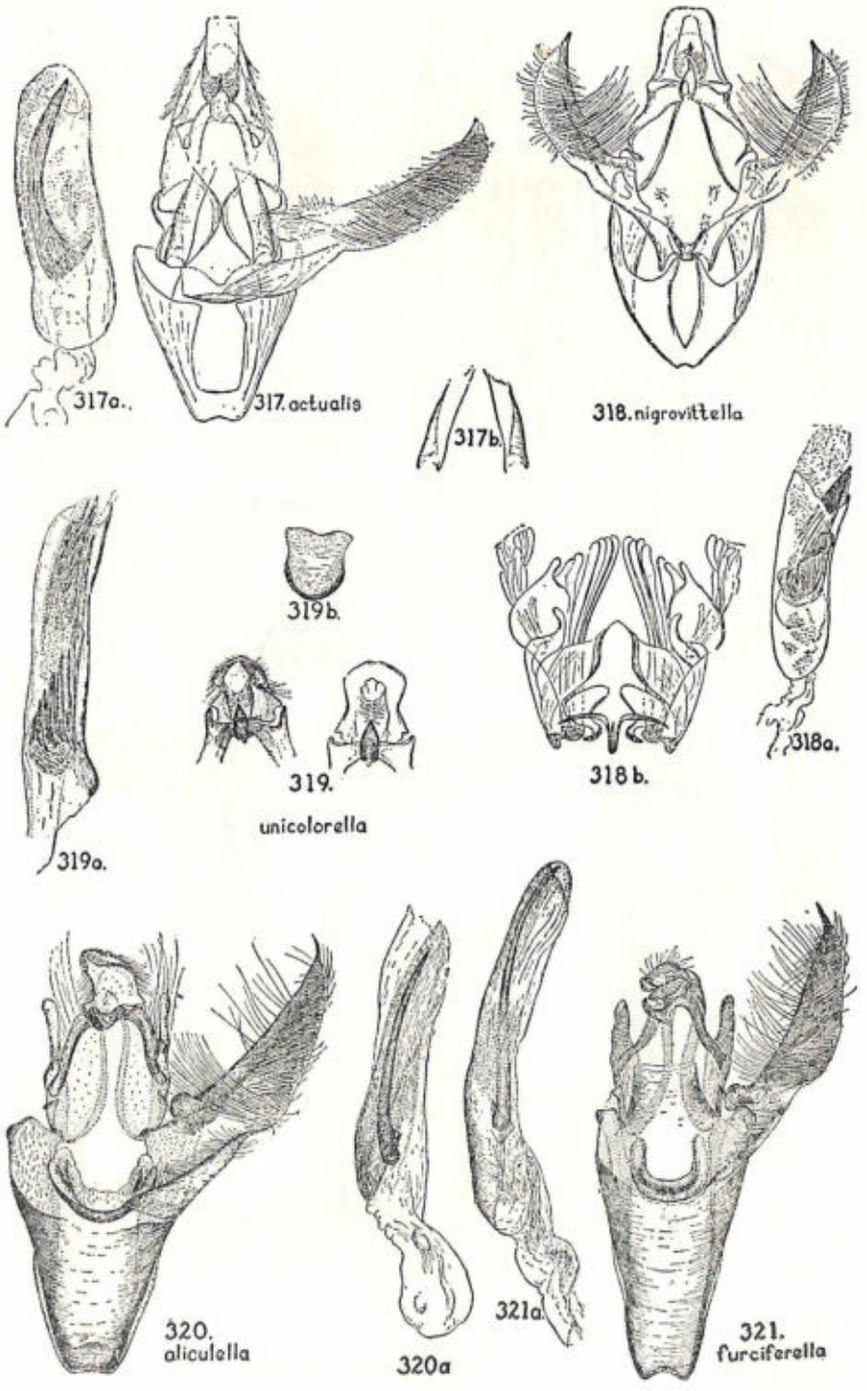
314. *Catastia marginea* (Schiffermüller): aedeagus omitted; 314a, aedeagus; 314b, transtilla.

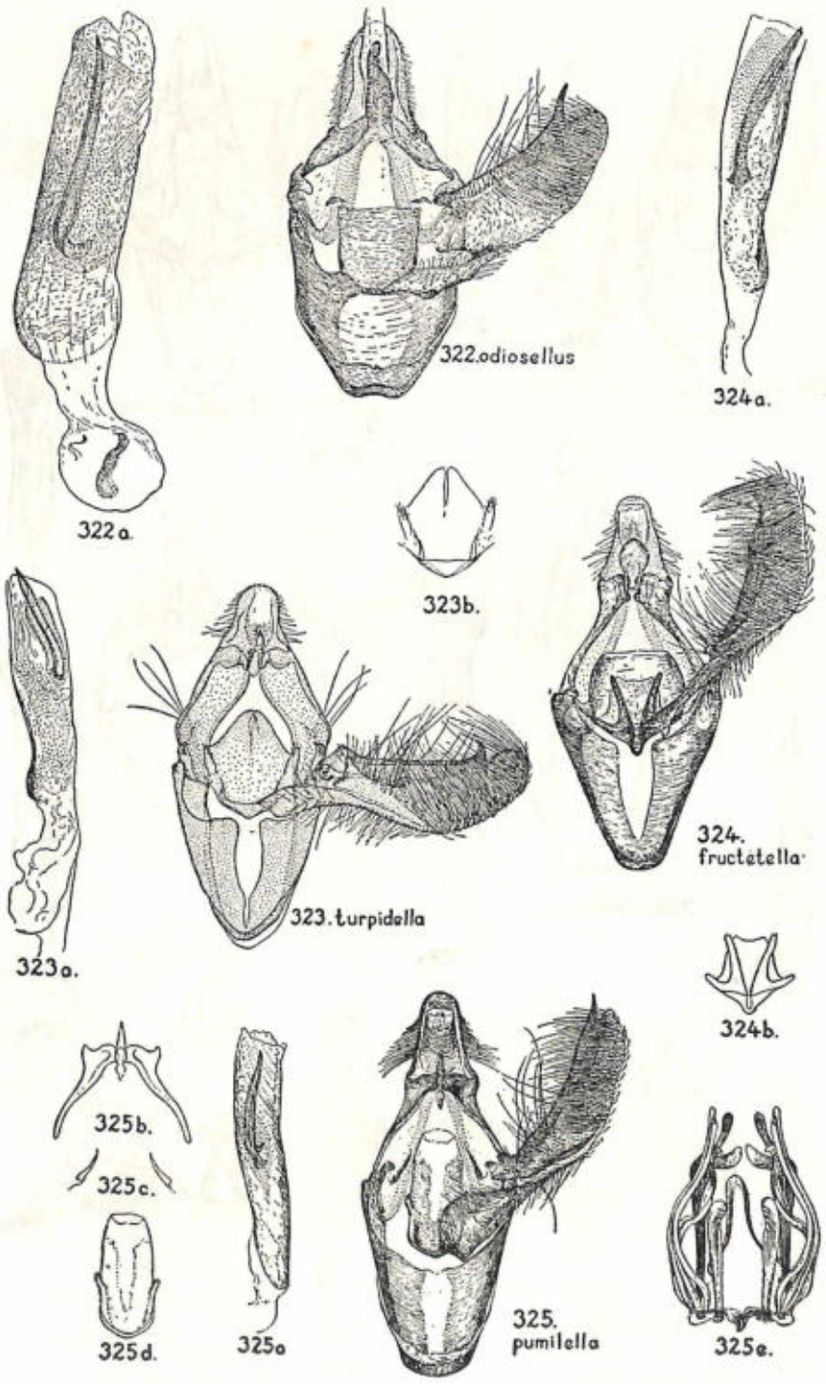
315. *Catastia incorruscella* (Hulst), type; 315a, aedeagus; 315b, gnathos; 315c, elements of transtilla; 315d, anellus; 315e, tufts and sclerotization of eighth abdominal segment.

316. *Catastia bistriatella* (Hulst), specimen from Humphreys Basin, Calif.; 316a, aedeagus.

FIGURES 317–321.—MALES.

317. *Catastia actualis* (Hulst); 317a, aedeagus; 317b, elements of transtilla.
318. *Immyrla nigrovittella* Dyar, aedeagus omitted; 318a, aedeagus; 318b, compound tufts of eighth abdominal segment.
319. *Oreana unicolorella* (Hulst), two views of uncus and gnathos; 319a, aedeagus; 319b, anellus.
320. *Olybria aliculella* (Hulst); 320a, aedeagus.
321. *Olybria furciferella* (Dyar), type; 321a, aedeagus.





FIGURES 322–325.—MALES.

322. *Salebriacus odiosellus* (Hulst); 322a, aedeagus.

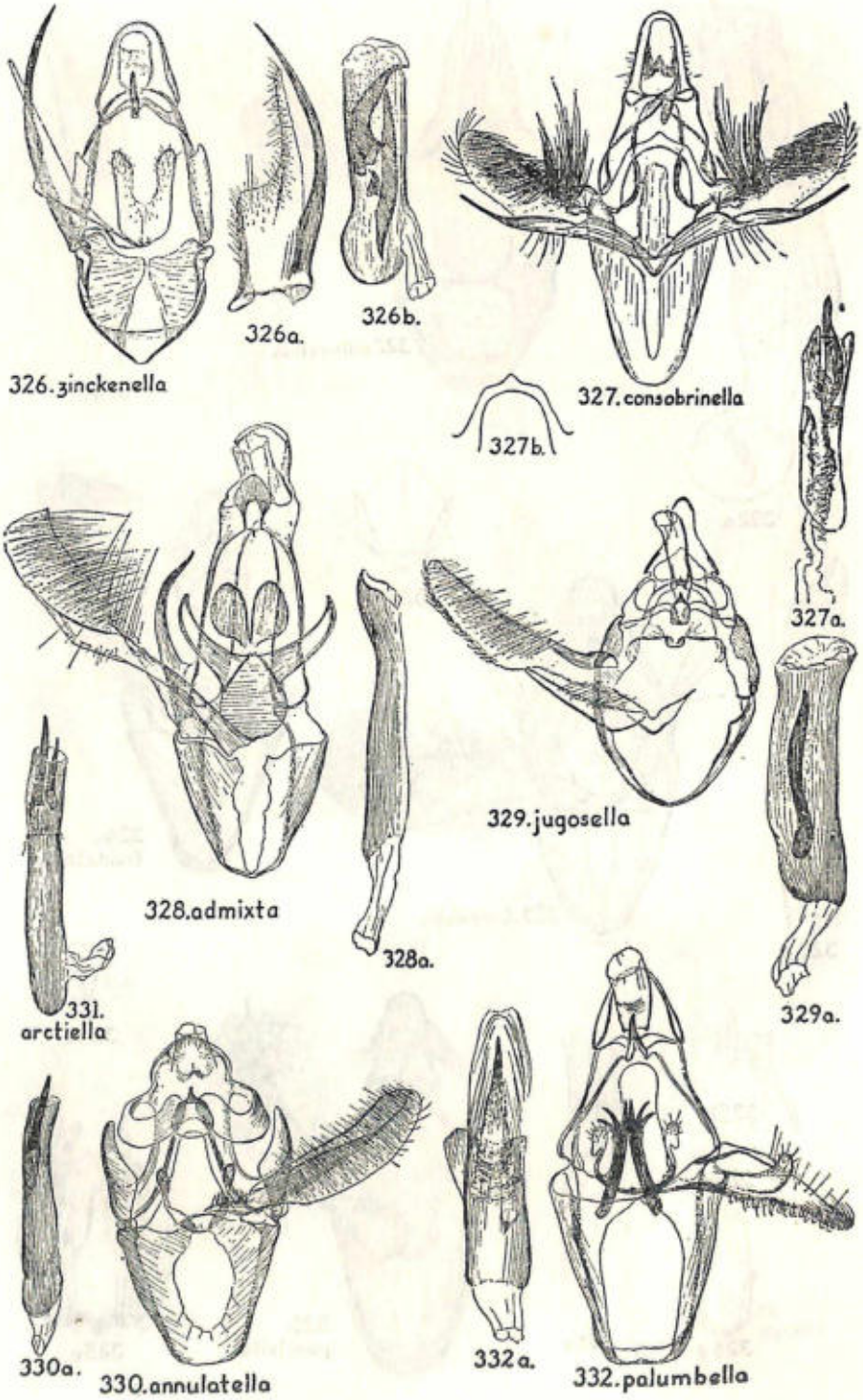
323. *Salebriaria turpidella* (Ragonot), figured from type of its synonym *Salebria ademptandella* Dyar; 323a, aedeagus; 323b, anellus.

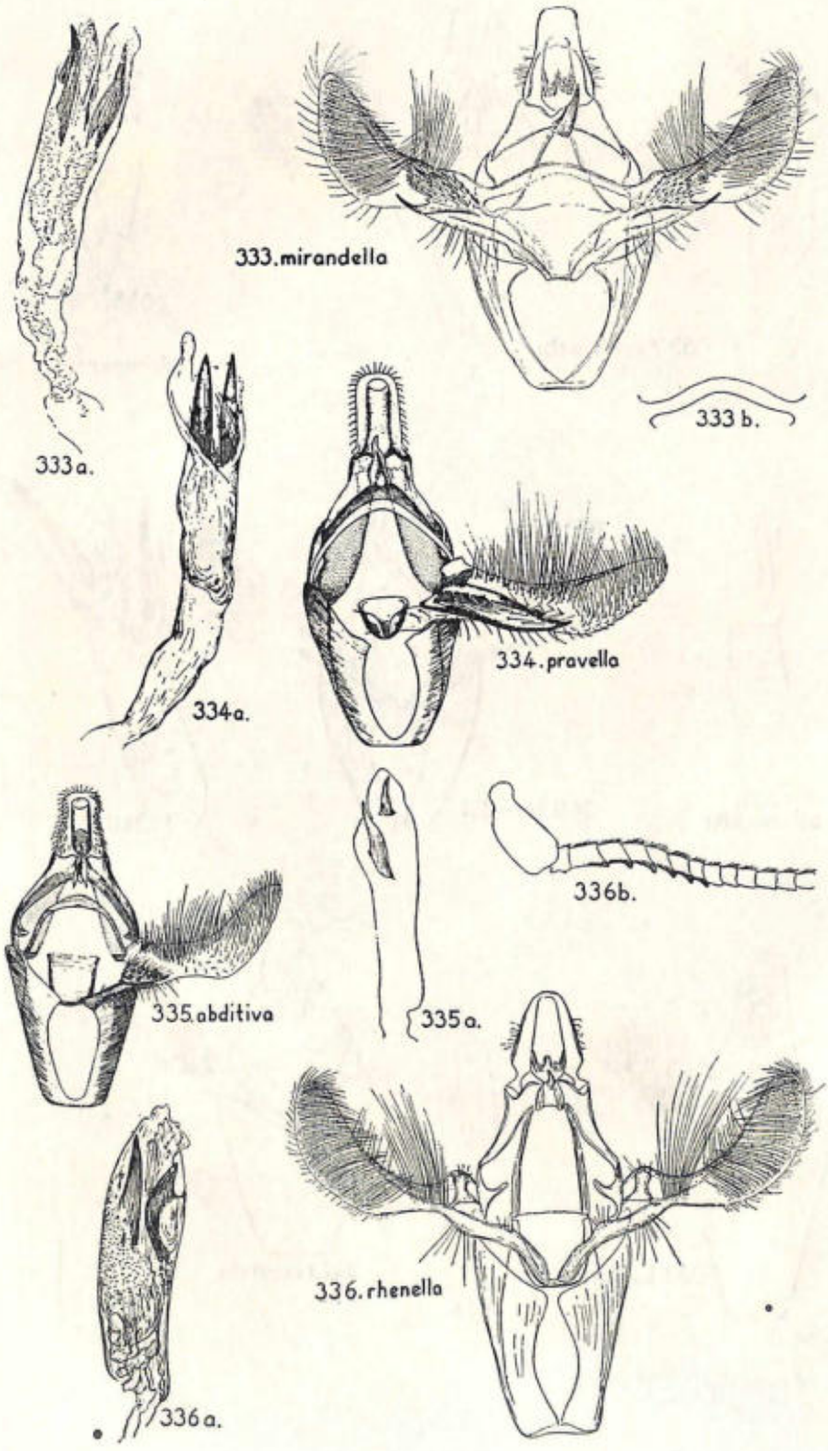
324. *Salebriaria fructetella* (Hulst), figured from type of its synonym *Salebria rectistrigella* Dyar; 324a, aedeagus; 324b, anellus.

325. *Salebriaria pumilella* (Ragonot), figured from type of its synonym *Salebria georgiella* Hulst; 325a, aedeagus; 325b, gnathos; 325c, elements of transtilla; 325d, anellus; 325e, compound tufts of eighth abdominal segment.

FIGURES 326–332.—MALES.

326. *Etiella zinckenella* (Treitschke); 326a, ventral view of harpe; 326b, aedeagus.
327. *Glyptocera consobrinella* (Zeller), aedeagus omitted; 327a, aedeagus; 327b, transtilla.
328. *Quasisalebria admixta* Heinrich, type; 328a, aedeagus.
329. *Ortholepis jugosella* Ragonot; 329a, aedeagus.
330. *Polopeustis annulatella* (Zetterstedt); 330a, aedeagus.
331. *Polopeustis arctiella* (Gibson), aedeagus.
332. *Salebria palumbella* (Schiffermüller); 332a, aedeagus.



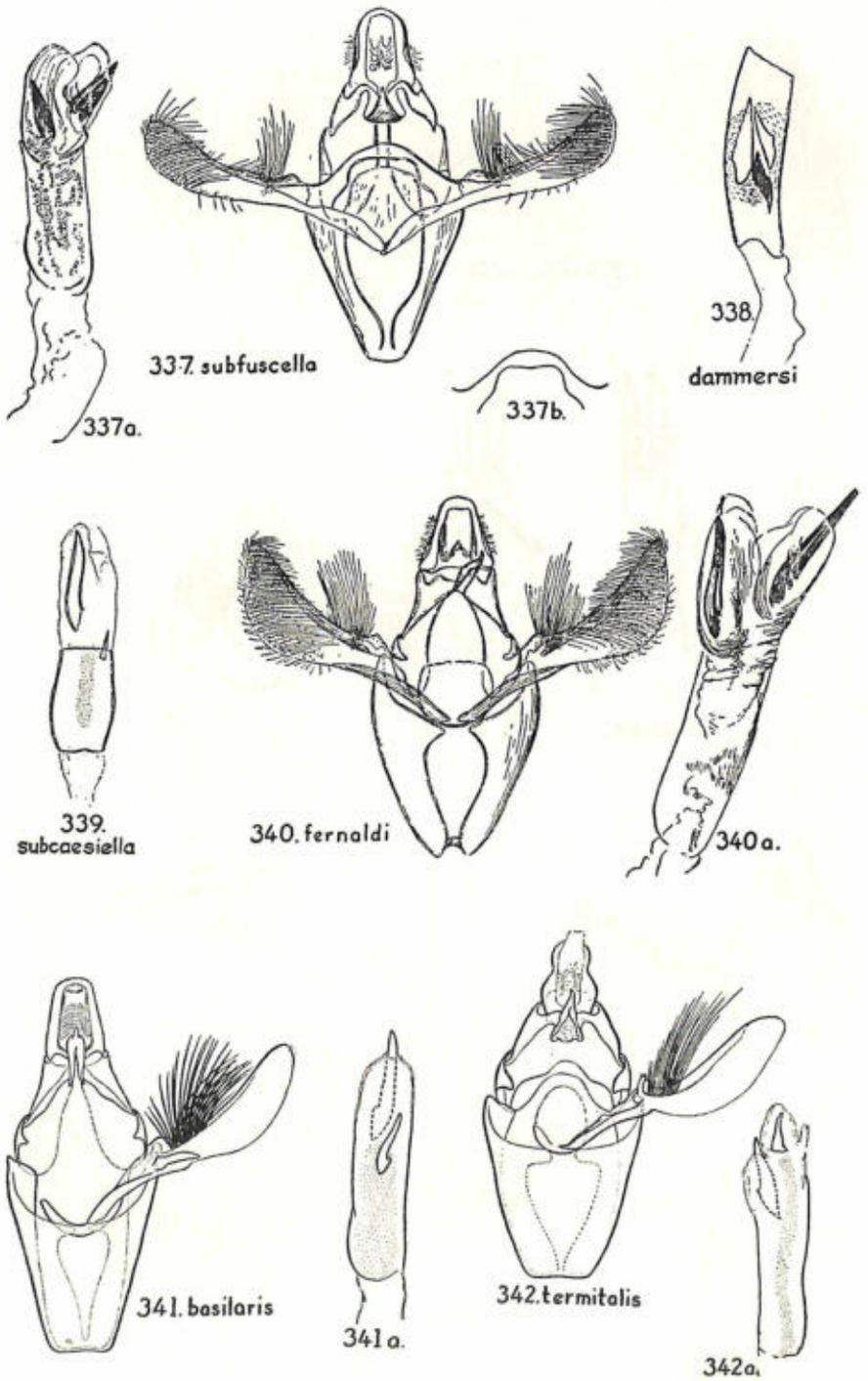


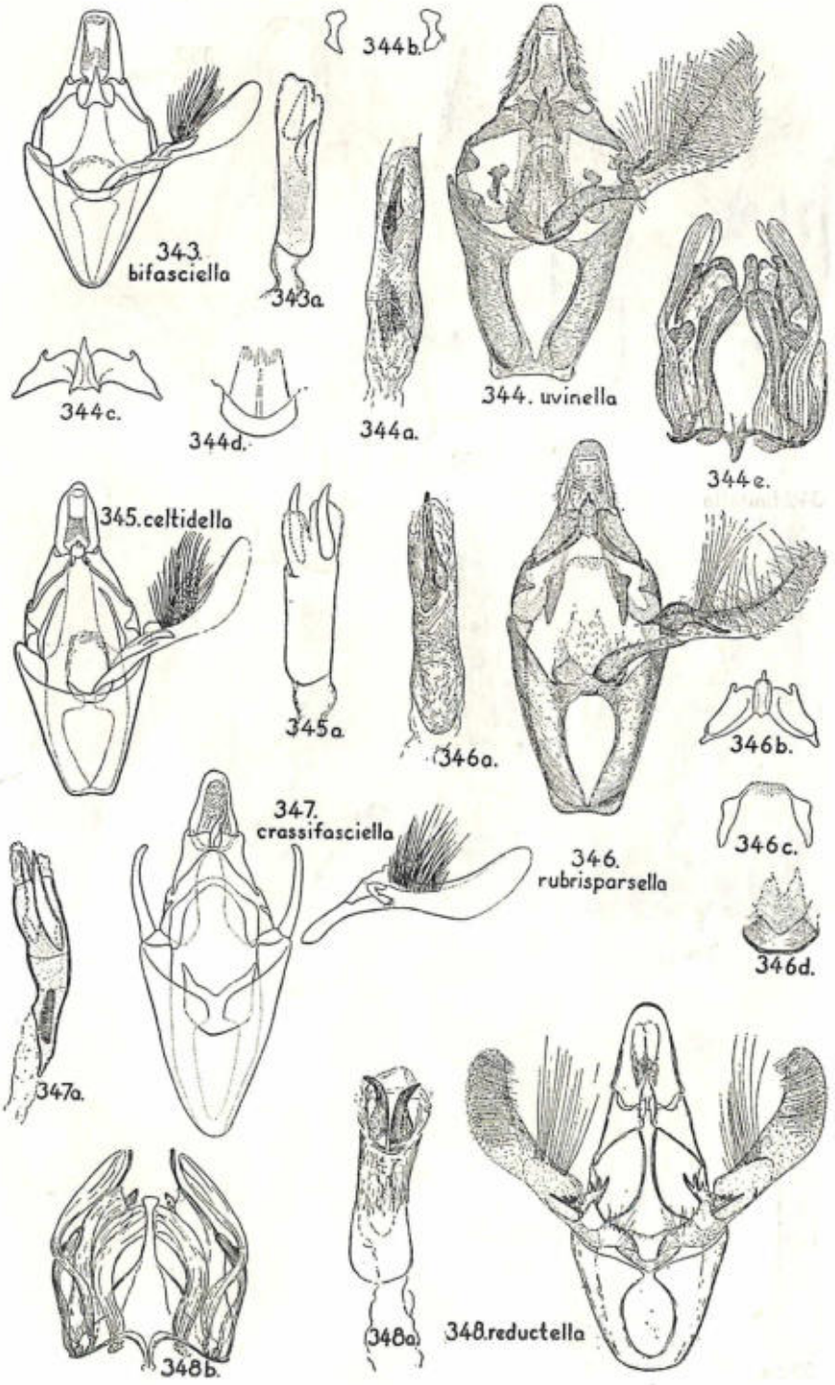
FIGURES 333–336.—MALES.

333. *Meroptera mirandella* Ragonot, aedeagus omitted; 333a, aedeagus; 333b, transtilla.
334. *Meroptera pravella* (Grote), specimen from Edmonton, Alberta; 334a, aedeagus.
335. *Meroptera abditiva* Heinrich, new species, type; 335a, aedeagus.
336. *Nephopteryx rhenella* (Zincken), aedeagus omitted; 336a, aedeagus; 336b, basal segments of antenna, denuded.

FIGURES 337–342.—MALES.

337. *Nephopteryx subfuscella* (Ragonot), aedeagus omitted; 337a, aedeagus; 337b, transtilla.
338. *Nephopteryx dammersi* Heinrich, new species, aedeagus.
339. *Nephopteryx subcaesiella* (Clemens), aedeagus.
340. *Nephopteryx fernaldi* (Ragonot), specimen from Colorado, aedeagus omitted; 340a, aedeagus.
341. *Nephopteryx basilaris* Zeller; 341a, aedeagus.
342. *Nephopteryx termitalis* (Hulst), type; 342a, aedeagus.





FIGURES 343–348.—MALES.

343. *Nephopteryx bifasciella* Hulst, type; 343a, aedeagus.

344. *Nephopteryx uvinella* (Ragonot); 344a, aedeagus; 344b, elements of transtilla; 344c, gnathos; 344d, anellus; 344e, compound tufts of eighth abdominal segment.

345. *Nephopteryx celtidella* (Hulst); 345a, aedeagus.

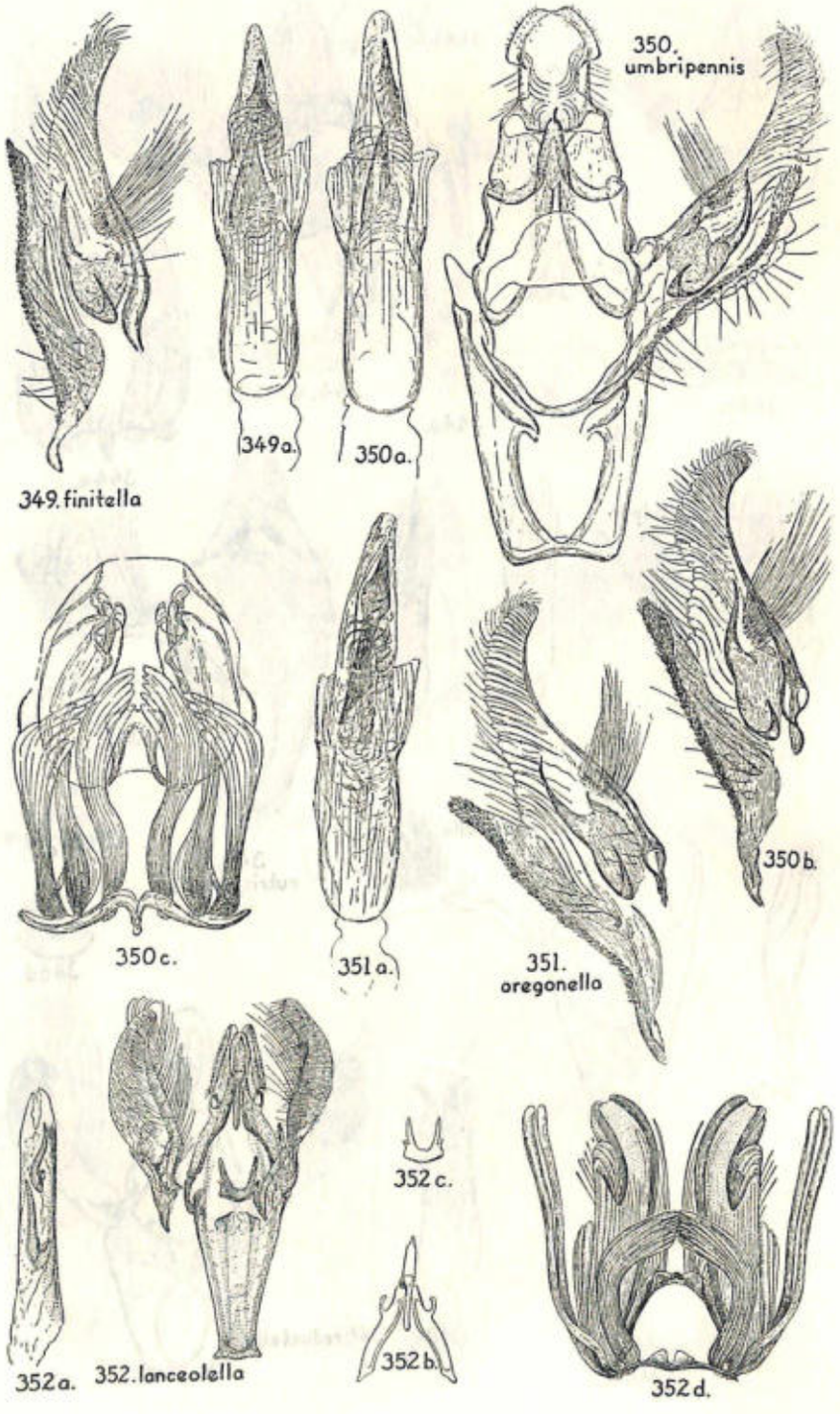
346. *Nephopteryx rubrisparsella* (Ragonot), figured from type of its synonym *texanella* Hulst, 346a, aedeagus; 346b, gnathos; 346c, transtilla; 346d, anellus.

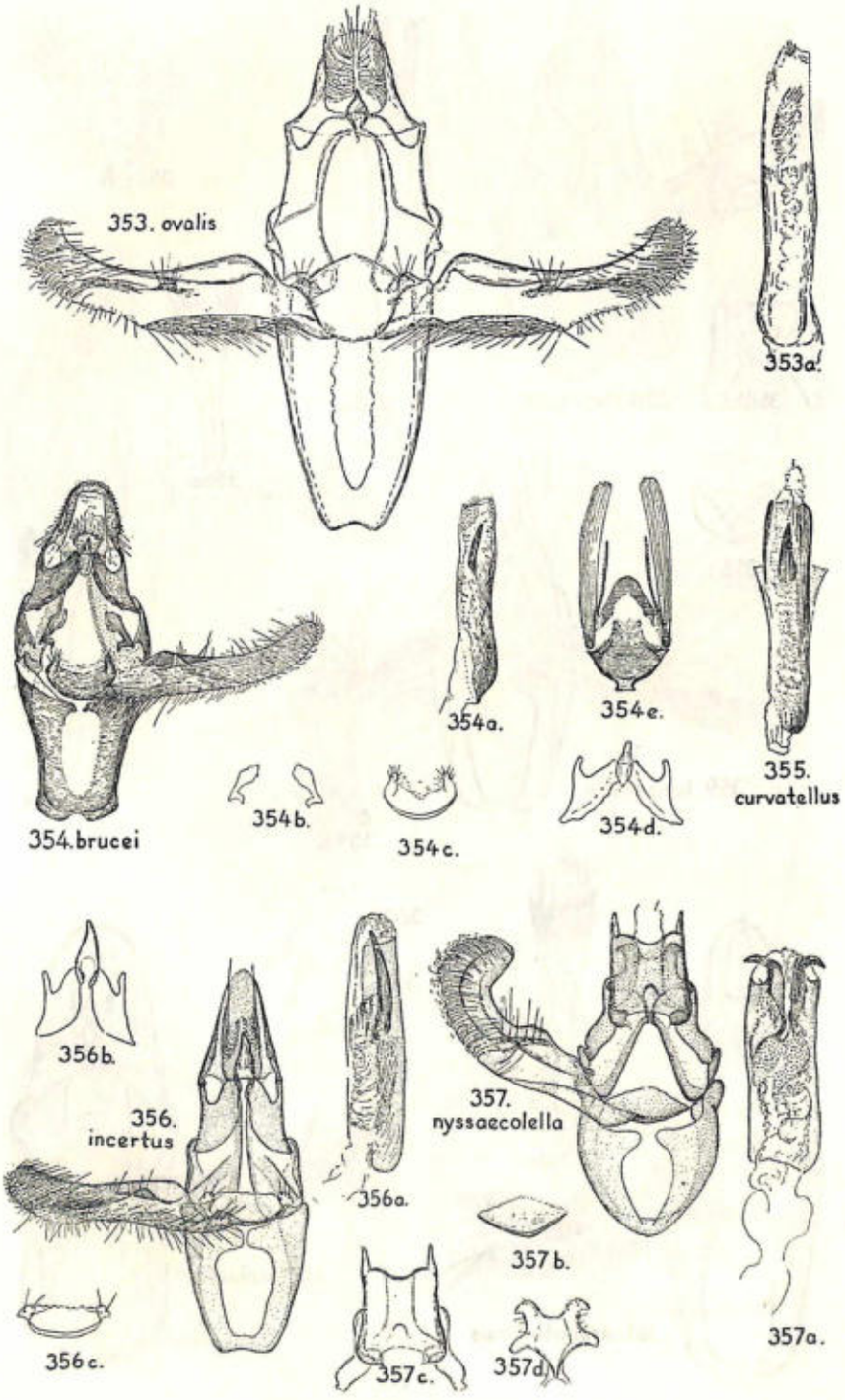
347. *Nephopteryx crassifasciella* Ragonot, one harpe omitted, one detached, and aedeagus omitted; 347a, aedeagus.

348. *Tlascala reductella* (Walker), figured from type of its synonym *Pempelia gleditschiella* Fernald, aedeagus omitted; 348a, aedeagus; 348b, compound ventral tufts of eighth abdominal segment.

FIGURES 349–352.—MALES.

349. *Tulsa finitella* (Walker), specimen from Florida, harpe; 349a, aedeagus.
350. *Tulsa umbripennis* (Hulst), figured from type of its synonym *Ortholepis gillettella* Dyar; 350a, aedeagus; 350b, harpe; 350c, compound tufts of eighth abdominal segment.
351. *Tulsa oregonella* (Barnes and McDunnough), type; harpe; 351a, aedeagus.
352. *Homeographa lanceolella* Ragonot, type, one harpe detached and aedeagus omitted; 352a, aedeagus; 352b, gnathos; 352c, anellus; 352d, compound tufts of eighth abdominal segment.





FIGURES 353–357.—MALES.

353. *Telethusia ovalis* (Packard), aedeagus omitted; 353a, aedeagus.

354. *Phobus brucei* (Hulst), type; 354a, aedeagus; 354b, elements of transtilla; 354c, anellus; 354d, gnathos; 354e, sclerotizations and tufts of eighth abdominal segment.

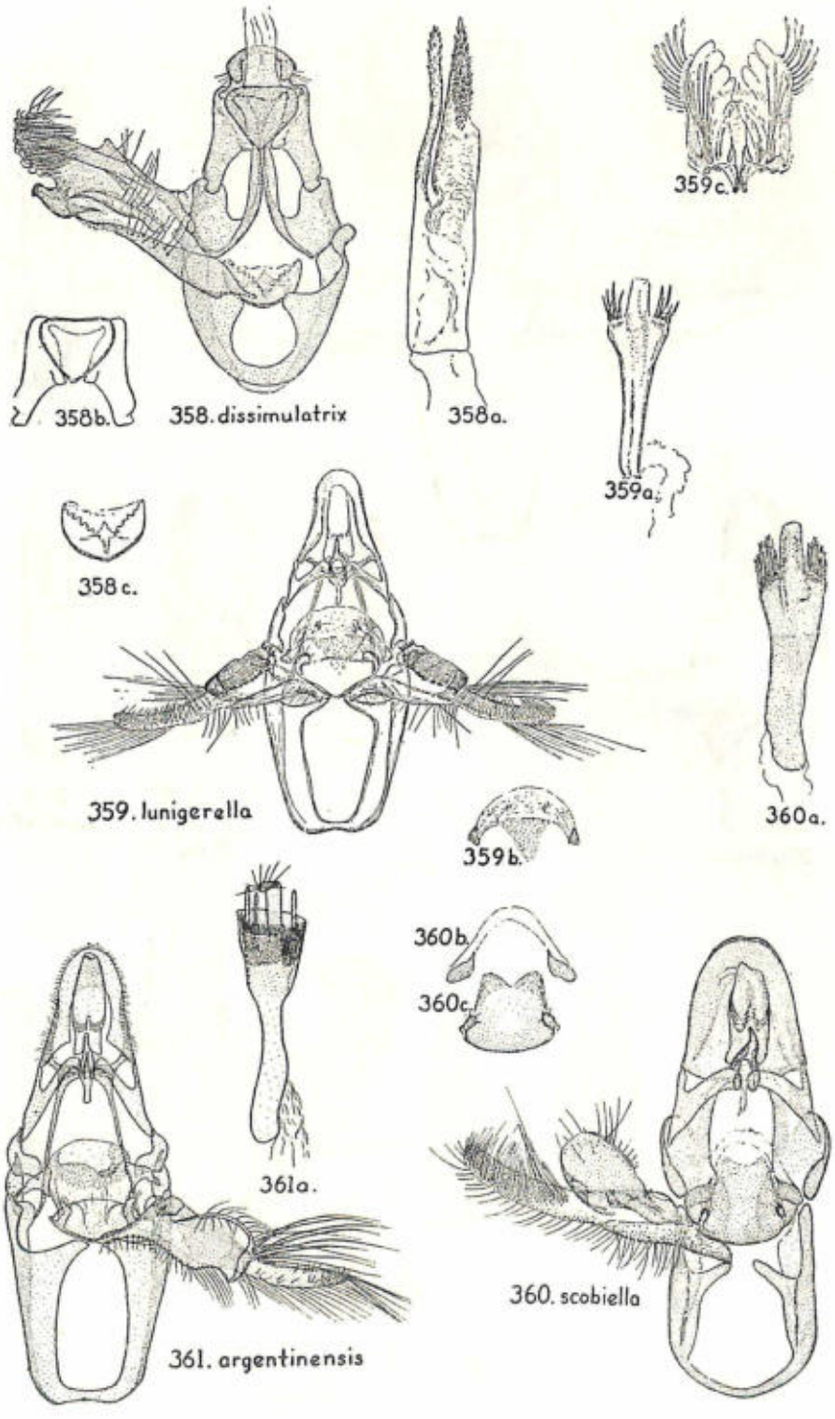
355. *Phobus curvatellus* (Ragonot), anellus.

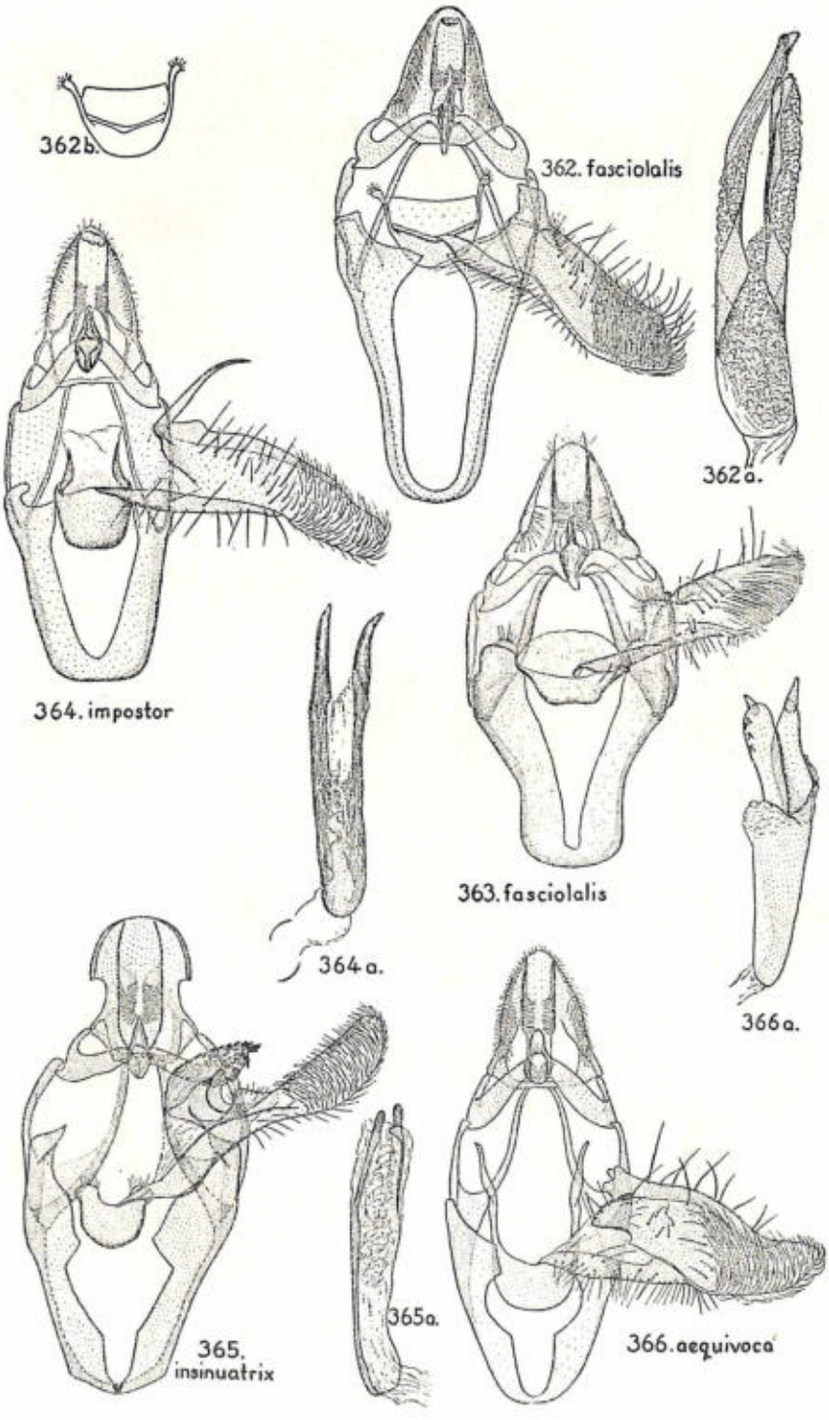
356. *Phobus incertus* Heinrich, new species; 356a, aedeagus; 356b, gnathos; 356c, anellus.

357. *Actrix nyssaecolella* (Dyar), type; 357a, aedeagus; 357b, anellus; 357c, gnathos; 357d, uncus.

FIGURES 358–361.—MALES.

358. *Actrix dissimulatrix* Heinrich, type; 358a, aedeagus, 358b, gnathos; 358c, anellus.
359. *Stylopalpia lunigerella* Hampson, aedeagus omitted; 359a, aedeagus; 359b, transtilla; 359c, tufts of eighth abdominal segment.
360. *Stylopalpia scobiella* (Grote), 360a, aedeagus; 360b, vestiges of transtilla; 360c, anellus.
361. *Stylopalpia argentinensis* Heinrich, type; 361a, aedeagus.





FIGURES 362–366.—MALES.

362. *Pyla fasciolalis* (Hulst), type; 362a, aedeagus; 362b, anellus.
363. *Pyla fasciolalis* (Hulst), variety with shorter harpe and vinculum.
364. *Pyla impostor* Heinrich, new species; 364a, aedeagus.
365. *Pyla insinuatrix* Heinrich, new species, type; 365a, aedeagus.
366. *Pyla aequivoca* Heinrich, new species, type; 366a, aedeagus.

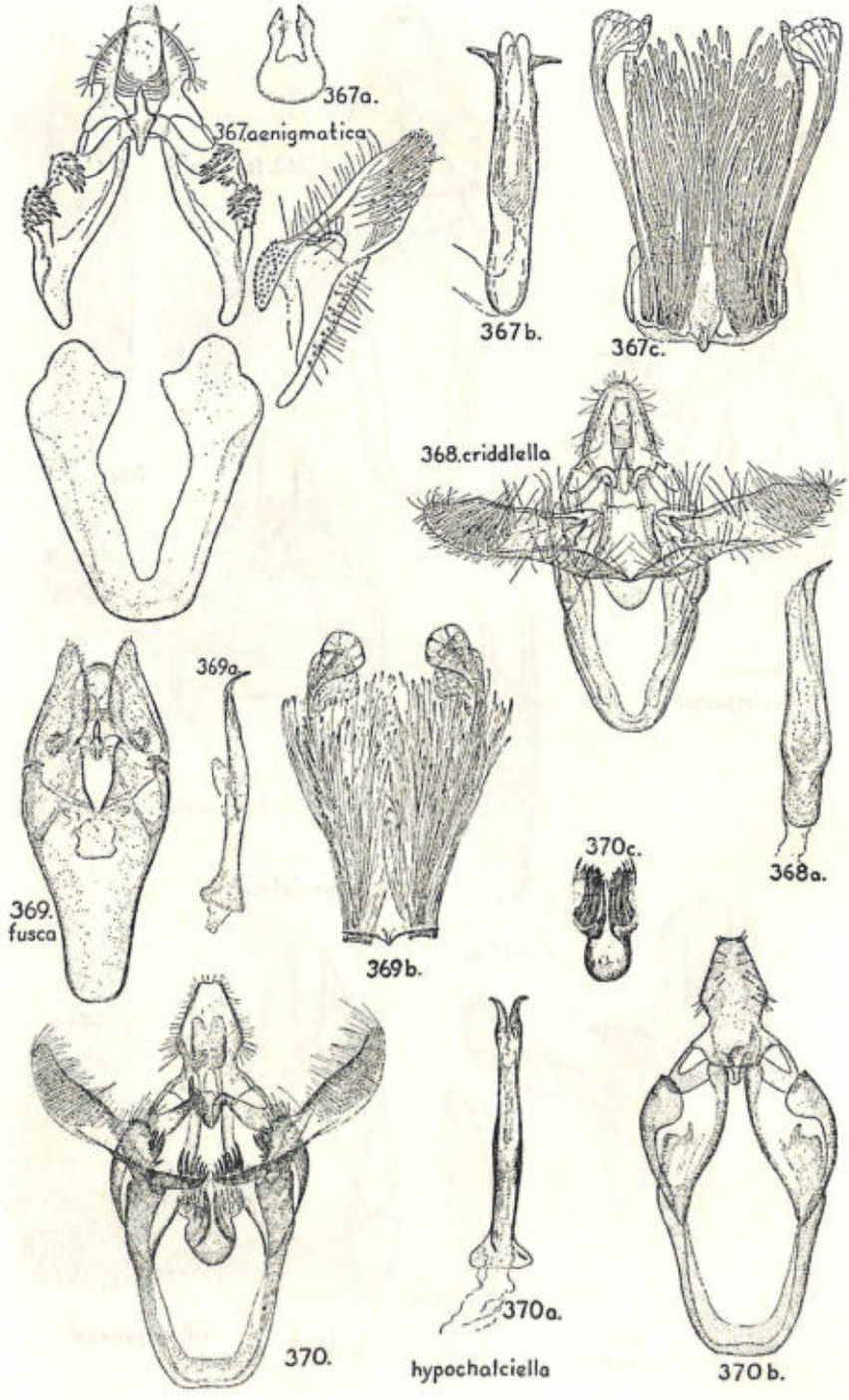
FIGURES 367–370.—MALES.

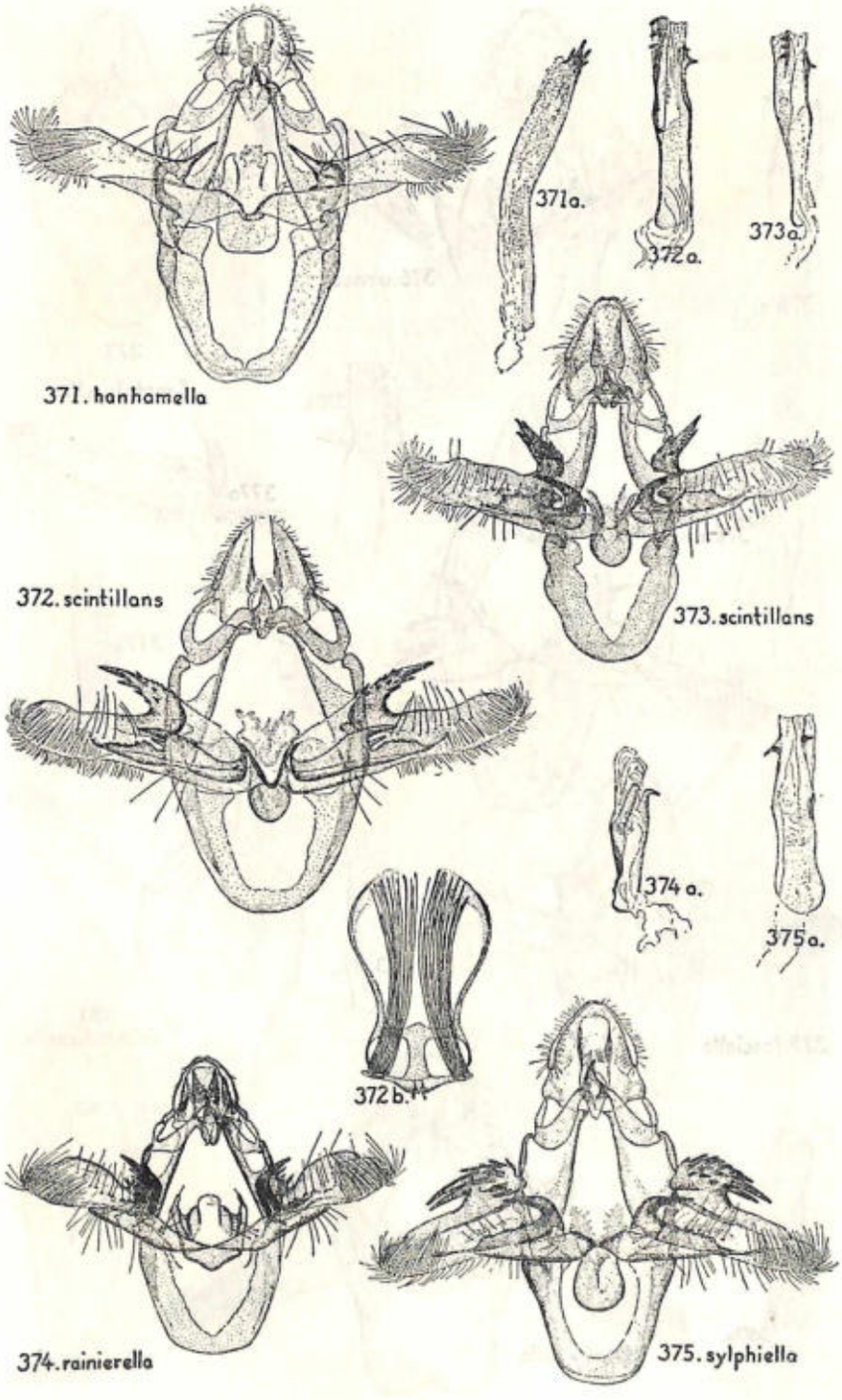
367. *Pyla aenigmatica* Heinrich, new species; genitalia dissected and one harpe, aedeagus, and anellus omitted; 367a, anellus; 367b, aedeagus; 367c, tufts of eighth abdominal segment.

368. *Pyla criddlella* Dyar, type, aedeagus omitted; 368a, aedeagus.

369. *Pyla fusca* (Haworth), aedeagus omitted; 369a, aedeagus; 369b, tufts of eighth abdominal segment.

370. *Pyla hypochalciella* (Ragonot), figured from type of its synonym *P. blackmorella* Dyar, aedeagus omitted; 370a, aedeagus; 370b, dorsal view of uncus, tegumen, and vinculum; 370c, anellus.



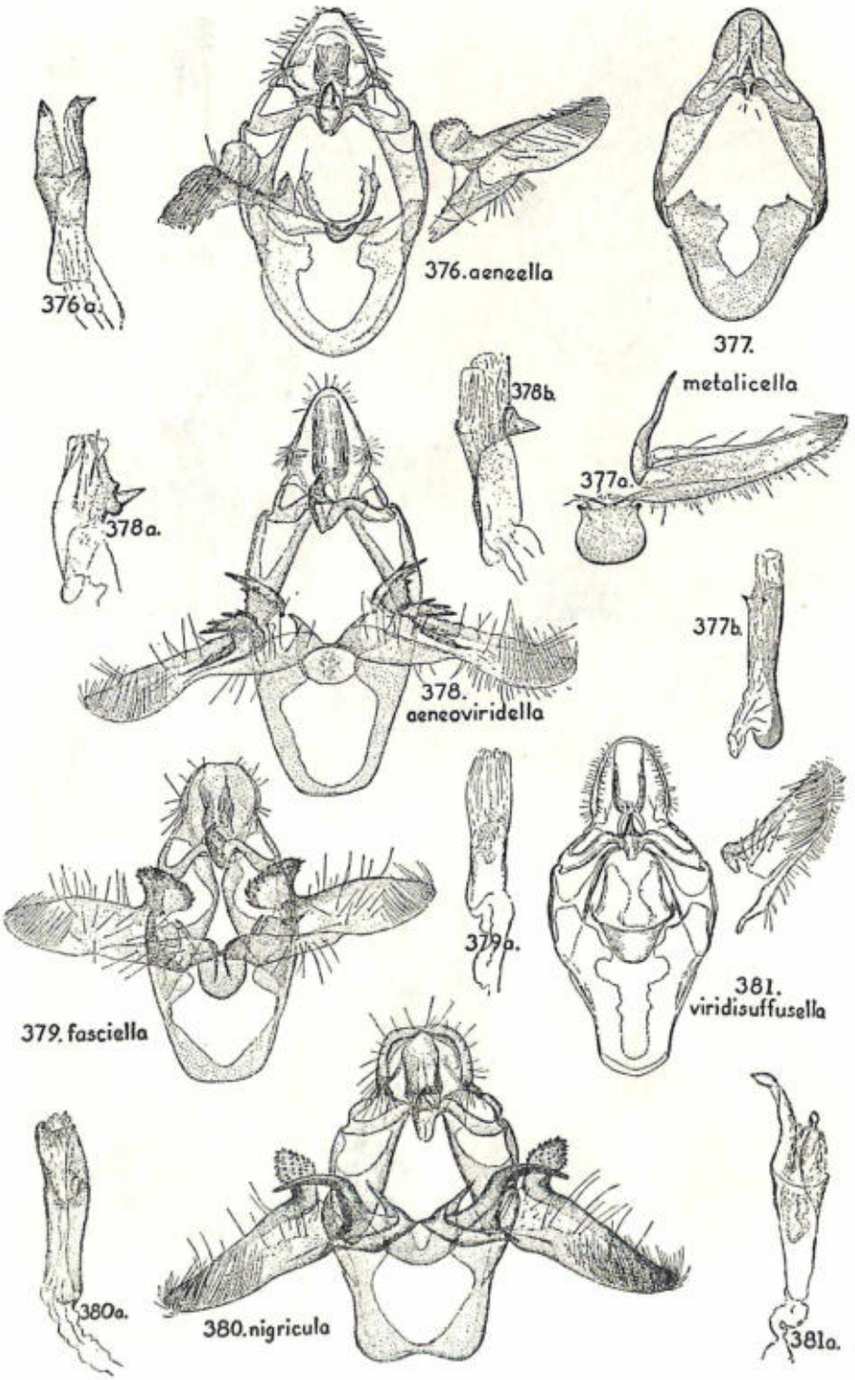


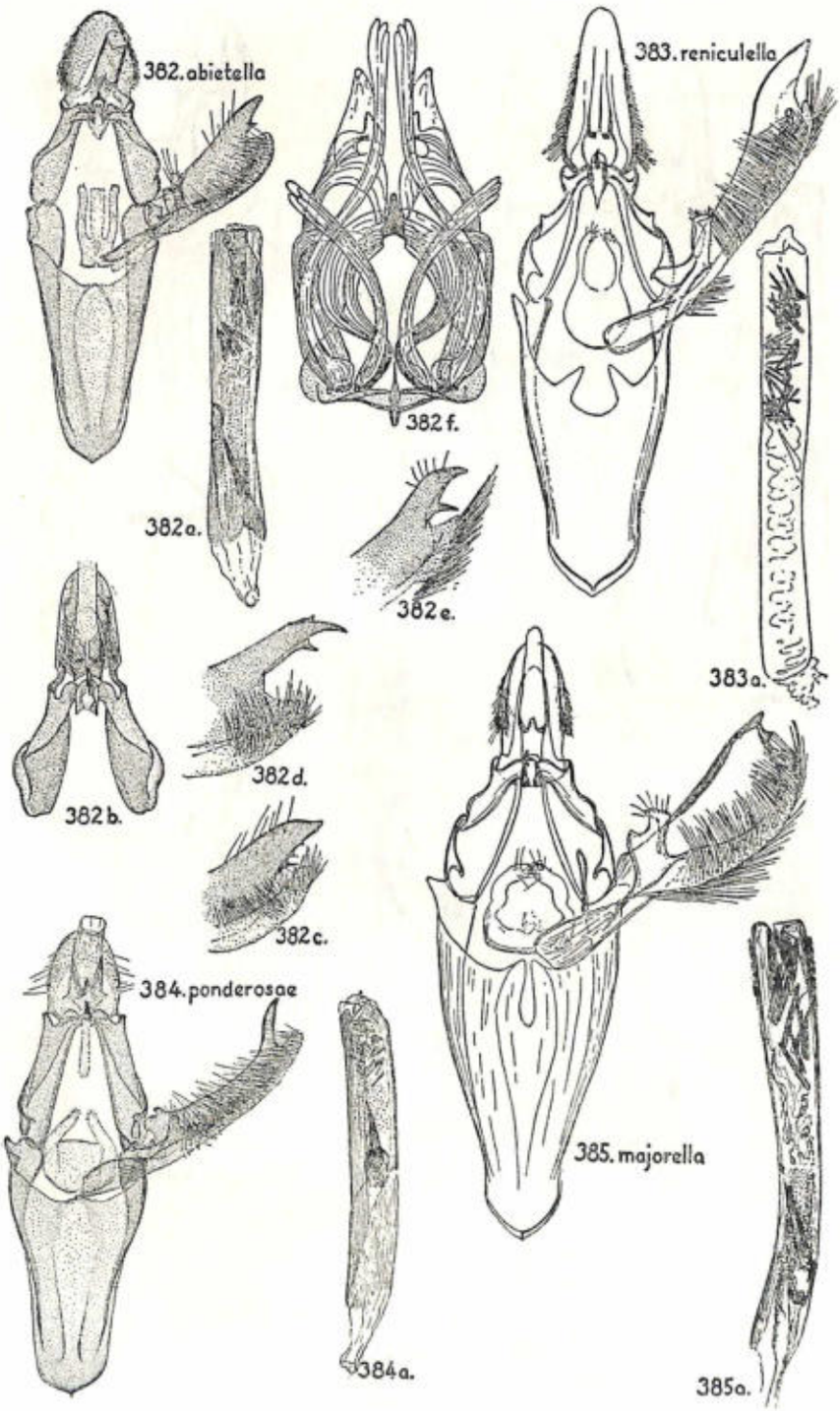
FIGURES 371–375.—MALES.

371. *Pyla hanhamella* Dyar, type, aedeagus omitted; 371a, aedeagus.
372. *Pyla scintillans* (Grote), specimen from Tuolumne Meadows, Calif., aedeagus omitted; 372a, aedeagus; 372b, hair tufts of eighth abdominal segment.
373. *Pyla scintillans* (Grote), figured from type of its synonym, *P. feella* Dyar, aedeagus omitted; 373a, aedeagus.
374. *Pyla rainierella* Dyar, type, aedeagus omitted; 374a, aedeagus.
375. *Pyla sylphiella* Dyar, type, aedeagus omitted; 375a, aedeagus.

FIGURES 376–381.—MALES.

376. *Pyla aeneella* Hulst, left harpe deformed, right harpe detached, and aedeagus omitted; 376a, aedeagus.
377. *Pyla metalicella* Hulst: Ventral view of uncus, gnathos, tegumen, and vinculum; 377a, anellus and harpe; 377b, aedeagus.
378. *Pyla aeneoviridella* Ragonot, aedeagus omitted; 278a-b, two variations of the aedeagus.
379. *Pyla fasciella* Barnes and McDunnough, aedeagus omitted; 379a, aedeagus.
380. *Pyla nigricula* Heinrich, new species, aedeagus omitted; 380a, aedeagus.
381. *Pyla viridisuffusella* Barnes and McDunnough, one harpe detached and one harpe and aedeagus omitted; 381a, aedeagus.





FIGURES 382–385.—MALES

382. *Dioryctria abietella* (Denis and Schiffermüller); 382a, aedeagus; 382b, uncus, gnathos, and tegumen of a European example; 383c–e, variations in the costo-terminal part of harpe in American specimens; 383f, compound tufts on eighth abdominal segment.

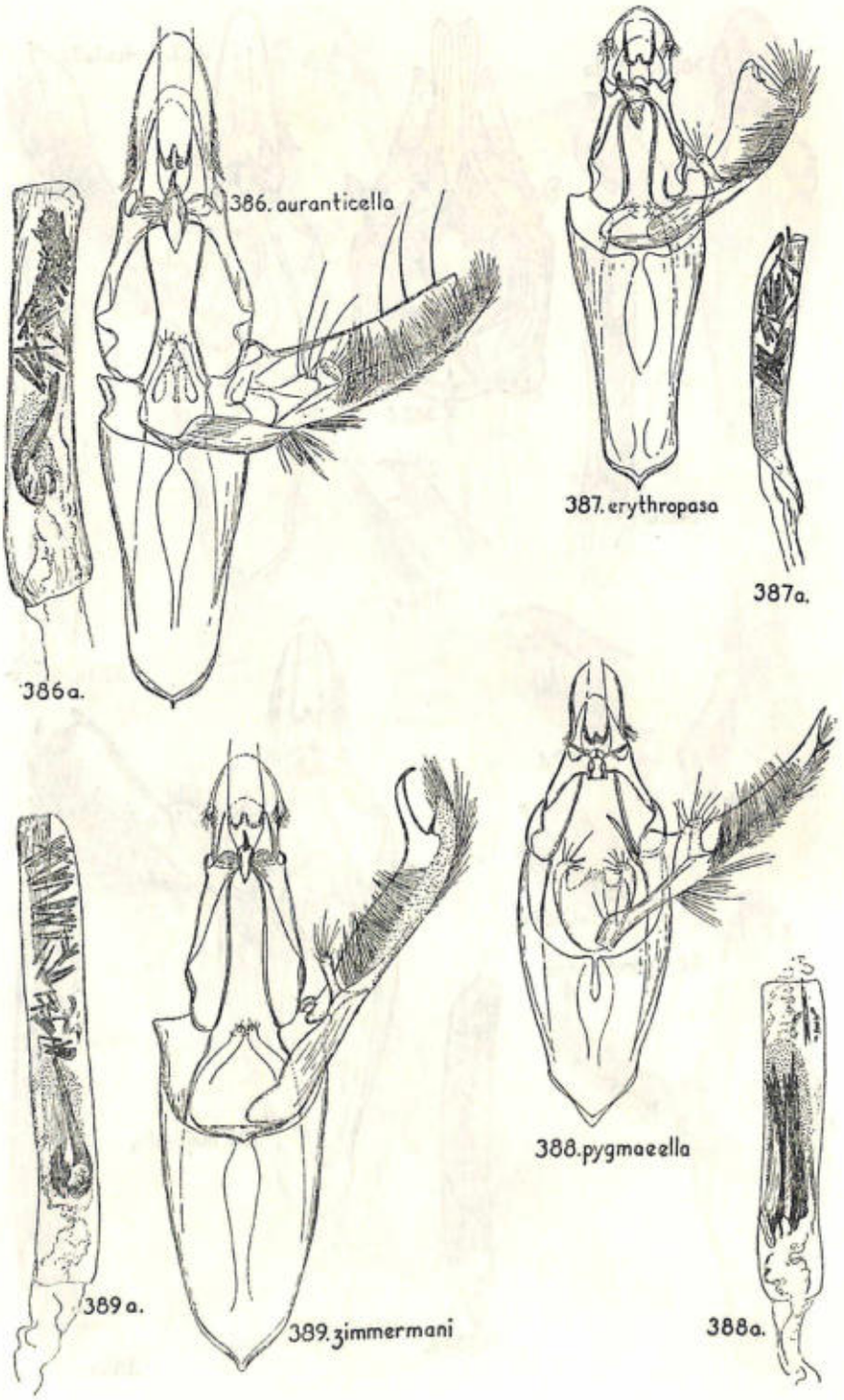
383. *Dioryctria reniculella* Grote; 383a, aedeagus.

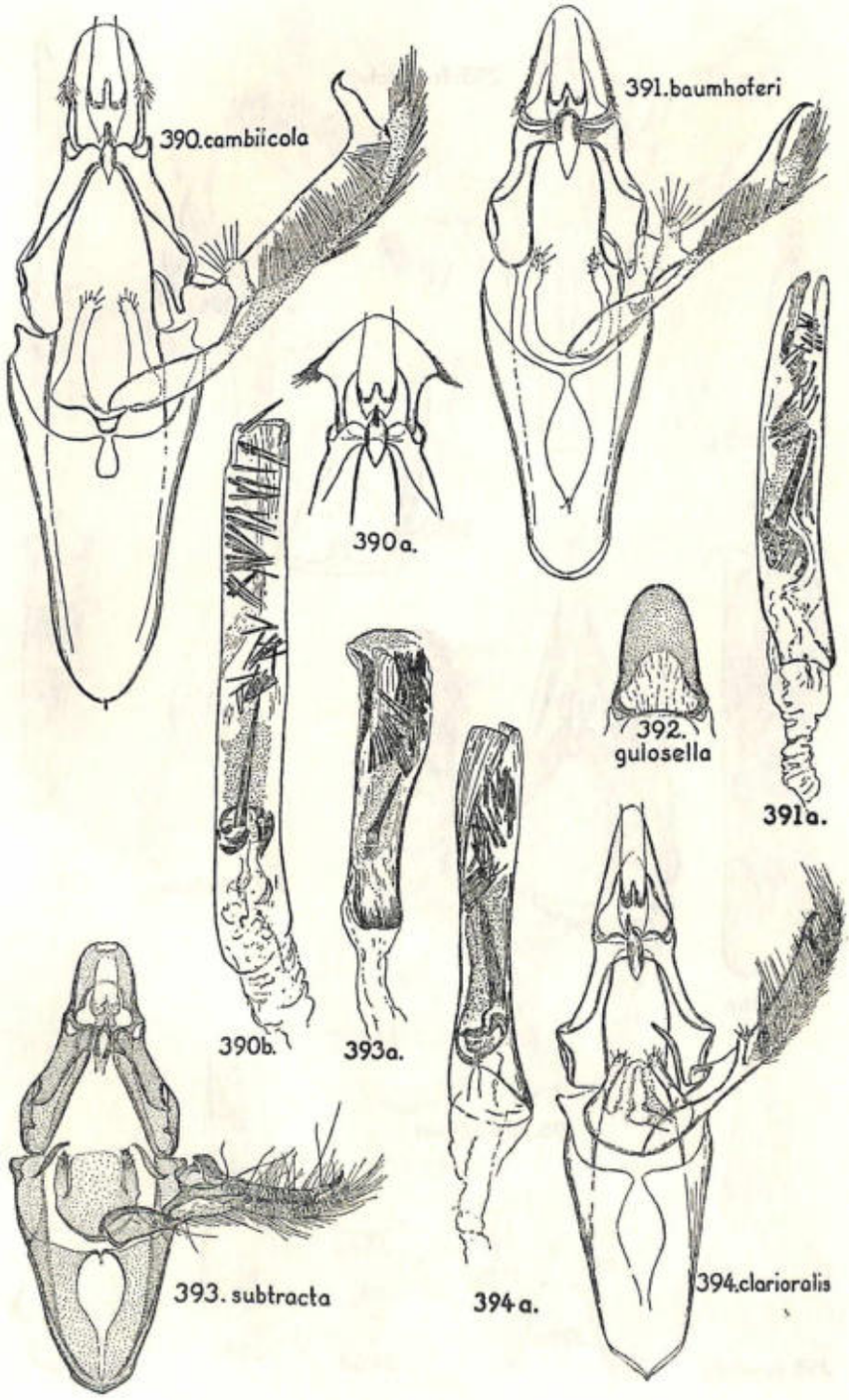
384. *Dioryctria ponderosae* Dyar, type; 384a, aedeagus.

385. *Dioryctria majorella* Dyar; figured from type of its synonym *D. muellerana* Dyar; 385a, aedeagus.

FIGURES 386–389.—MALES.

386. *Dioryctria auranticella* (Grote); 386a, aedeagus.
387. *Dioryctria erythropasa* (Dyar), type; 387a, aedeagus.
388. *Dioryctria pygmaeella* Ragonot; 388a, aedeagus.
389. *Dioryctria zimmermani* (Grote), typical eastern example; 389a, aedeagus.





FIGURES 390–394.—MALES.

390. *Dioryctria cambiicola* (Dyar), type; 390a, uncus, with lateral margins flattened; 390b, aedeagus.
391. *Dioryctria baumhoferi* Heinrich, new species, type; 391a, aedeagus.
392. *Dioryctria gulosella* (Hulst), uncus.
393. *Dioryctria subtracta* Heinrich, new species, type; 393a, aedeagus.
394. *Dioryctria clarioralis* (Walker), typical Florida specimen; 394a, aedeagus.

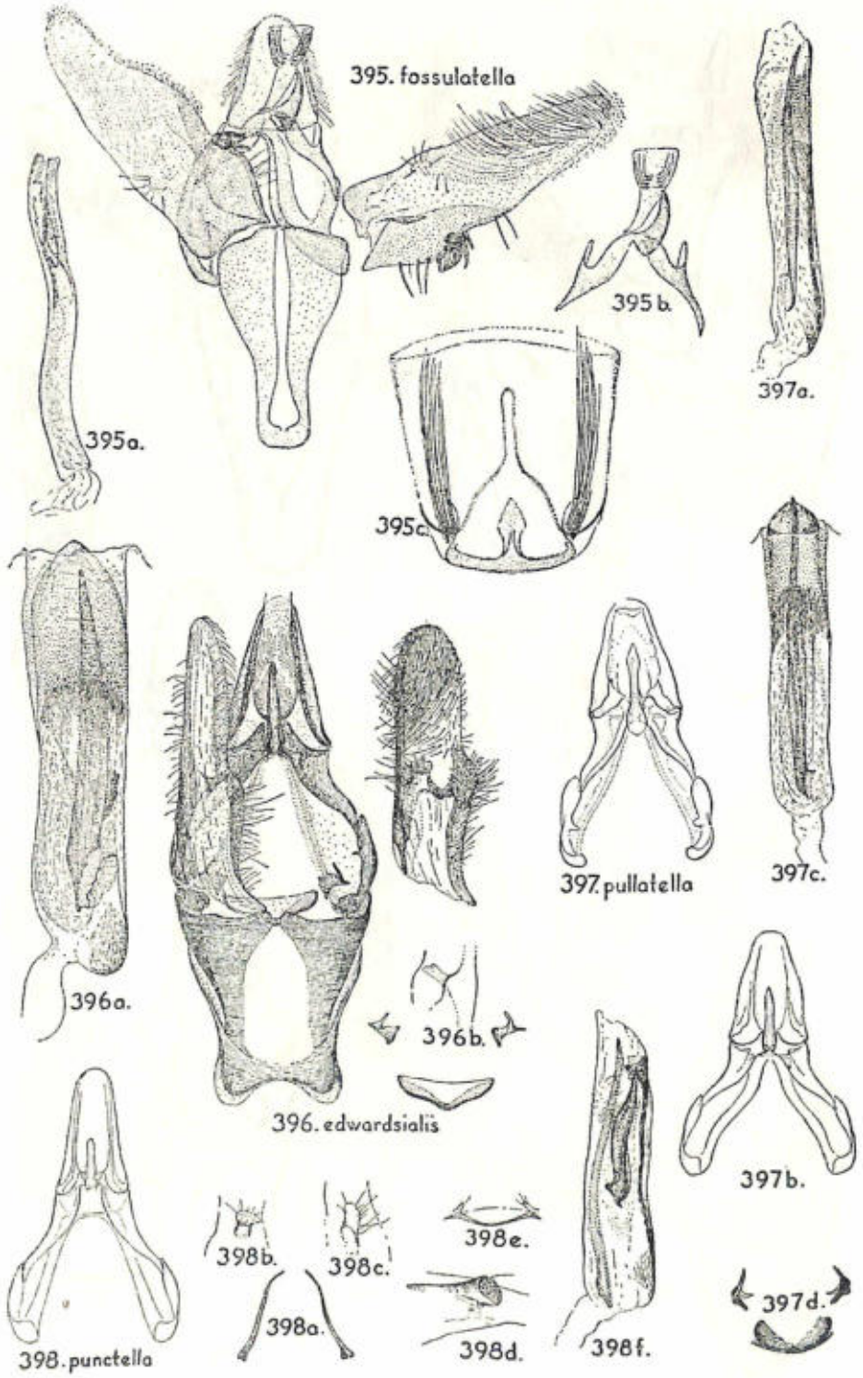
FIGURES 395–398.—MALES.

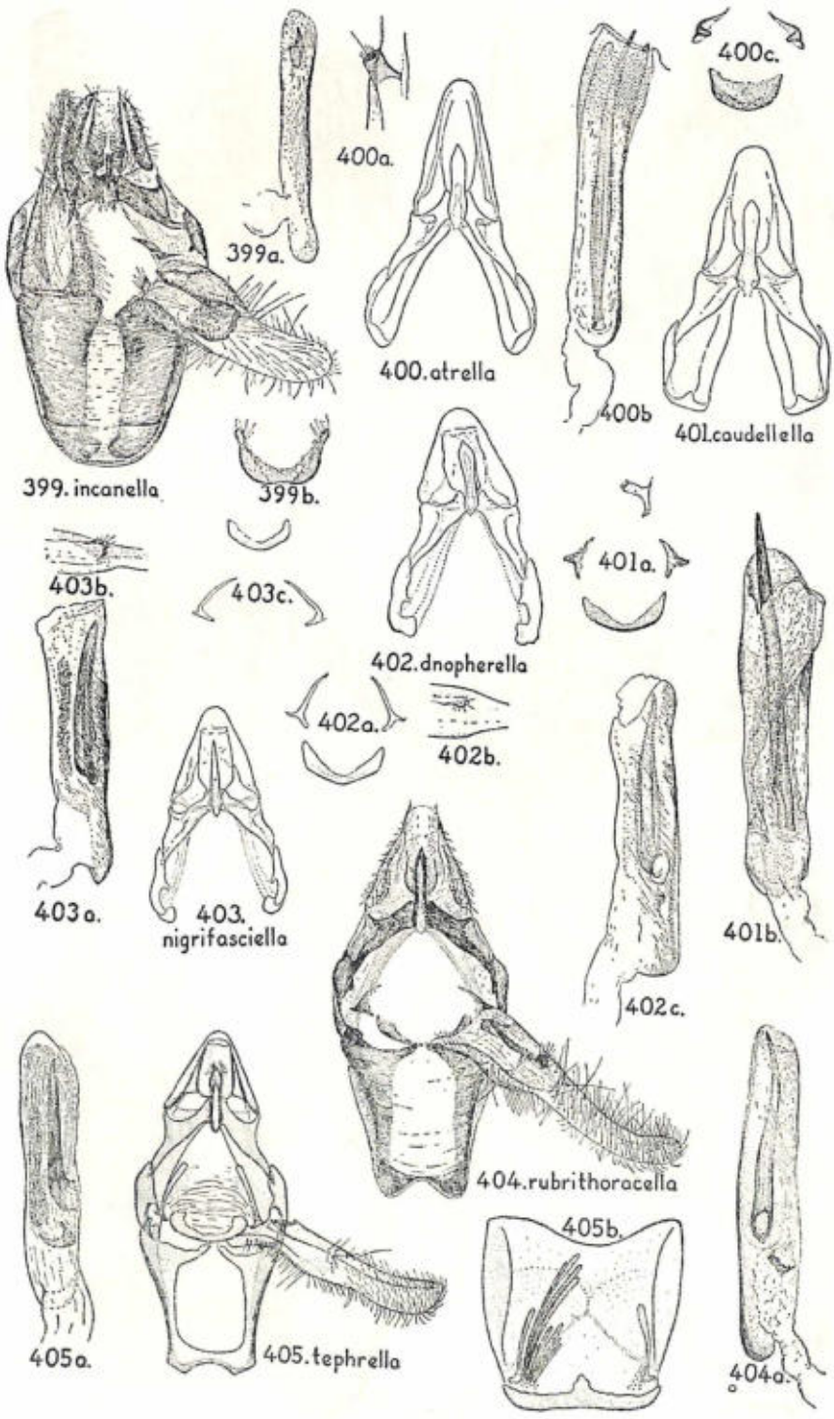
395. *Oryctometopia fossulatella* Ragonot, one harpe detached and aedeagus omitted; 395a, aedeagus; 395b, gnathos; 395c, eighth abdominal segment, showing hair tufts.

396. *Sarata edwardsialis* (Hulst), type, one harpe detached and aedeagus omitted; 396a, aedeagus; 396b, clasper of harpe (small example), elements of transtilla, and anellus.

397. *Sarata pullatella* (Ragonot), uncus, gnathos, and tegumen of type; 397a, aedeagus of type; 397b, uncus, gnathos, and tegumen of example from Utah; 397c, aedeagus of example from Utah; 397d, elements of transtilla and anellus.

398. *Sarata punctella* (Dyar), uncus, gnathos, and tegumen; 398a, elements of transtilla; 398b–d, variations in clasper of harpe; 398e, anellus; 398f, aedeagus.





FIGURES 399–405.—MALES.

399. *Sarata incanella* (Hulst), aedeagus omitted; 399a, aedeagus; 399b, anellus.

400. *Sarata atrella* (Hulst), uncus, gnathos, and tegumen; 400a, clasper of harpe; 400b, aedeagus; 400c, elements of transtilla and anellus.

401. *Sarata caudellella* (Dyar), type, uncus, gnathos, and tegumen; 401a, clasper of harpe, elements of transtilla and anellus; 401b, aedeagus.

402. *Sarata dnopherella* Ragonot, type, uncus, gnathos, and tegumen; 402a, elements of transtilla and anellus; 402b, clasper of harpe; 402c, aedeagus.

403. *Sarata nigrifasciella* Ragonot, type, uncus, gnathos, and tegumen; 403a, aedeagus; 403b, clasper of harpe; 403c, anellus and elements of transtilla.

404. *Sarata rubrithoracella* (Barnes and McDunnough), type; 404a, aedeagus.

405. *Sarata tephrella* Ragonot, type; 405a, aedeagus; 405b, eighth abdominal segment, showing ventrolateral tufts.

FIGURES 406–410.—MALES.

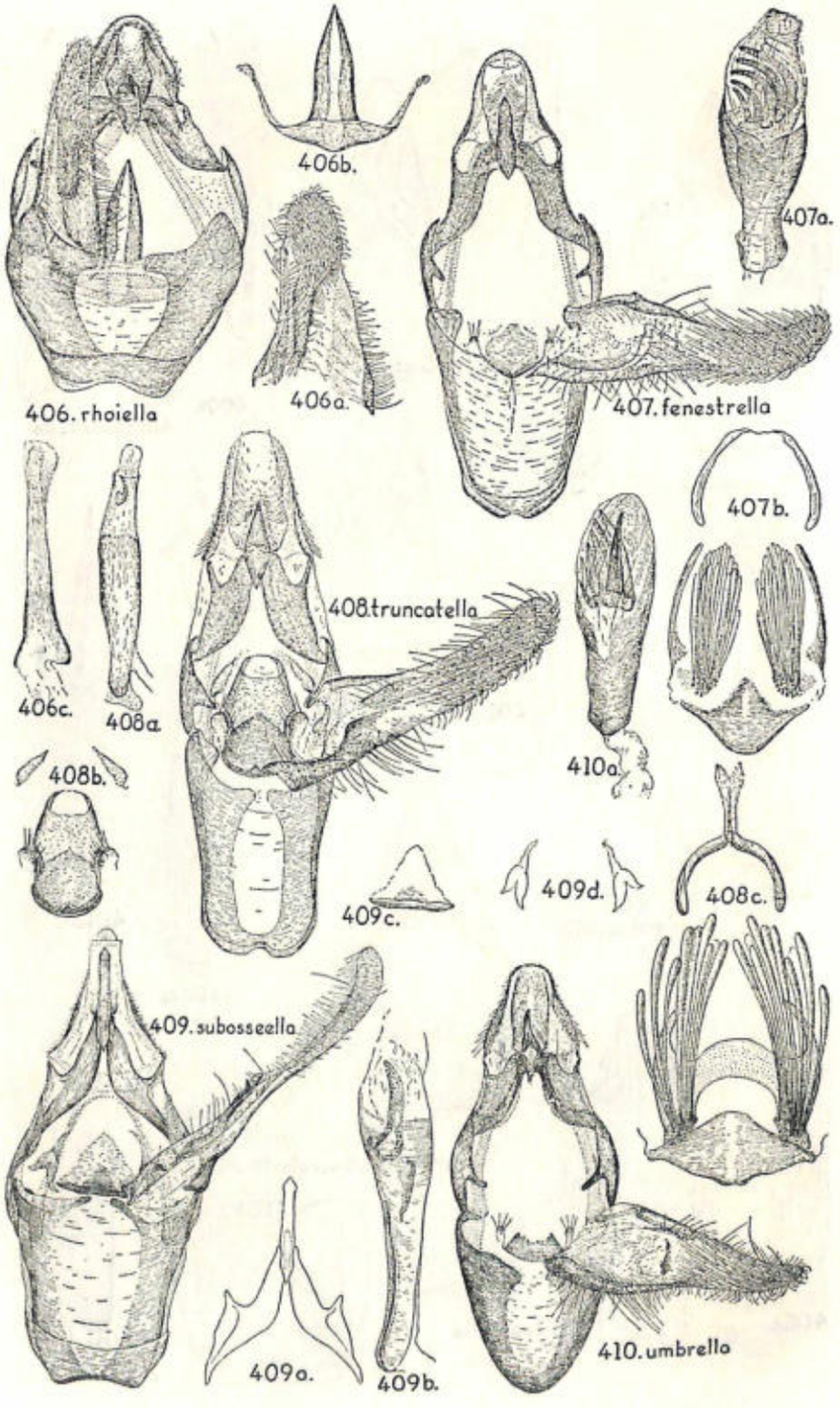
406. *Philodema rhoiella* (Dyar), paratype from type locality; 406a, ventral view of right harpe; 406b, anellus; 406c, aedeagus.

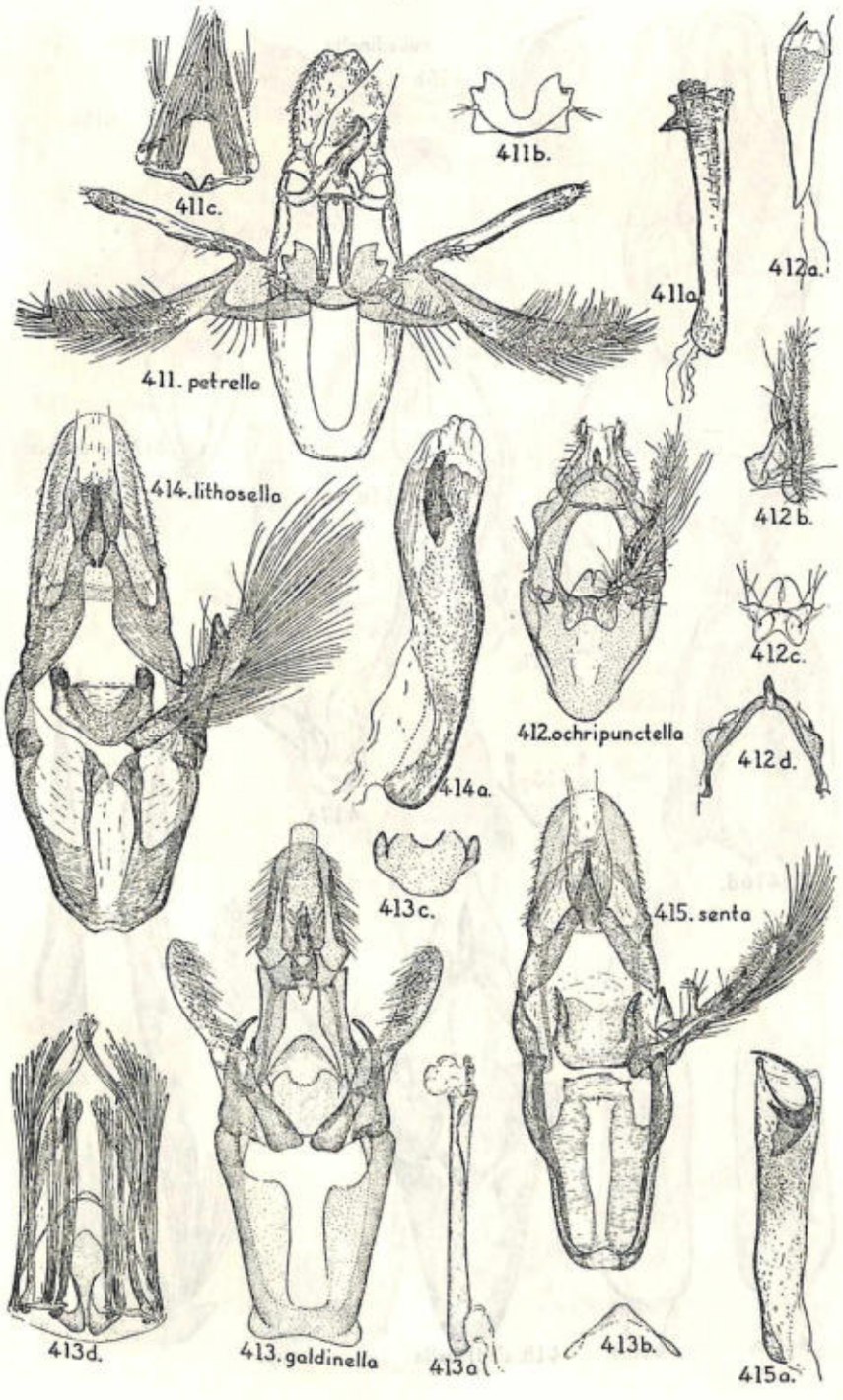
407. *Lipographis fenestrella* (Packard); 407a, aedeagus; 407b, tergite and sternite of eighth abdominal segment.

408. *Lipographis truncatella* (Wright), specimen from Chula Vista, Calif., 408a, aedeagus; 408b, elements of transtilla and anellus; 408c, tergite and sternite of eighth abdominal segment.

409. *Lipographis subosseella* Hulst, type; 409a, gnathos; 409b, aedeagus; 409c, anellus; 409d, elements of transtilla.

410. *Lipographis umbrella* (Dyar), type; 410a, aedeagus.





FIGURES 411–415.—MALES.

411. *Adelphia petrella* (Zeller), aedeagus omitted; 411a, aedeagus; 411b, anellus; 411c, tufts of eighth abdominal segment.

412. *Adelphia ochripunctella* (Dyar), type; 412a, aedeagus; 412b, ventral view of harpe; 412c, anellus; 412d, gnathos.

413. *Tota galdinella* (Schaus), aedeagus omitted; 413a, aedeagus; 413b, transtilla; 413c, anellus; 413d, tufts of eighth abdominal segment.

414. *Ufa lithosella* (Ragonot); 414a, aedeagus.

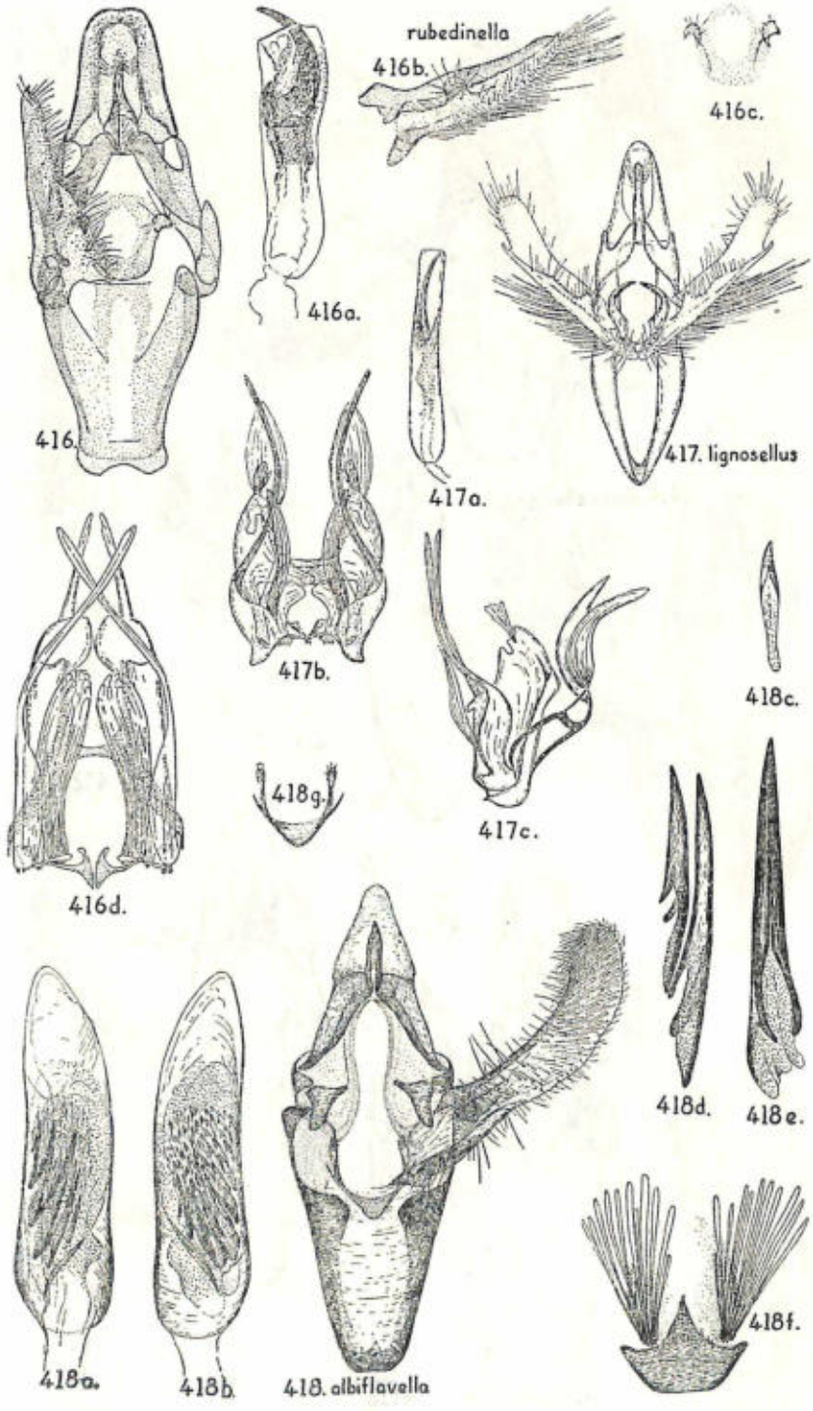
415. *Ufa senta* Heinrich, new species, type; 415a, aedeagus.

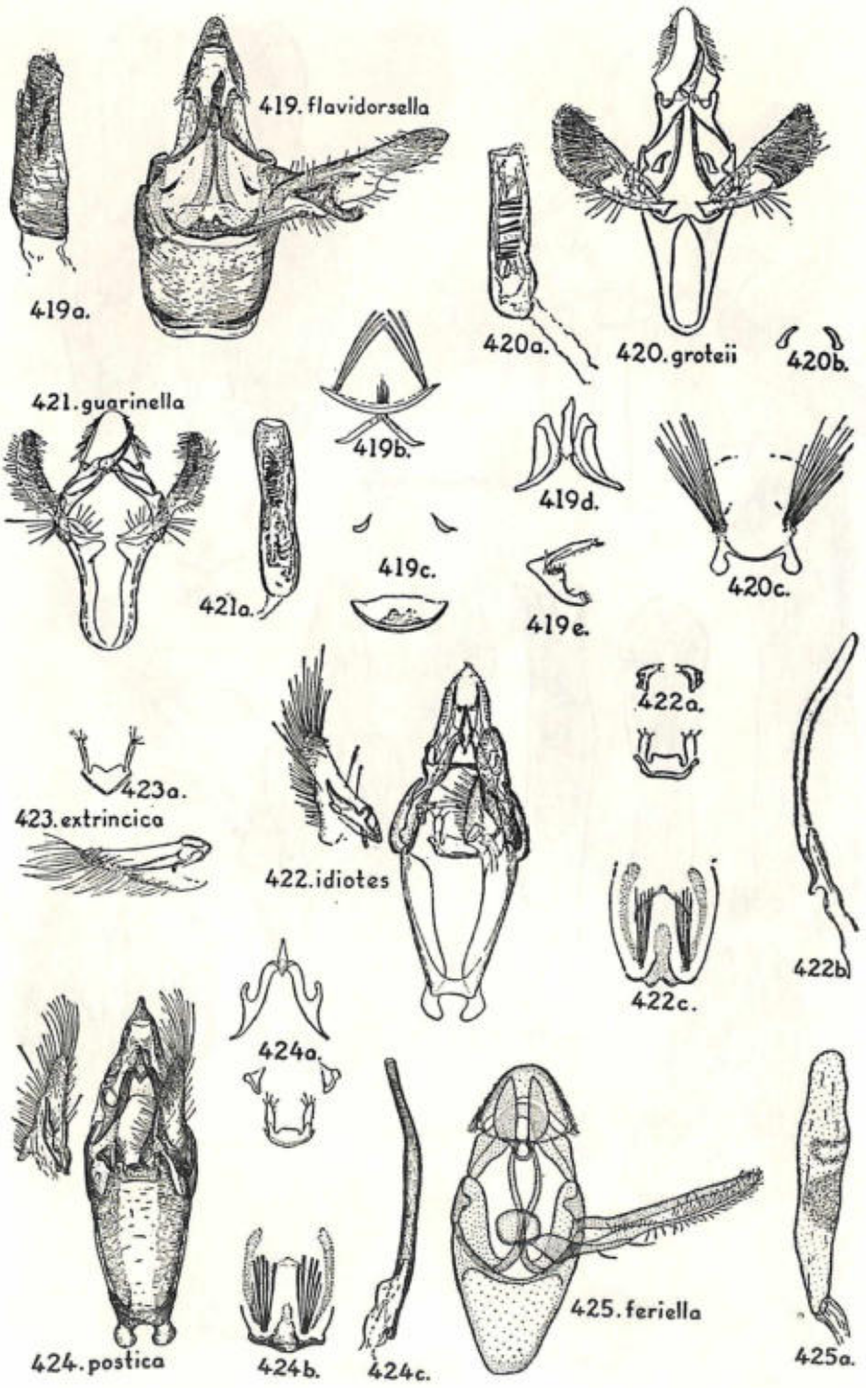
FIGURES 416–418.—MALES.

416. *Ufa rubedinella* (Zeller); 416a, aedeagus; 416b, harpe; 416c, anellus; 416d, compound tufts of eighth abdominal segment.

417. *Elasmopalpus lignosellus* (Zeller), aedeagus omitted; 417a, aedeagus; 417b, tufts of eighth abdominal segment, ventral view; 417c, lateral view of tufts of eighth abdominal segment.

418. *Acroncosa albiflavella* Barnes and McDunnough; 418a, aedeagus, dorsal view; 418b, aedeagus, ventral view; 418c–e, cornuti of penis, much enlarged; 418f, ventrolateral tufts of eighth abdominal segment; 418g, anellus.





FIGURES 419–425.—MALES.

419. *Passadena flavidorsella* (Ragonot); 419a, aedeagus; 419b, sclerotizations and tufts of eighth abdominal segment; 419c, elements of transtilla and anellus; 419d, gnathos; 419e, clasper of harpe.

420. *Ulophora groteii* Ragonot, aedeagus omitted; 420a, aedeagus; 420b, elements of transtilla; 420c, hair tufts of eighth abdominal segment.

421. *Ulophora guarinella* (Zeller), specimen from Cuba, aedeagus omitted; 421a, aedeagus.

422. *Chorrera idiotes* Dyar, one harpe detached and aedeagus omitted; 422a, elements of transtilla and anellus; 422b, aedeagus; 422c, hair tufts of eighth abdominal segment.

423. *Chorrera extrincica* (Dyar), harpe; 423a, anellus.

424. *Chorrera postica* (Zeller), type, one harpe detached and aedeagus omitted; 424a, gnathos, elements of transtilla and anellus; 424b, tufts of eighth abdominal segment; 424c, aedeagus.

425. *Tacoma feriella* Hulst; 425a, aedeagus.

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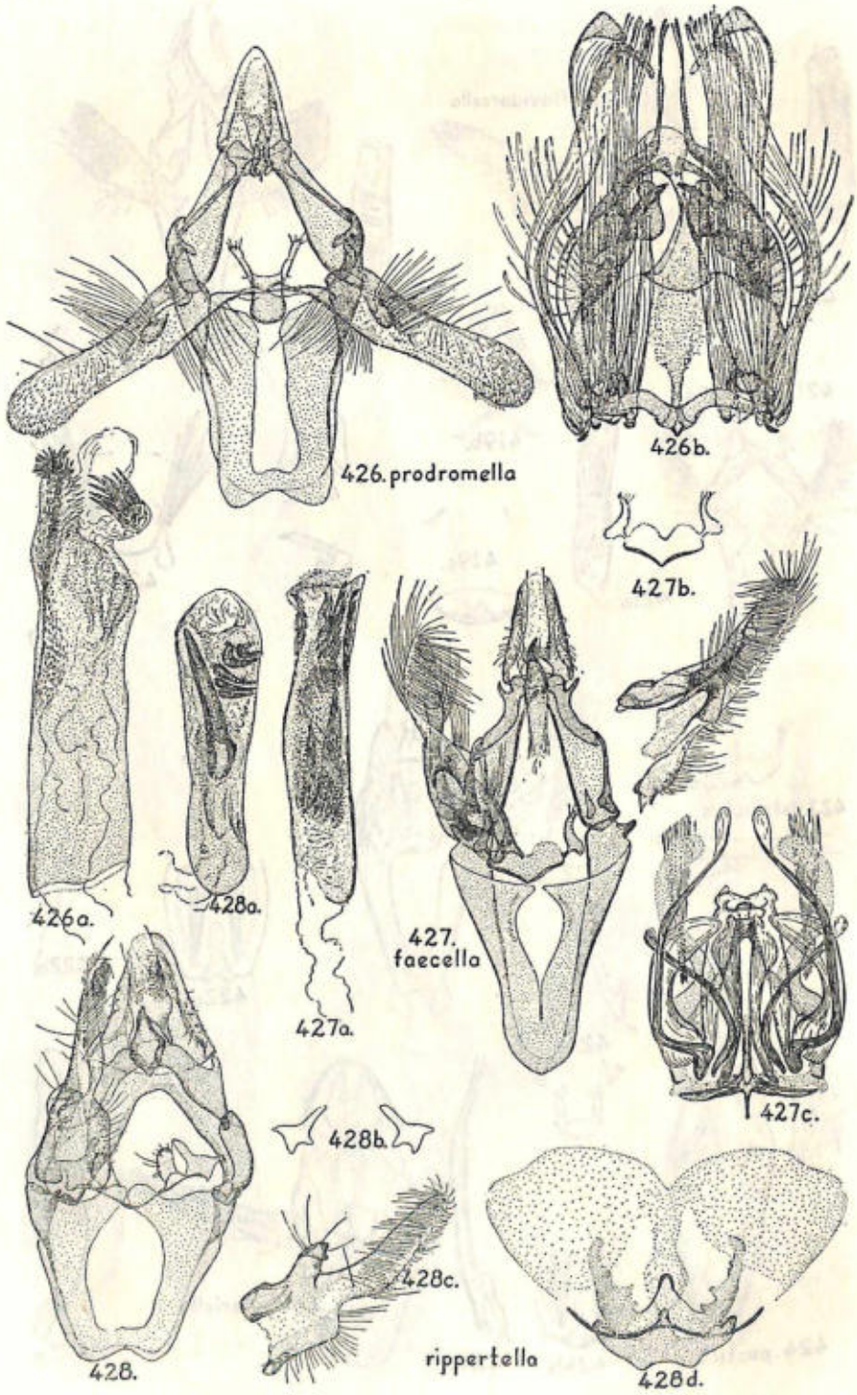
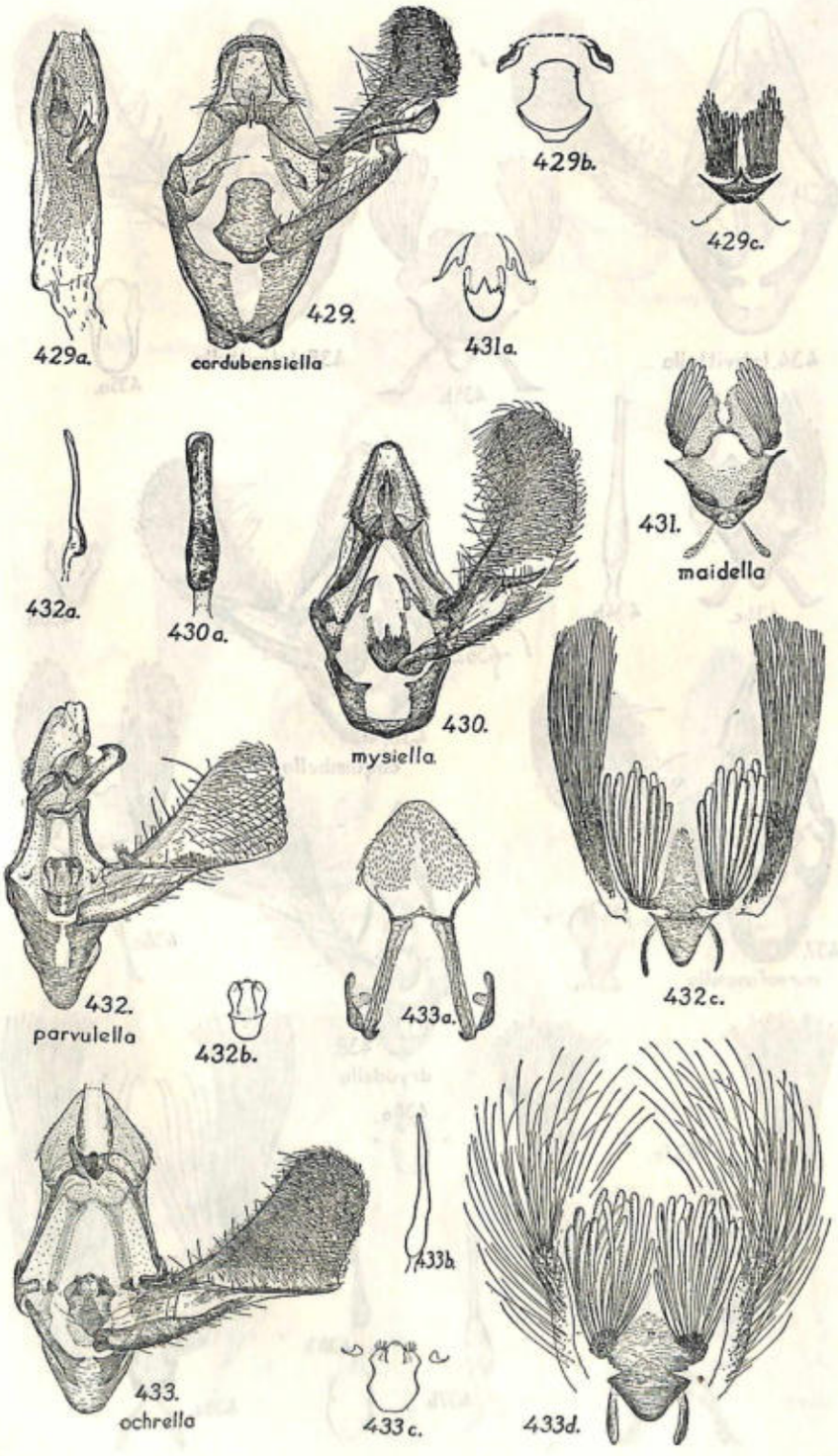
FIGURES 426–428.—MALES.

426. *Epischnia prodromella* (Hübner), aedeagus omitted; 426a, aedeagus; 426b, compound tufts of eighth abdominal segment.

427. *Laodamia faecella* (Zeller), one harpe detached and aedeagus omitted; 427a, aedeagus; 427b, anellus; 427c, compound tufts of eighth abdominal segment.

428. *Megasis rippertella* (Zeller); 428a, aedeagus; 428b, elements of transtilla; 428c, harpe; 428d, eighth abdominal segment.





FIGURES 429–433.—MALES.

429. *Adelperga cordubensiella* (Ragonot), specimen from Tucumán (in USNM); 429a, aedeagus; 429b, elements of transtilla and anellus; 429c, tufts of eighth abdominal segment.

430. *Eumysia mysiella* (Dyar), type; 430a, aedeagus.

431. *Eumysia maidella* (Dyar), sclerotization and tufts of eighth abdominal segment, 431a, elements of transtilla and anellus.

432. *Divitiaca parvulella* Barnes and McDunnough; 432a, aedeagus; 432b, anellus; 432c, eighth abdominal segment, showing sclerotizations, haired lobes, and scale tufts.

433. *Divitiaca ochrella* Barnes and McDunnough, type; 433a, dorsal view of uncus and tegumen; 433b, aedeagus; 433c, anellus and elements of transtilla; 433d, eighth abdominal segments, showing sclerotization, haired lobes, and scale tufts.

FIGURES 434–438.—MALES.

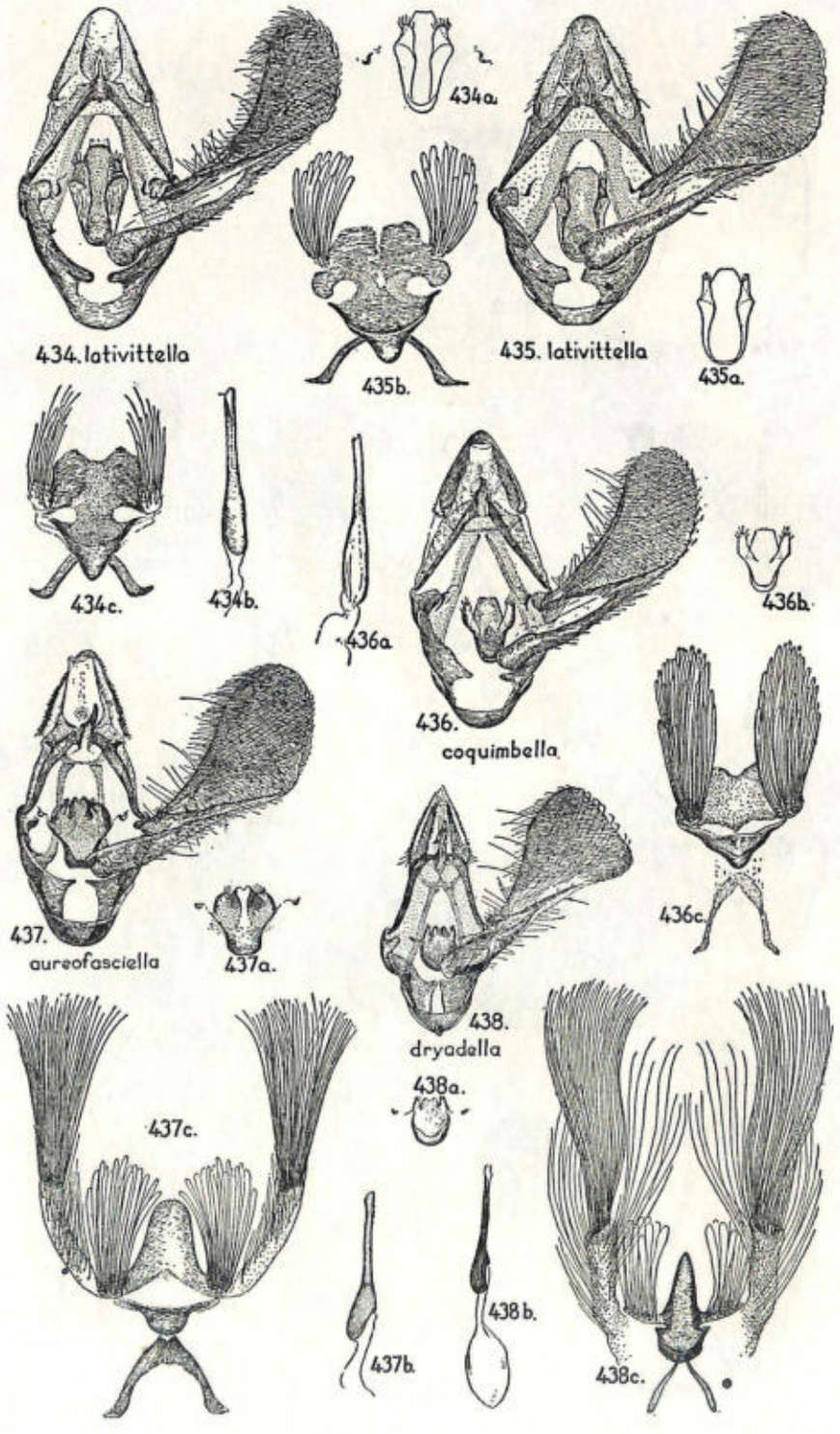
434. *Valdivia lativittella* (Ragonot), figured from the type of its synonym *Zophodia aureomaculella* Dyar; 434a, anellus; 434b, aedeagus; 434c, sclerotization and tufts of eighth abdominal segment.

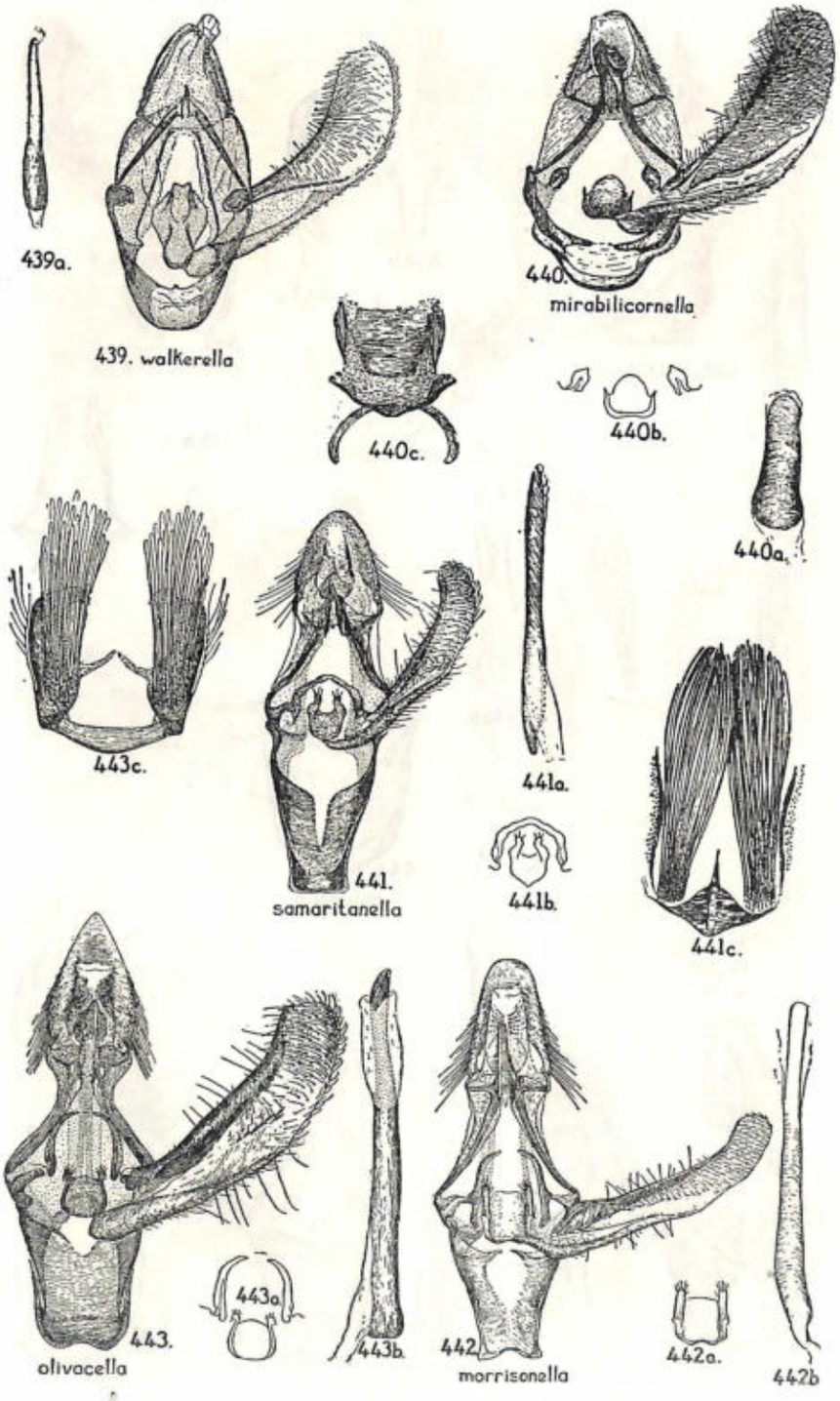
435. *Valdivia lativittella* (Ragonot), Brownsville, Tex., example; 435a, anellus; 435b, sclerotization and tufts of eighth abdominal segment.

436. *Valdivia coquimbella* Ragonot, paratype from type locality (in BM); 436a, aedeagus; 436b, anellus; 436c, sclerotization and tufts of eighth abdominal segment.

437. *Macrorrhinia aureofasciella* Ragonot; 437a, anellus; 437b, aedeagus; 437c, sclerotization, lobes and tufts of eighth abdominal segment.

438. *Ocala dryadella* Hulst, type; 438a, anellus and elements of transtilla; 438b, aedeagus; 438c, sclerotization, lobes and tufts of eighth abdominal segment.





FIGURES 439–443.—MALES.

439. *Valdivia walkerella* (Ragonot), type; 439a, aedeagus.

440. *Protasia mirabilicornella* (Dyar), type; 440a, aedeagus; 440b, anellus and elements of transtilla; 440c, sclerotizations of eighth abdominal segment.

441. *Heterographis samaritanella* (Zeller); 441a, aedeagus; 441b, transtilla and anellus; 441c, tufts of eighth abdominal segment.

442. *Heterographis morrisonella* Ragonot; 442a, anellus; 442b, aedeagus.

443. *Staudingeria olivacella* Dyar, a synonym of *S. albipenella* (Hulst), type; 443a, transtilla and anellus; 443b, aedeagus.

FIGURES 444–448.—MALES.

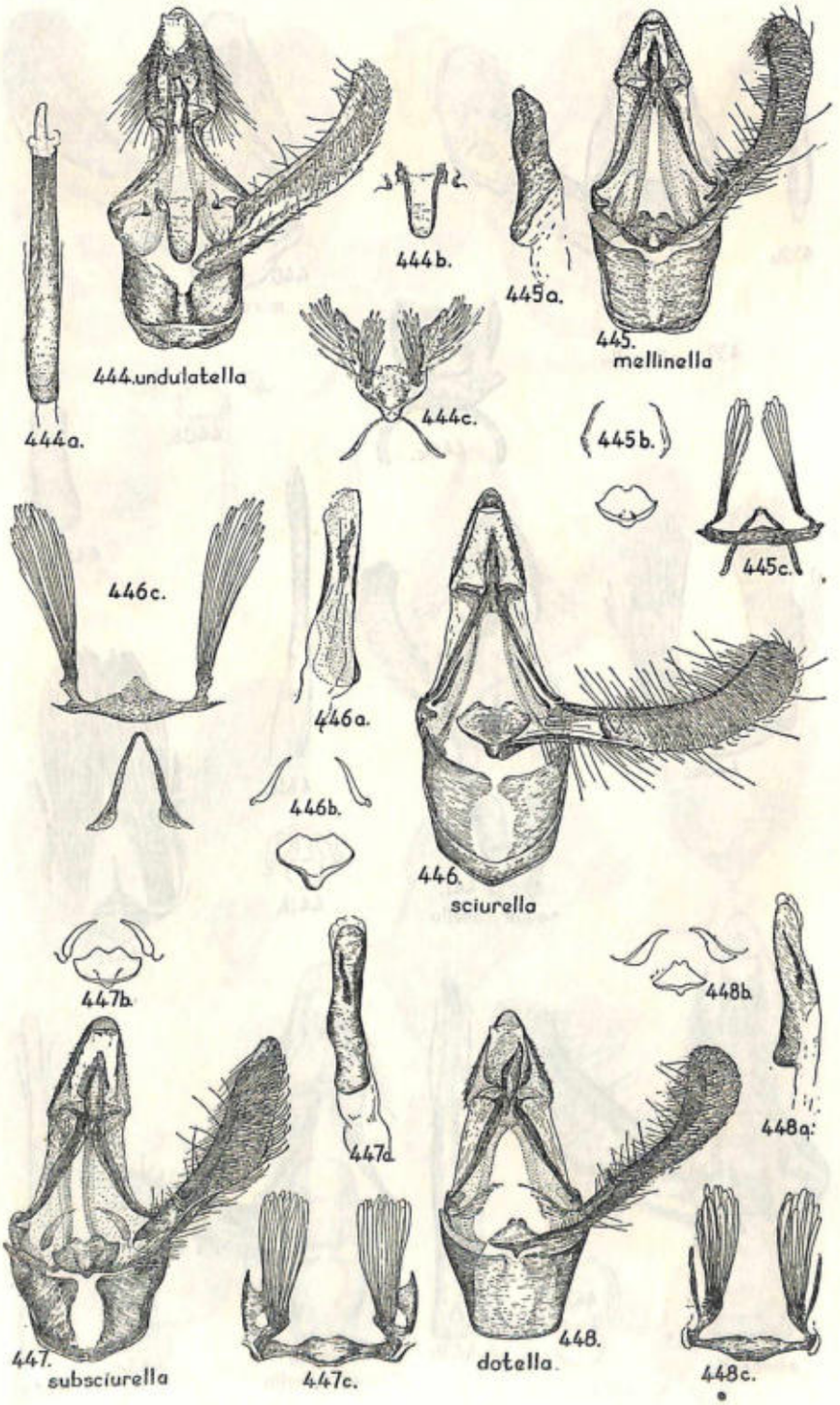
444. *Hulstia undulatella* (Clemens), figured from the type of its synonym *Honora fumosella* Hulst; 444a, aedeagus; 444b, anellus and elements of transtilla; 444c, sclerotization and tufts of eighth abdominal segment.

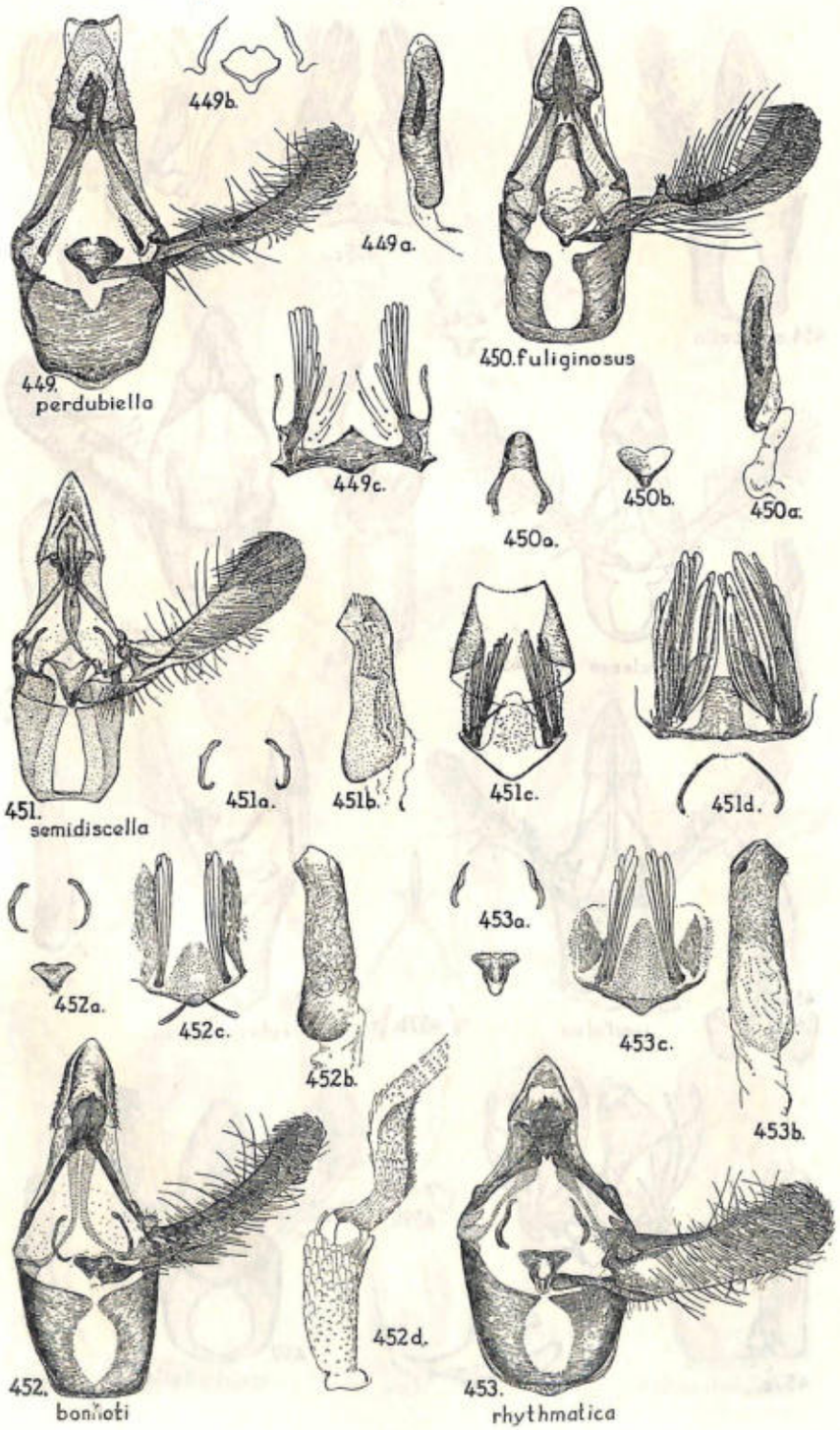
445. *Honora mellinella* Grote, specimen from Texas; 445a, aedeagus; 445b, anellus and elements of transtilla; 445c, sclerotization and tufts of eighth abdominal segment.

446. *Honora sciurella* Ragonot, type; 446a, aedeagus; 446b, anellus and elements of transtilla; 446c, sclerotization and tufts of eighth abdominal segment.

447. *Honora subsciurella* Ragonot; 447a, aedeagus; 447b, anellus and elements of transtilla; 447c, sclerotization and tufts of eighth abdominal segment.

448. *Honora dotella* Dyar, type; 448a, aedeagus; 448b, anellus and elements of transtilla; 448c, sclerotization and tufts of eighth abdominal segment.





FIGURES 449–453.—MALES.

449. *Honora perdubiella* (Dyar) type; 449a, aedeagus; 449b, anellus and elements of transtilla; 449c, sclerotization and tufts of eighth abdominal segment.

450. *Honorinus fuliginosus* Heinrich, new species, type; 450a, aedeagus; 450b, anellus; 450c, transtilla; 450d, sclerotization and tufts of eighth abdominal segment.

451. *Cabotia semidiscella* Ragonot; 451a, elements of transtilla; 451b, aedeagus; 451c, eighth abdominal segment, showing tufts.

452. *Cabotia bonhoti* (Hampson), specimen from Trelawney Parish, Jamaica; 452a, anellus and elements of transtilla; 452b, aedeagus; 452c, tufts of eighth abdominal segment; 452d, basal segments of male antenna.

453. *Cabotia rhythmatica* Dyar, type; 453a, anellus and elements of transtilla; 453b, aedeagus; 453c, tufts of eighth abdominal segment.

FIGURES 454–459.—MALES.

454. *Oncolabis anticella* Zeller; 454a, aedeagus; 454b, tufts of eighth abdominal segment; 454c, elements of transtilla and anellus; 454d, basal segments of antenna.

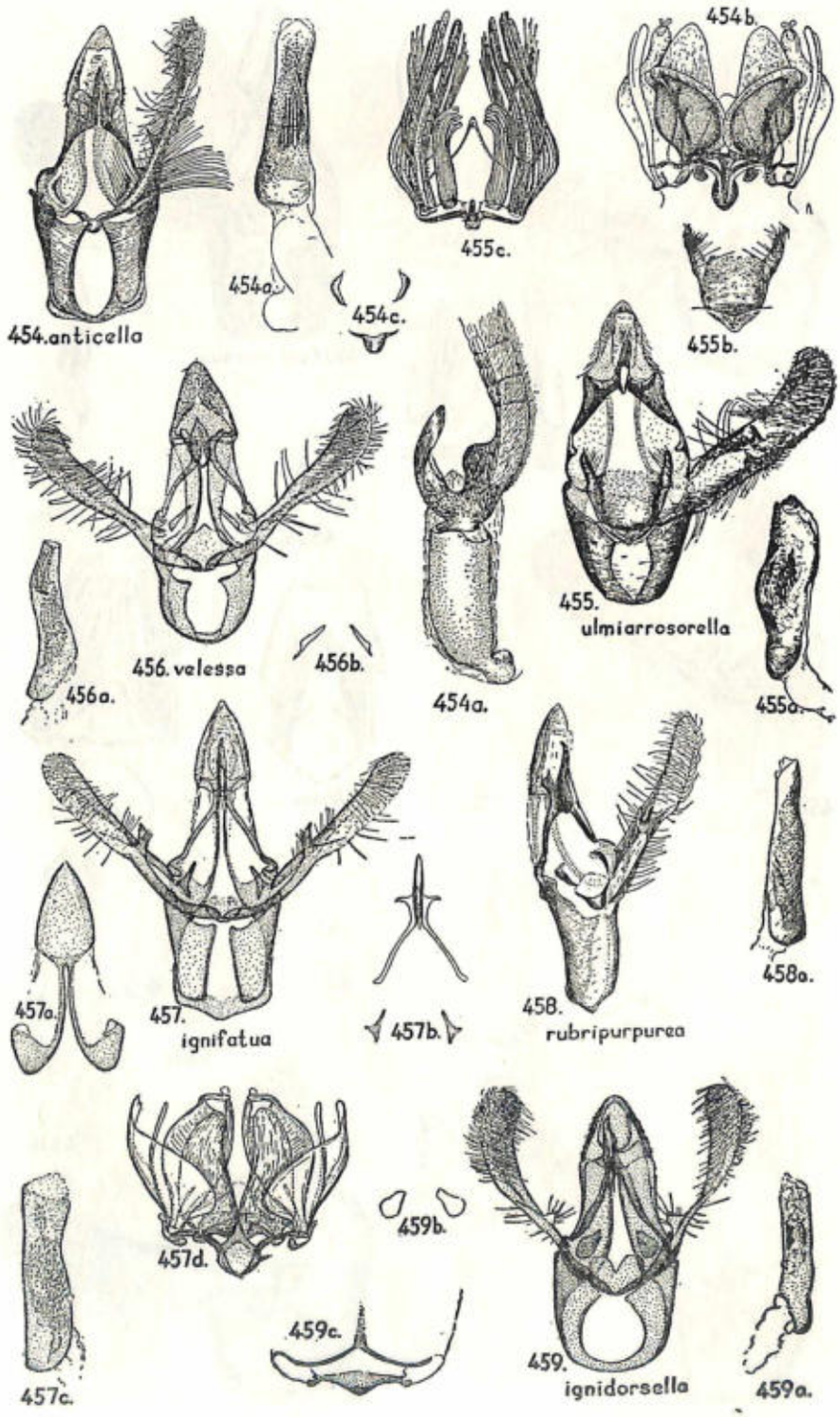
455. *Canarsia ulmiarrosorella* (Clemens); 455a, aedeagus; 455b, anellus; 455c, tufts of eighth abdominal segment.

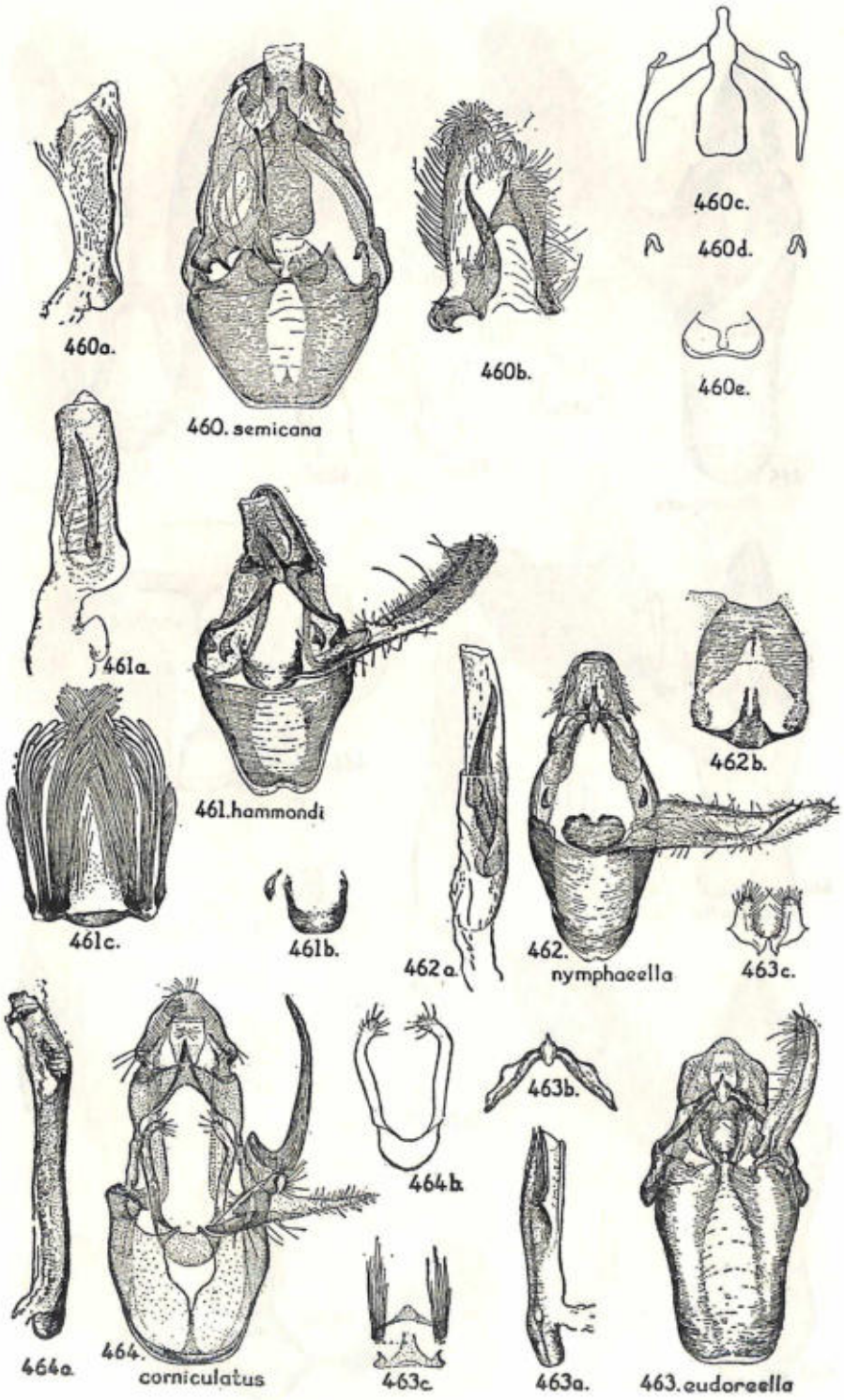
456. *Harnocha velessa* Dyar, type, aedeagus omitted; 456a, aedeagus; 456b, elements of transtilla.

457. *Eurythmasis ignifatua* Dyar, type, aedeagus omitted; 457a, dorsal view of uncus and tegumen; 467b, gnathos and elements of transtilla; 457c, aedeagus; 457d, tufts of eighth abdominal segment.

458. *Stylobasis rubripurpurea* Hampson, type, three-quarter view; 458a, aedeagus.

459. *Eurythmidia ignidorsella* (Ragonot), aedeagus omitted; 459a, aedeagus; 459b, elements of transtilla; 459c, tergite and sternite of eighth abdominal segment.





FIGURES 460–464.—MALES.

460. *Patriciola semicana* Heinrich, new species; 460a, aedeagus; 460b, ventral view of right harpe; 460c, gnathos; 460d, elements of transtilla; 460e, anellus.

461. *Psorosina hammondi* (Riley); 461a, aedeagus; 461b, anellus and elements of transtilla; 461c, tufts of eighth abdominal segment of abdomen.

462. *Palatka nymphaecella* (Hulst); 462a, aedeagus; 462b, sclerotization of eighth abdominal segment.

463. *Diviana eudoreella* Ragonot, figured from type of its synonym, *Dannemora edentella* Hulst; 463a, aedeagus; 463b, gnathos; 463c, anellus.

464. *Paconius corniculatus* Heinrich, new species, type; 464a, aedeagus; 464b, anellus; 464c, tufts of eighth abdominal segment.

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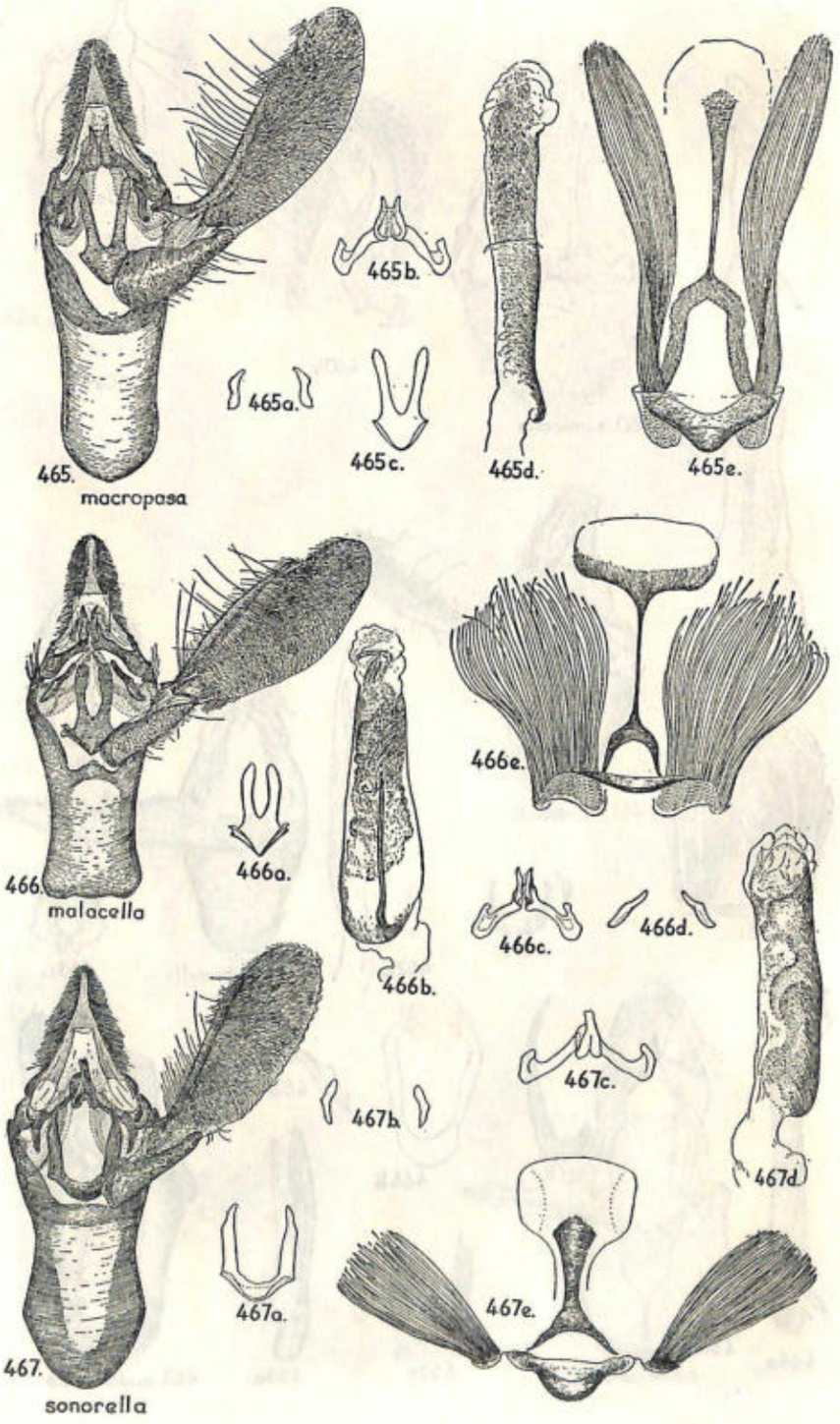
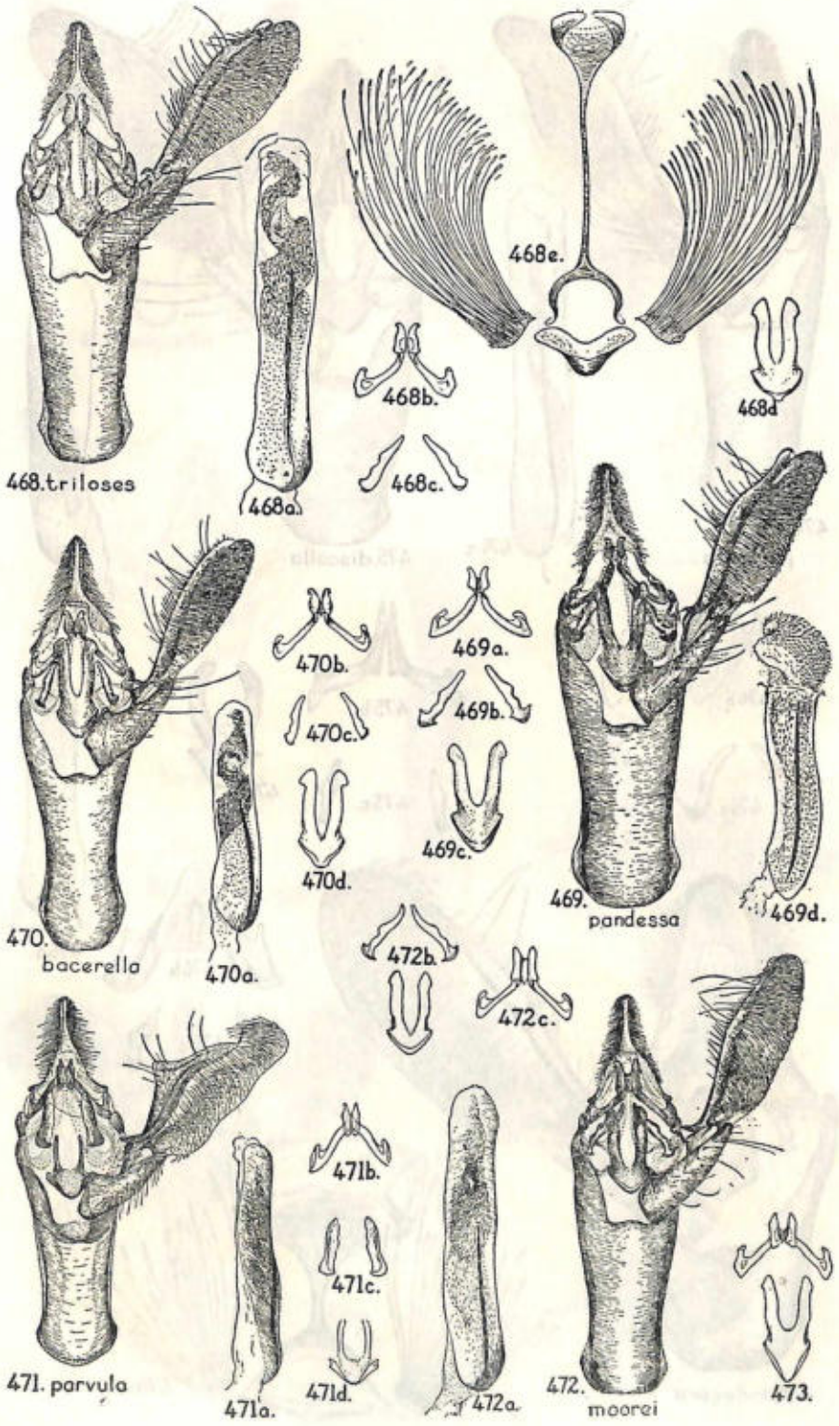
FIGURES 465–467.—MALES.

465. *Aptunga macropasa* (Dyar); 465a, elements of transtilla; 465b, gnathos; 465c, anellus; 465d, aedeagus; 465e, eighth abdominal segment, showing tufts and sclerotizations.

466. *Cassiana malacella* (Dyar), type; 466a, anellus; 466b, aedeagus; 466c, gnathos; 466d, elements of transtilla; 466e, eighth abdominal segment, showing tufts and sclerotizations.

467. *Anderida sonorella* (Ragonot), figured from type of its synonym *Eyzophera placidella* Dyar; 467a, anellus; 467b, elements of transtilla; 467c, gnathos; 467d, aedeagus; 467e, eighth abdominal segment, showing tufts and sclerotizations.





FIGURES 468–473.—MALES.

468. *Mescinia triloses* Dyar, type; 468a, aedeagus; 468b, gnathos; 468c, elements of transtilla; 468d, anellus; 468e, eighth abdominal segment, showing tufts and sclerotizations.

469. *Mescinia pandessa* Dyar, type; 469a, gnathos; 469b, elements of transtilla; 469c, anellus; 469d, aedeagus.

470. *Mescinia bacerella* Dyar, type; 470a, aedeagus; 470b, gnathos; 470c, elements of transtilla; 470d, anellus.

471. *Mescinia parvula* (Zeller), paratype (in BM); 471a, aedeagus; 471b, gnathos; 471c, elements of transtilla; 471d, anellus.

472. *Mescinia moorei* Heinrich, new species; 472a, aedeagus; 472b, elements of transtilla and anellus; 472c, gnathos.

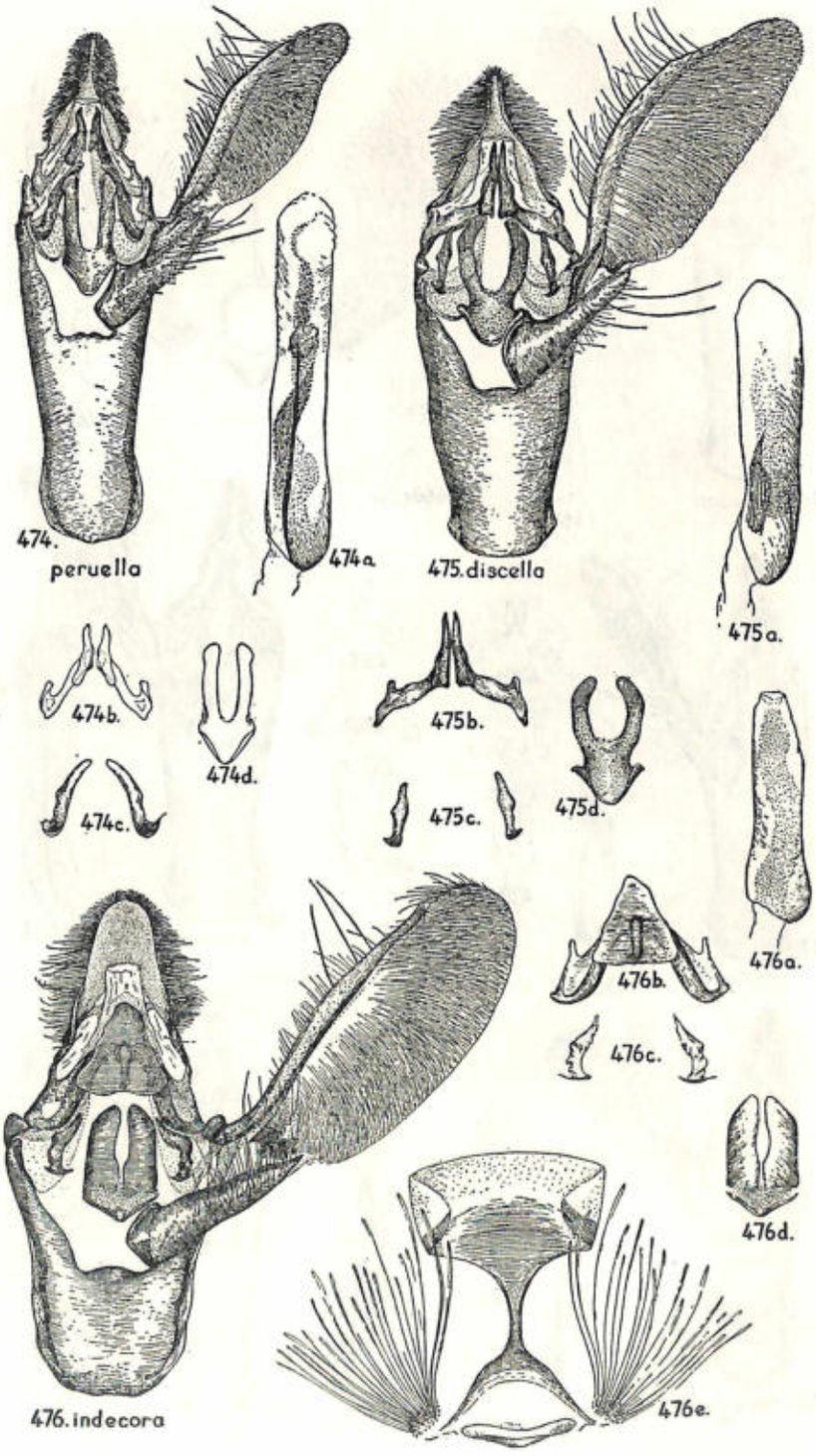
473. *Mescinia estrella* Barnes and McDunnough, anellus and gnathos.

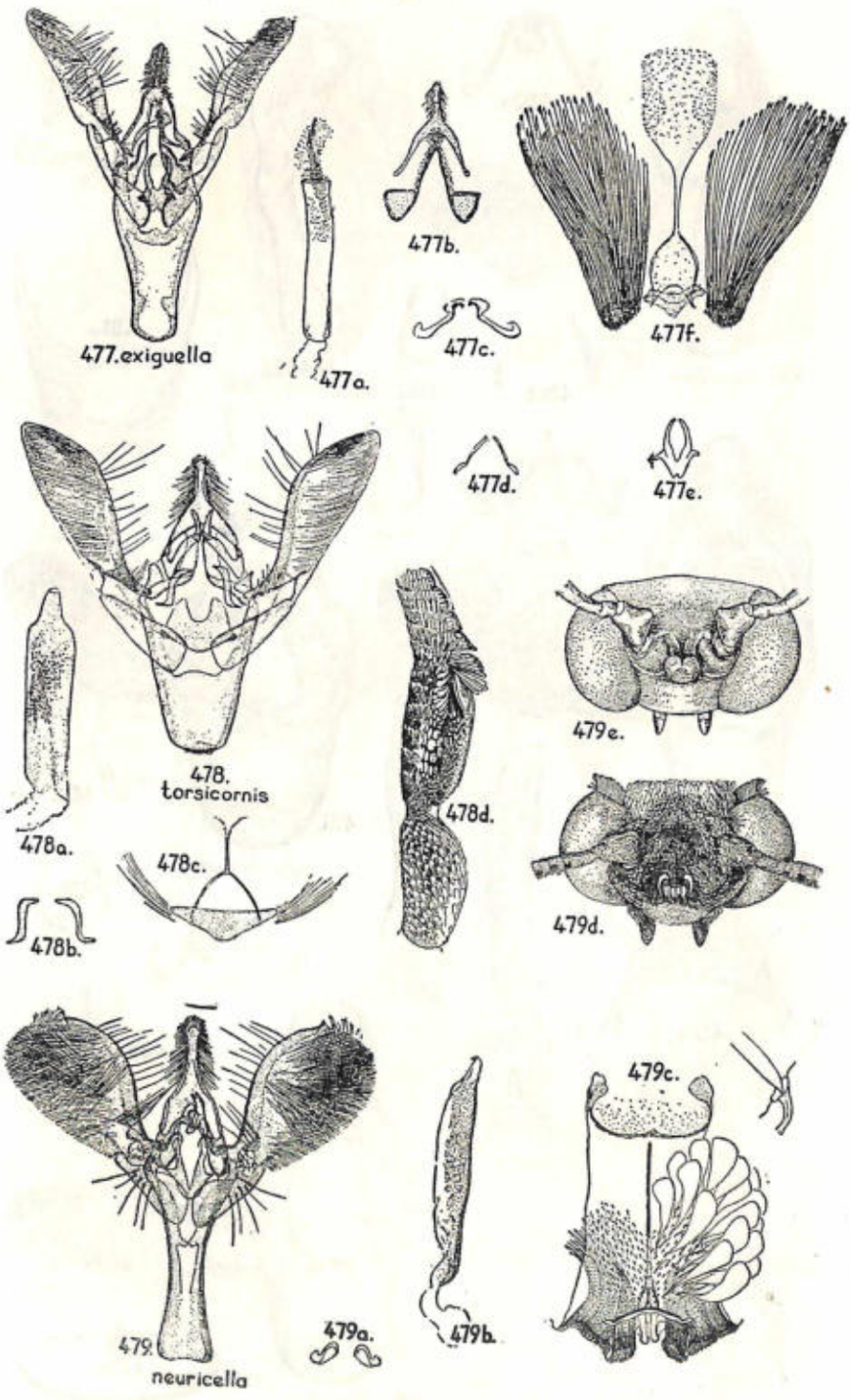
FIGURES 474–476.—MALES.

474. *Mescinia peruella* Schaus; 474a, aedeagus; 474b, gnathos; 474c, elements of transtilla; 474d, anellus.

475. *Mescinia discella* Hampson; 475a, aedeagus; 475b, gnathos; 475c, elements of transtilla; 475d, anellus.

476. *Mescinia indecora* Dyar; 476a, aedeagus; 476b, gnathos; 476c, elements of transtilla; 476d, anellus; 476e, eighth abdominal segment, showing tufts and sclerotizations.





FIGURES 477–479.—MALES.

477. *Nonia exiguella* (Ragonot), figured from type and from type of its synonym *Hypermecinia lambella* Dyar, aedeagus omitted; 477a, aedeagus; 477b, dorsal view of uncus and tegumen; 477c, gnathos; 477d, elements of transtilla; 477e, anellus; 477f, eighth abdominal segment, showing tufts and sclerotizations.

478. *Comotia torsicornis* Dyar, type, aedeagus omitted; 478a, aedeagus; 478b, elements of transtilla; 478c, tufts and sclerotizations of eighth abdominal segment; 478d, basal segments of antenna.

479. *Bema neuricella* (Zeller), figured from type of its synonym *B. myja* Dyar, aedeagus omitted; 479a, elements of transtilla; 479b, aedeagus; 479c, eighth abdominal segment, showing tuftings and sclerotizations; 479d, front view of head; 479e, front view of head, denuded.

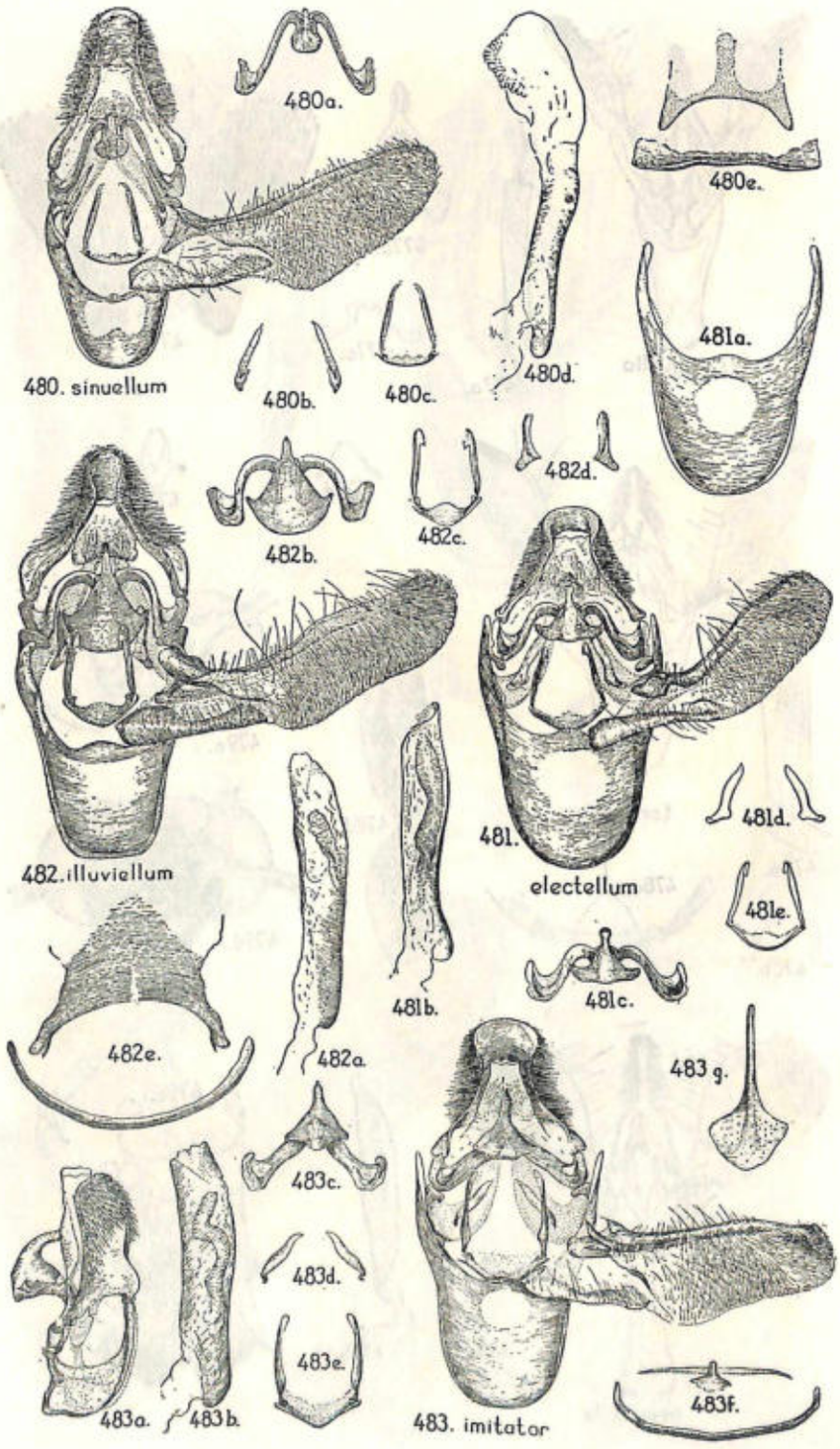
FIGURES 480–483.—MALES.

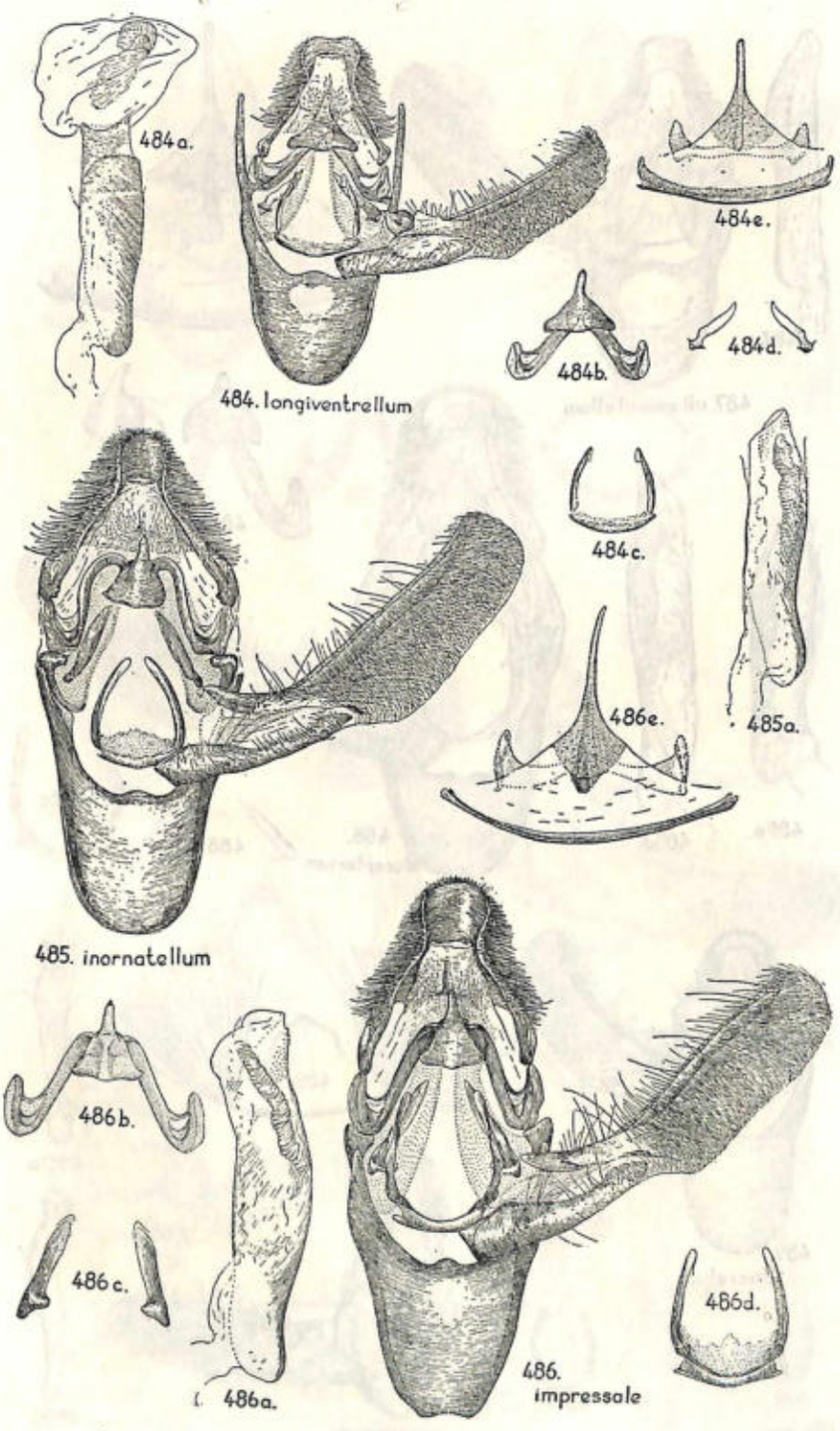
480. *Homoeosoma sinuellum* (Fabricius); 480a, gnathos; 480b, elements of transtilla; 480c, anellus; 480d, aedeagus; 480e, sclerotizations of eighth abdominal segment.

481. *Homoeosoma electellum* (Hulst); 481a, vinculum; 481b, aedeagus; 481c, gnathos; 481d, elements of transtilla; 481e, anellus.

482. *Homoeosoma illuviellum* Ragonot; 482a, aedeagus; 482b, gnathos; 482c, anellus; 482d, elements of transtilla; 482e, sclerotizations of eighth abdominal segment.

483. *Homoeosoma imitator* Heinrich, new species; 483a, lateral view of uncus, gnathos, and tegumen; 483b, aedeagus; 483c, gnathos; 483d, elements of transtilla; 483e, anellus; 483f, sclerotizations of eighth abdominal segment, showing shortest form of ventral process; 483g, longest form of ventral process from eighth abdominal segment.





FIGURES 484–486.—MALES.

484. *Homoeosoma longiventrellum* Ragonot, 3 specimens from Chiriquí, Panamá; 484a, aedeagus; 484b, gnathos; 484c, anellus; 484d, elements of transtilla; 484e, sclerotizations of eighth abdominal segment.

485. *Homoeosoma inornatellum* (Hulst); 485a, aedeagus.

486. *Homoeosoma impressale* Hulst; 486a, aedeagus; 486b, gnathos; 486c, elements of transtilla; 486d, anellus, 486e, sclerotizations of eighth abdominal segment.

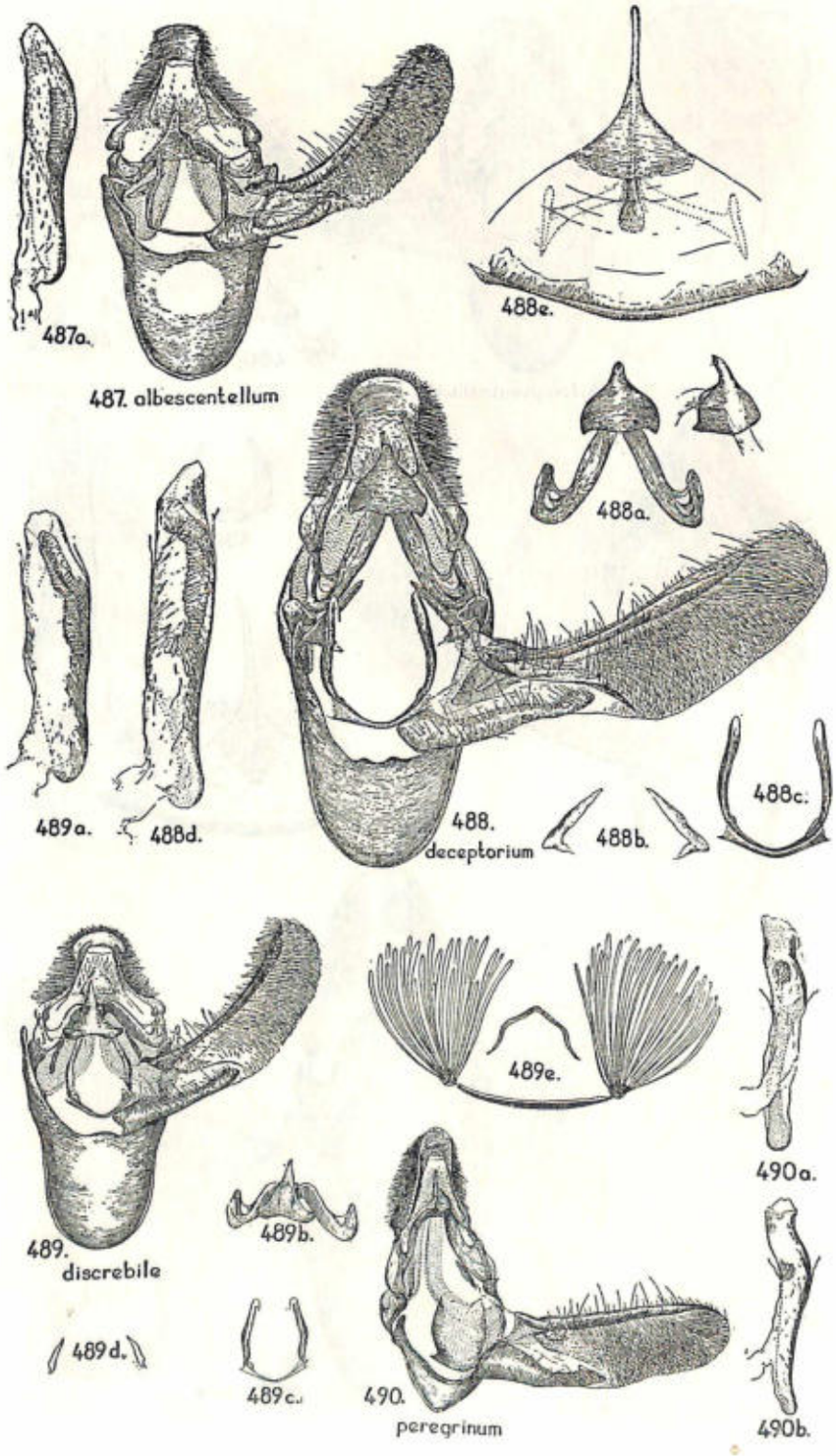
FIGURES 487–490.—MALES.

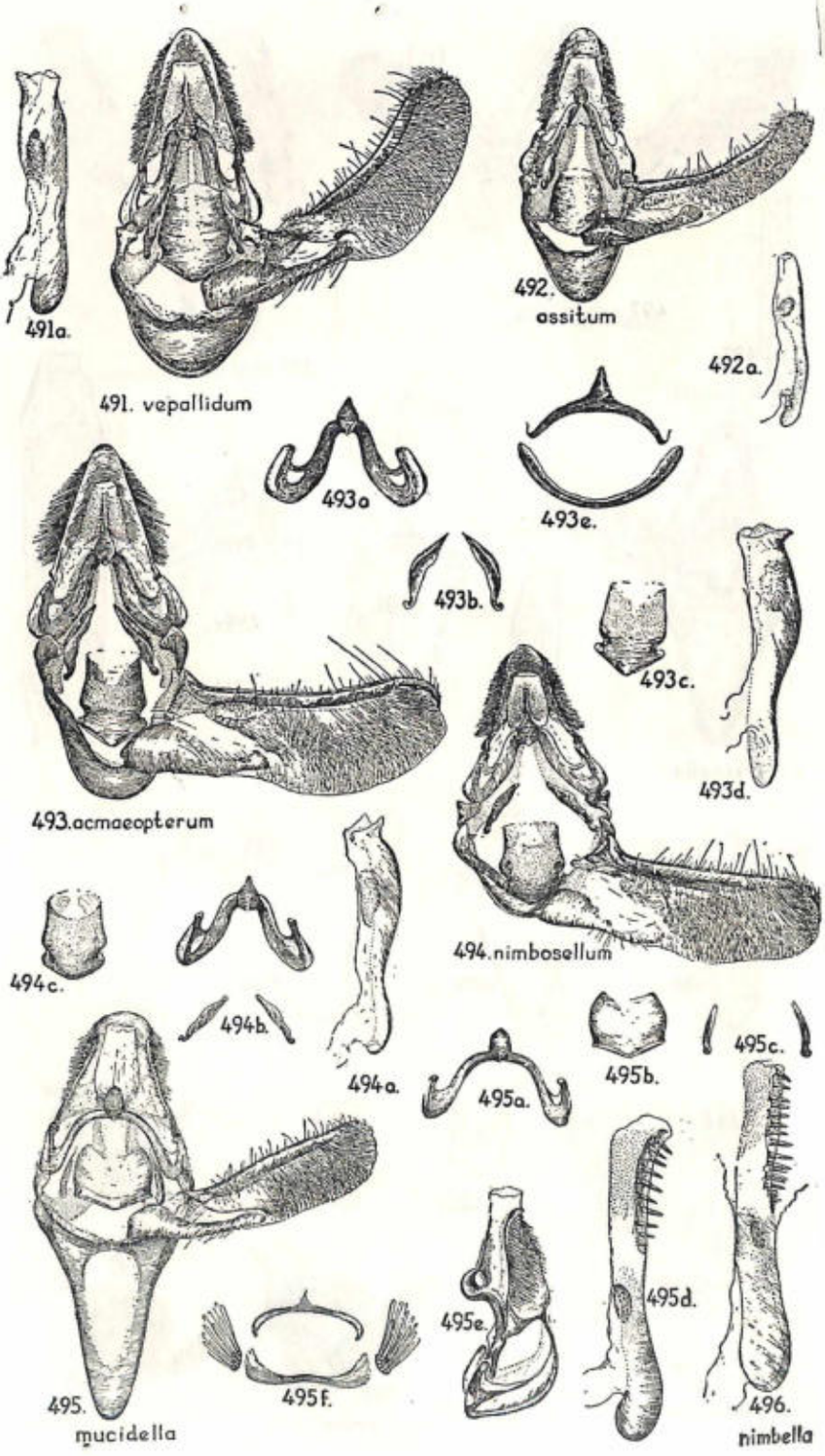
487. *Homoeosoma albescentellum* Ragonot, figured from type of its synonym *H. elongellum* Dyar; 487a, aedeagus.

488. *Homoeosoma deceptorium* Heinrich, new species, paratype from Alcove, Quebec; 488a, gnathos with apical projection shown in ventral and ventrolateral views; 488b, elements of transtilla; 488c, anellus; 488d, aedeagus; 488e, sclerotizations of eighth abdominal segment.

489. *Homoeosoma discrebile* Heinrich, new species; 489a, aedeagus; 489b, gnathos; 489c, anellus; 489d, elements of transtilla; 489e, tufts and sclerotizations of eighth abdominal segment.

490. *Homoeosoma peregrinum* Heinrich, new species; 490a-b, two views of aedeagus.





FIGURES 491–496.—MALES.

491. *Homoeosoma vepallidum* Heinrich, new species, type; 491a, aedeagus.
492. *Homoeosoma assitum* Heinrich, new species, type; 491a, aedeagus.
493. *Homoeosoma acmaeopterum* Ragonot, type; 493a, gnathos; 493b, elements of transtilla; 493c, anellus; 493d, aedeagus; 493e, sclerotizations of eighth abdominal segment.
494. *Homoeosoma nimbosellum* Ragonot, type; 494a, aedeagus; 494b, gnathos and elements of transtilla; 494c, anellus.
495. *Rotruda mucidella* (Ragonot); 495a, gnathos; 495b, anellus; 495c, elements of transtilla; 495d, aedeagus; 495e, lateral view of uncus, gnathos, and tegumen; 495f, tufts and sclerotizations of eighth abdominal segment.
496. *Rotruda nimbella* (Zeller), aedeagus.

FIGURES 497–502.—MALES.

497. *Strephomescinia schausella* Dyar, type, aedeagus omitted; 497a, aedeagus; 497b, anellus.

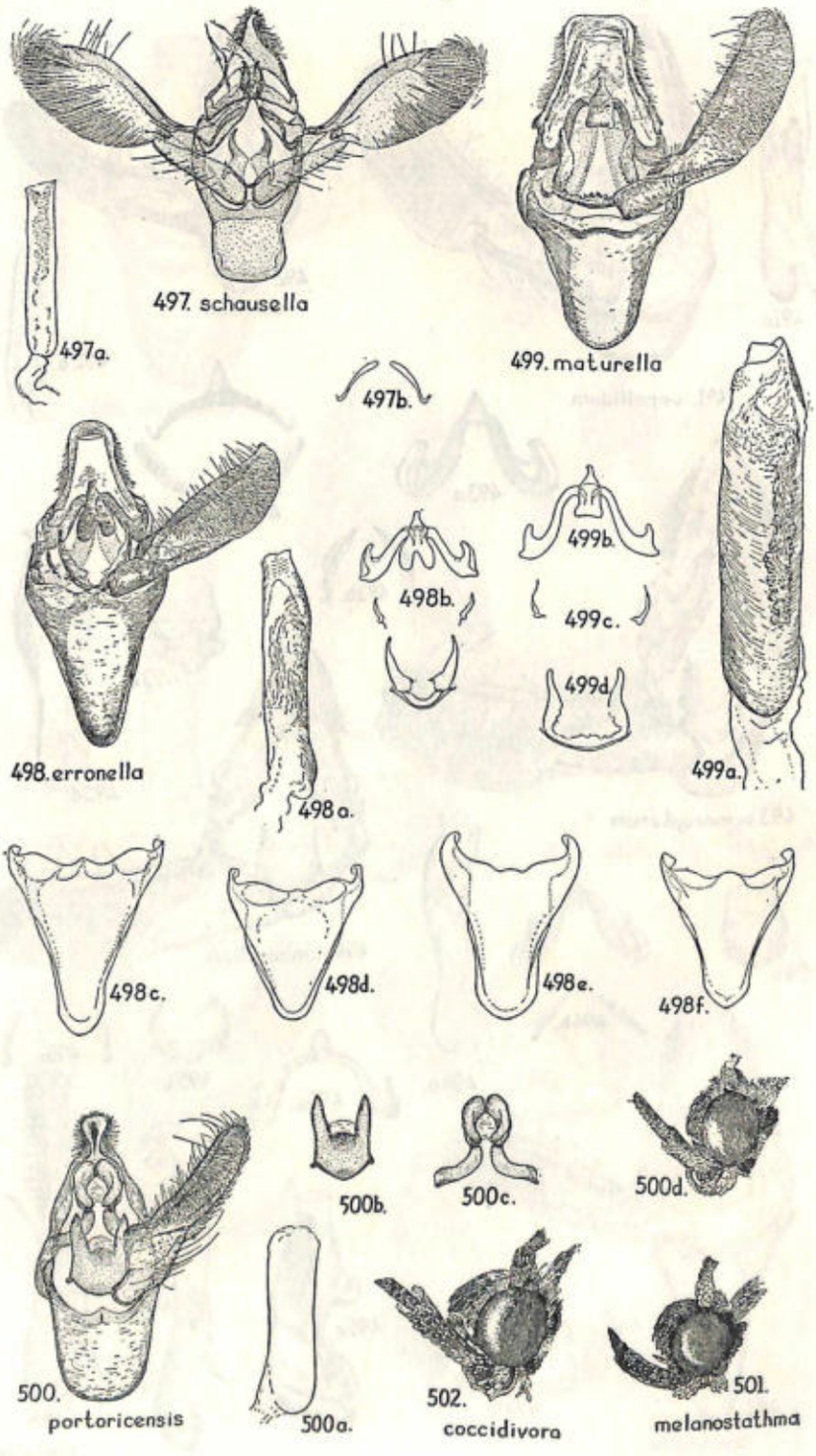
498. *Unadilla erronella* (Zeller); 498a, aedeagus; 498b, gnathos, elements of transtilla, and anellus; 498c-f, variations in vinculum.

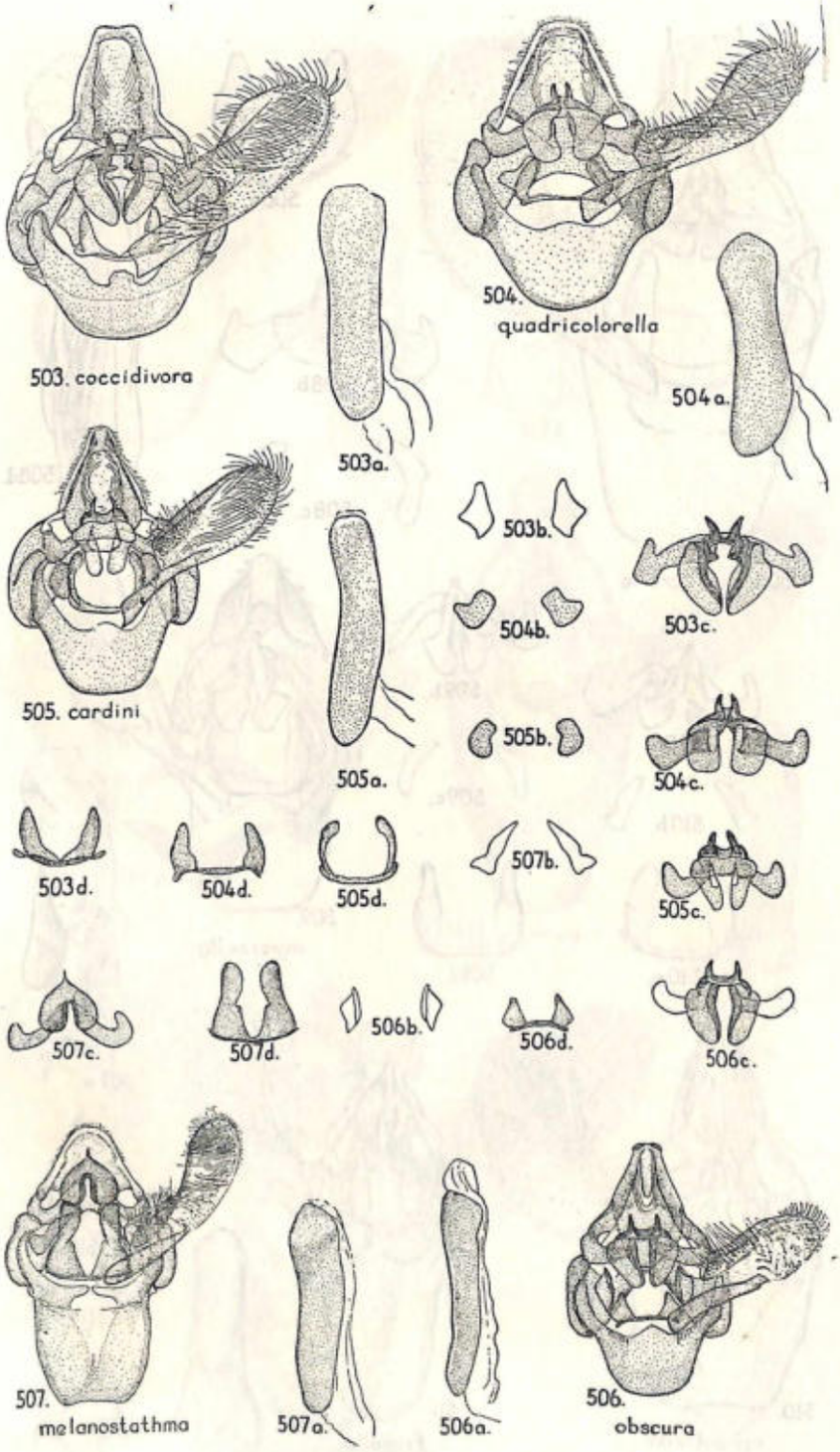
499. *Unadilla maturella* (Zeller), specimen from Guatemala; 499a, aedeagus; 499b, gnathos; 499c, elements of transtilla; 499d, anellus.

500. *Laetilia portoricensis* Dyar; 500a, aedeagus; 500b, anellus; 500c, gnathos; 500d, lateral view of female head.

501. *Laetilia melanostathma* (Meyrick), lateral view of male head.

502. *Laetilia coccidivora* (Comstock), lateral view of male head.





FIGURES 503–507.—MALES.

503. *Laetilia coccidivora* (Comstock); 503a, aedeagus; 503b, elements of transtilla; 503c, gnathos; 503d, anellus.

504. *Laetilia coccidivora quadricolorella* (Dyar); 504a, aedeagus; 504b, elements of transtilla; 504c, gnathos; 504d, anellus.

505. *Laetilia coccidivora cardini* Dyar, specimen from Florida; 505a, aedeagus; 505b, elements of transtilla; 505c, gnathos; 505d, anellus.

506. *Laetilia obscura* Dyar; 506a, aedeagus; 506b, elements of transtilla; 506c, gnathos; 506d, anellus.

507. *Laetilia melanostathma* (Meyrick); 507a, aedeagus; 507b, elements of transtilla; 507c, gnathos; 507d, anellus.

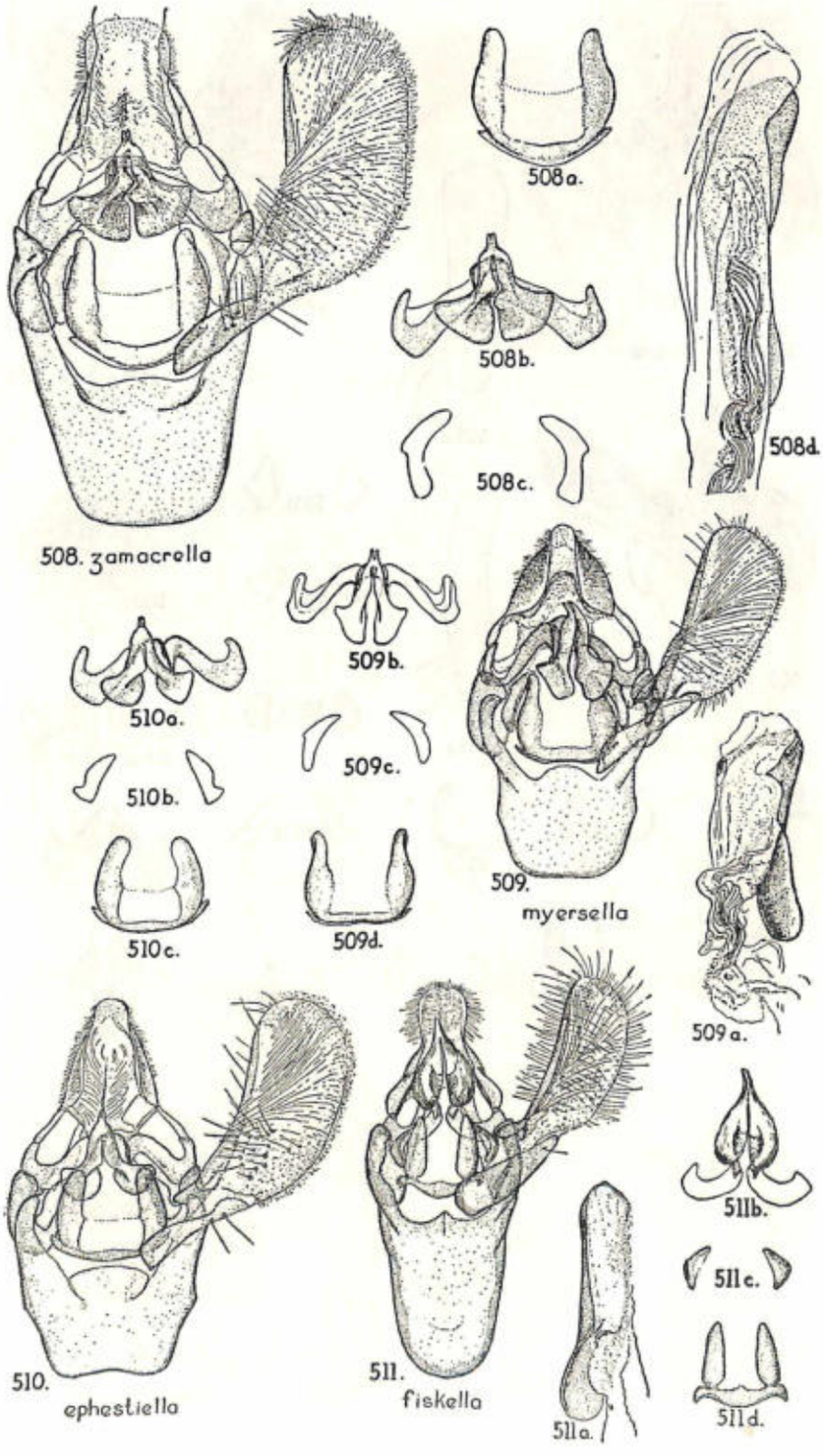
FIGURES 508–511.—MALES.

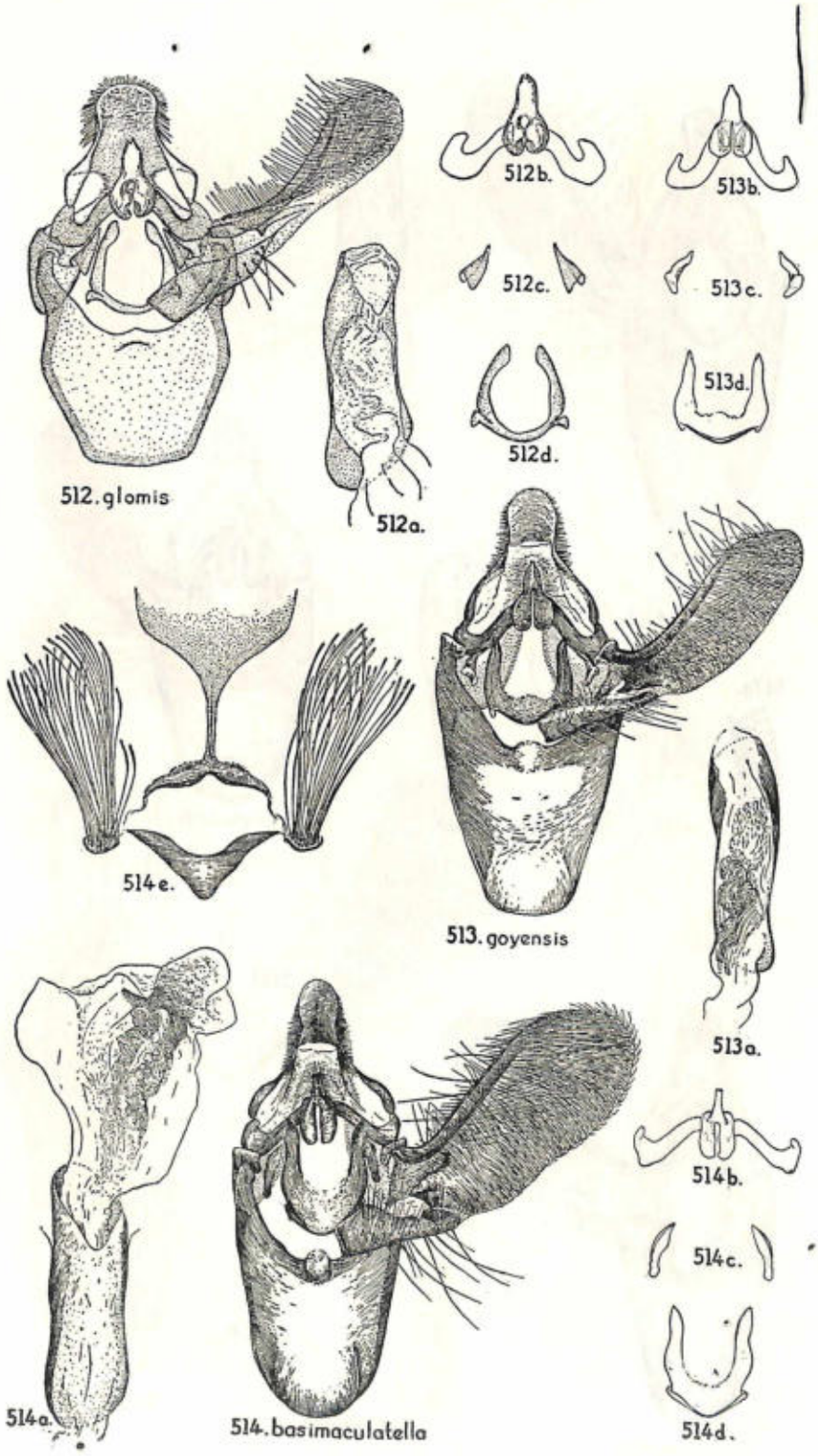
508. *Laetilia zamacrella* Dyar; 508a, anellus; 508b, gnathos; 508c, elements of transtilla; 508d, aedeagus.

509. *Laetilia myersella* Dyar; 509a, aedeagus; 509b, gnathos; 509c, elements of transtilla; 509d, anellus.

510. *Laetilia ephestiella* (Ragonot); 510a, gnathos; 510b, elements of transtilla; 510c, anellus.

511. *Laetilia fiskella* Dyar; 511a, aedeagus; 511b, gnathos; 511c, elements of transtilla; 511d, anellus.





FIGURES 512–514.—MALES.

512. *Laetilia glomis* (Dyar), type; 512a, aedeagus; 512b, gnathos; 512c, elements of transtilla; 512d, anellus.

513. *Baphala goyensis* (Ragonot), specimen from Paraná, Brazil; 513a, aedeagus; 513b, gnathos; 513c, elements of transtilla; 513d, anellus.

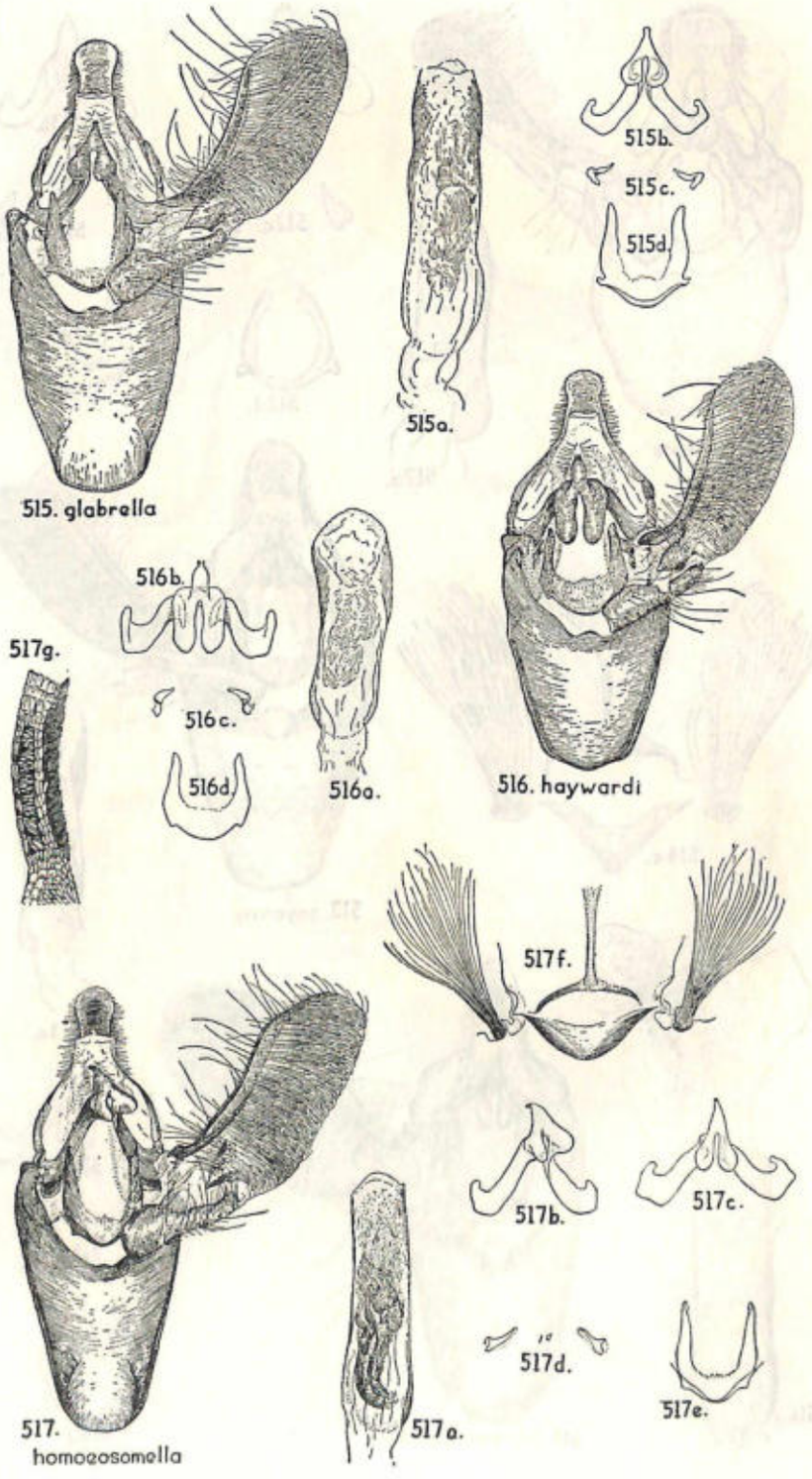
514. *Baphala basimaculatella* (Ragonot), specimen from Texas (in BM); 514a, aedeagus; 514b, gnathos; 514c, elements of transtilla; 514d, anellus; 514e, sclerotizations and tufts of eighth abdominal segment.

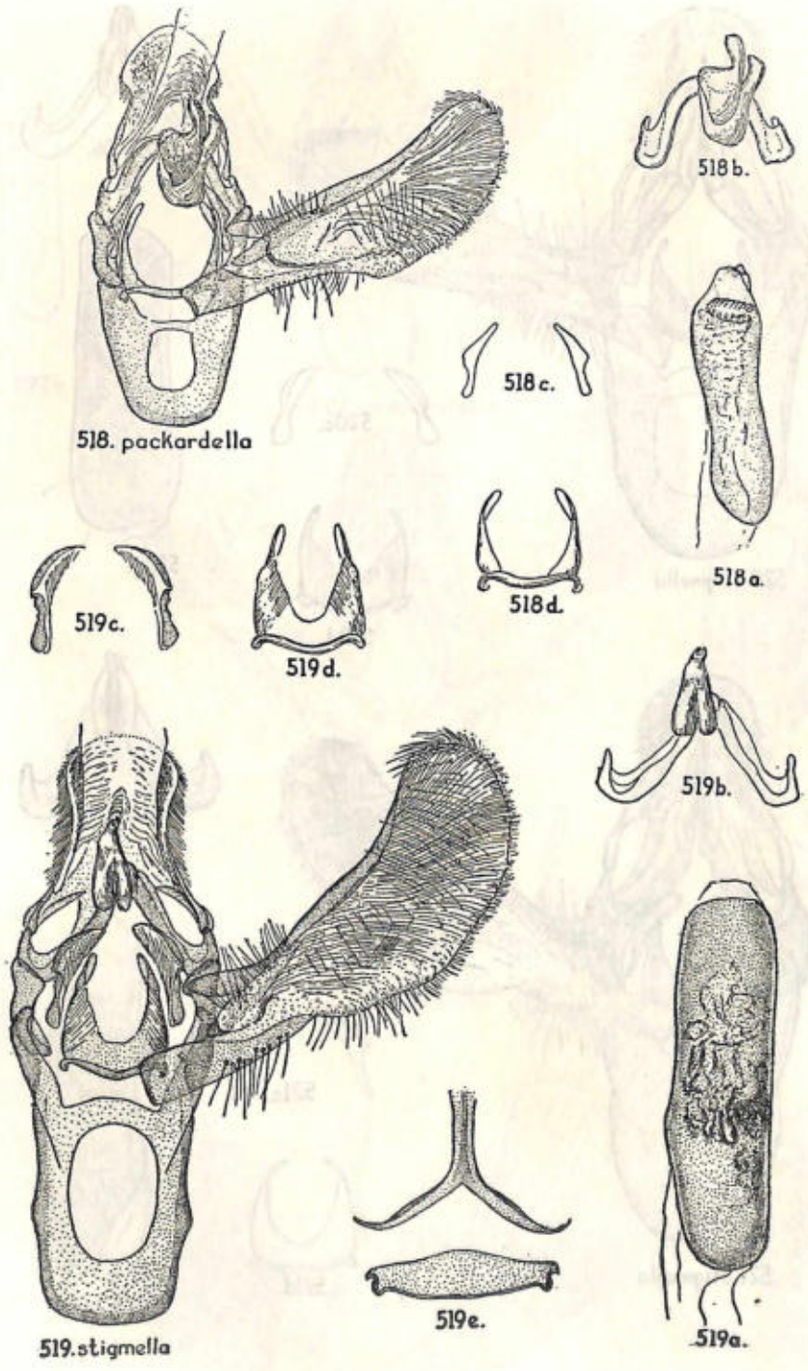
FIGURES 515–517.—MALES.

515. *Baphala glabrella* (Dyar), specimen from type locality; 515a, aedeagus; 515b, gnathos; 515c, elements of transtilla; 515d, anellus.

516. *Baphala haywardi* Heinrich, new species; 516a, aedeagus; 516b, gnathos; 516c, elements of transtilla; 516d, anellus.

517. *Baphala homoeosomella* (Zeller), specimen from type locality (in BM, Zeller, collection); 517a, aedeagus; 517b-c, gnathos with apical projection in ventrolateral and ventral views; 517d, elements of transtilla; 517e, anellus; 517f, tufts and sclerotizations of eighth abdominal segment; 517g, basal segments of antenna.





FIGURES 518, 519.—MALES.

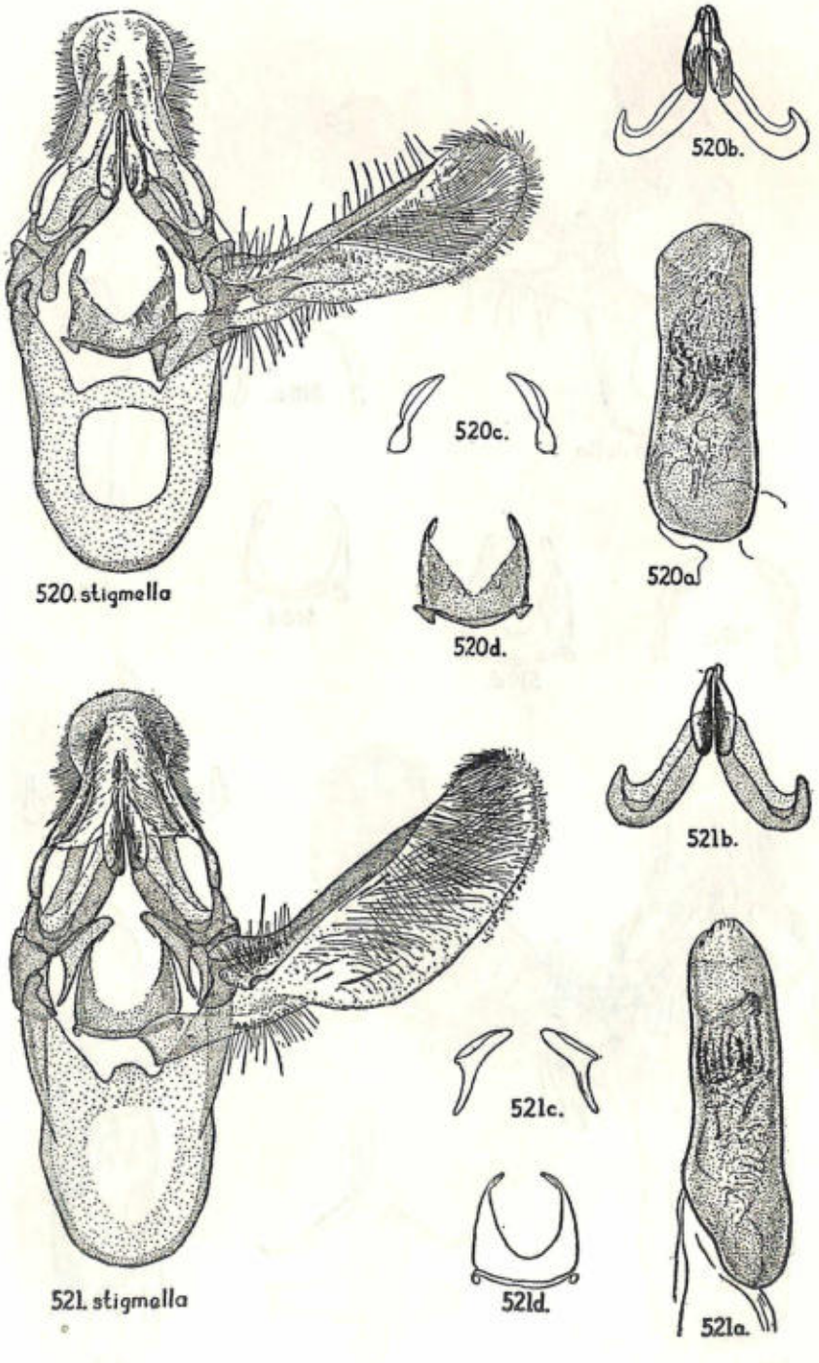
518. *Rhagea packardella* (Ragonot), figured from type of its synonym *Zophodia orobanchella* Dyar; 518a, aedeagus; 518b, gnathos; 518c, elements of transtilla; 518d, anellus.

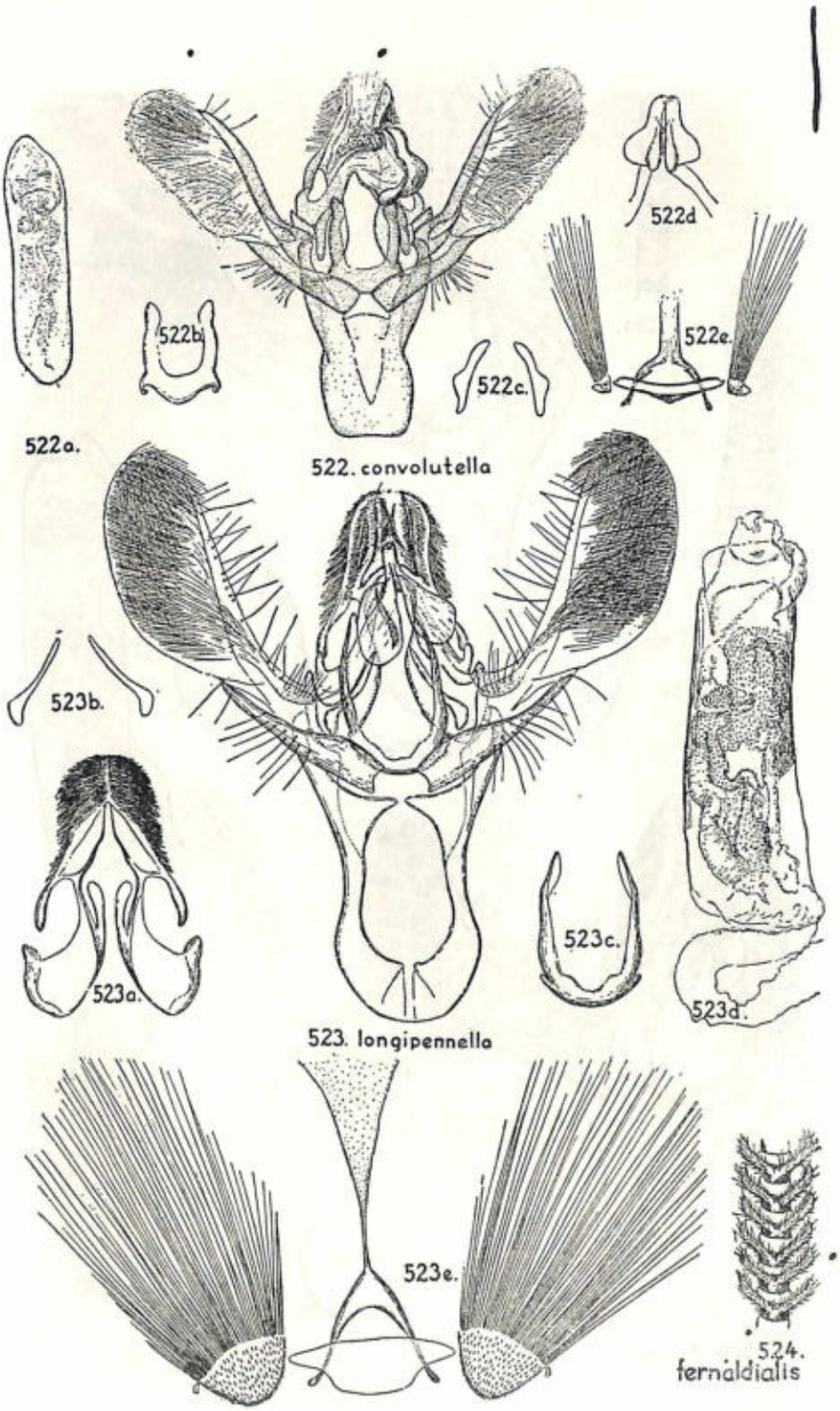
519. *Rhagea stigmella* (Dyar), type; 519a, aedeagus; 519b, gnathos; 519c, elements of transtilla; 519d, anellus; 519e, sclerotizations of eighth abdominal segment.

FIGURES 520, 521.—MALES.

520. *Rhagea stigmella* (Dyar), figured from its synonym *Yosemitia maculicula* Dyar; 520a, aedeagus; 520b, gnathos; 520c, elements of transtilla; 520d, anellus.

521. *Rhagea stigmella* (Dyar), variety from Half Moon Bay, Calif.; 521a, aedeagus; 521b, gnathos; 521c, elements of transtilla; 521d, anellus.





FIGURES 522–524.—MALES.

522. *Zophodia convolutella* (Hübner), aedeagus omitted; 522a, aedeagus; 522b, anellus; 522c, elements of transtilla; 522d, apical process of gnathos; 522e, sclerotizations and tufts of eighth abdominal segment.

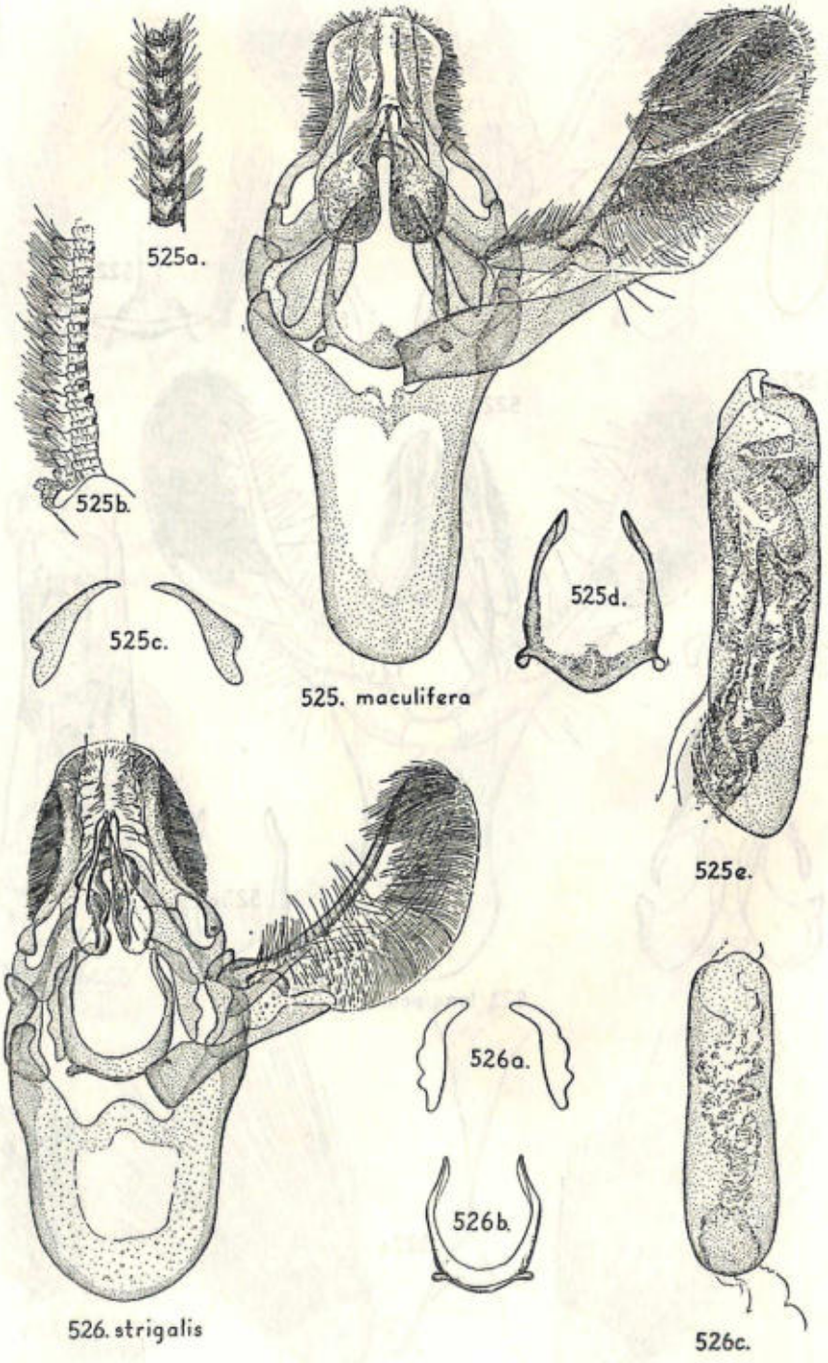
523. *Cactobrosis longipennella* (Hampson), figured from type of its synonym *Moodna elongatella* Hampson, aedegus omitted; 523a, dorsal view of uncus and tegumen; 523b, elements of transtilla; 523c, anellus; 523d, aedeagus; 523e, tufts of eighth abdominal segment.

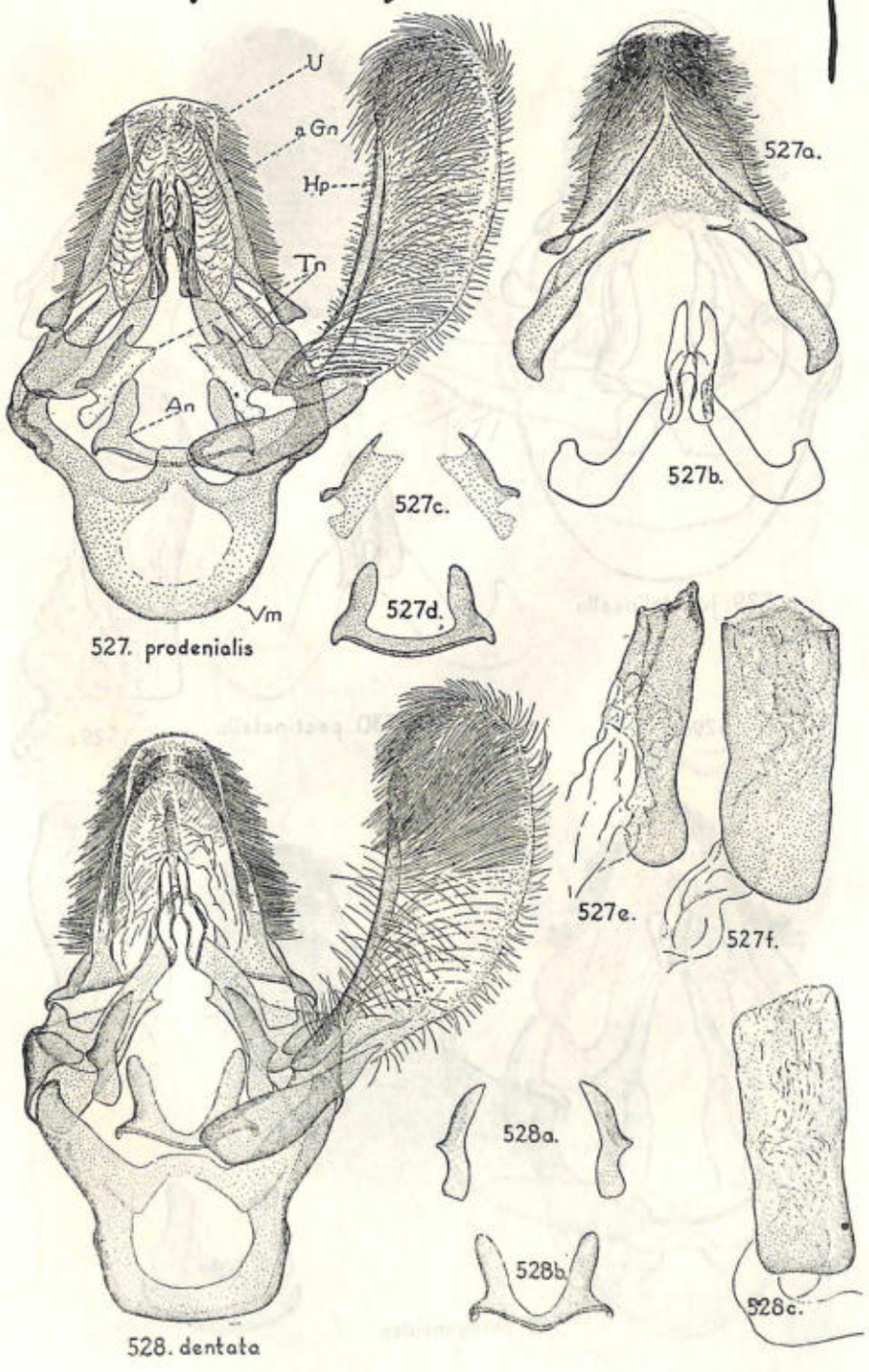
524. *Cactobrosis fernaldialis* (Hulst), part of shaft of antenna, ventral view.

FIGURES 525, 526.—MALES.

525. *Cactobrosis maculifera* Dyar; 525a, part of shaft of antenna, ventral view; 525b, basal segments of antenna, lateral view; 525c, elements of transtilla; 525d, anellus; 525e, aedeagus.

526. *Cactobrosis strigalis* (Barnes and McDunnough); 526a, elements of transtilla; 526b, anellus; 526c, aedeagus.





FIGURES 527, 528.—MALES.

527. *Melitara prodenialis* Walker; 527a, dorsal view of uncus and tegumen; 527b, gnathos; 527c, elements of transtilla; 527d, anellus; 527e-f, lateral and ventral views of aedeagus.

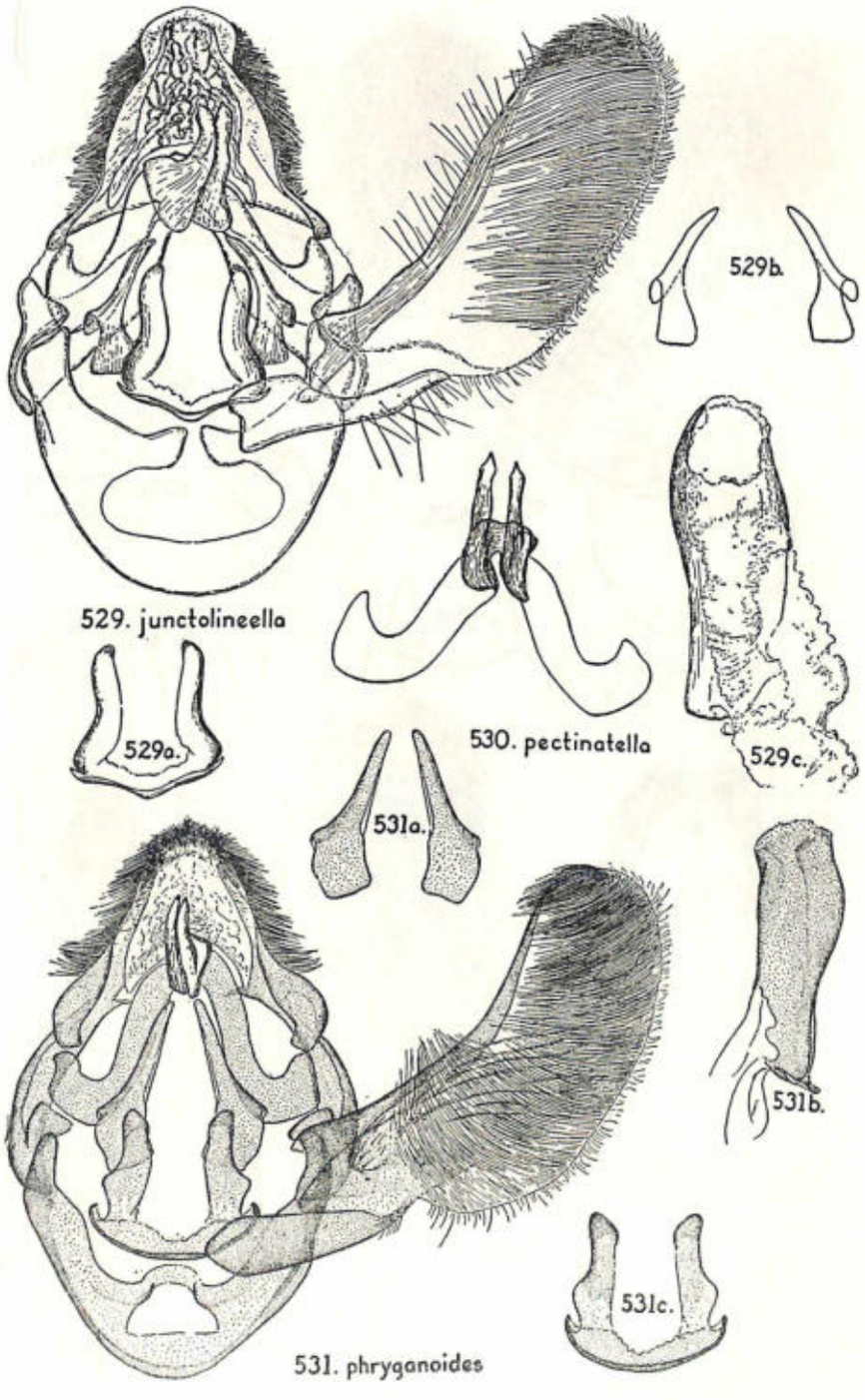
528. *Melitara dentata* (Grote); 528a, elements of transtilla; 528b, anellus; 528c, aedeagus.

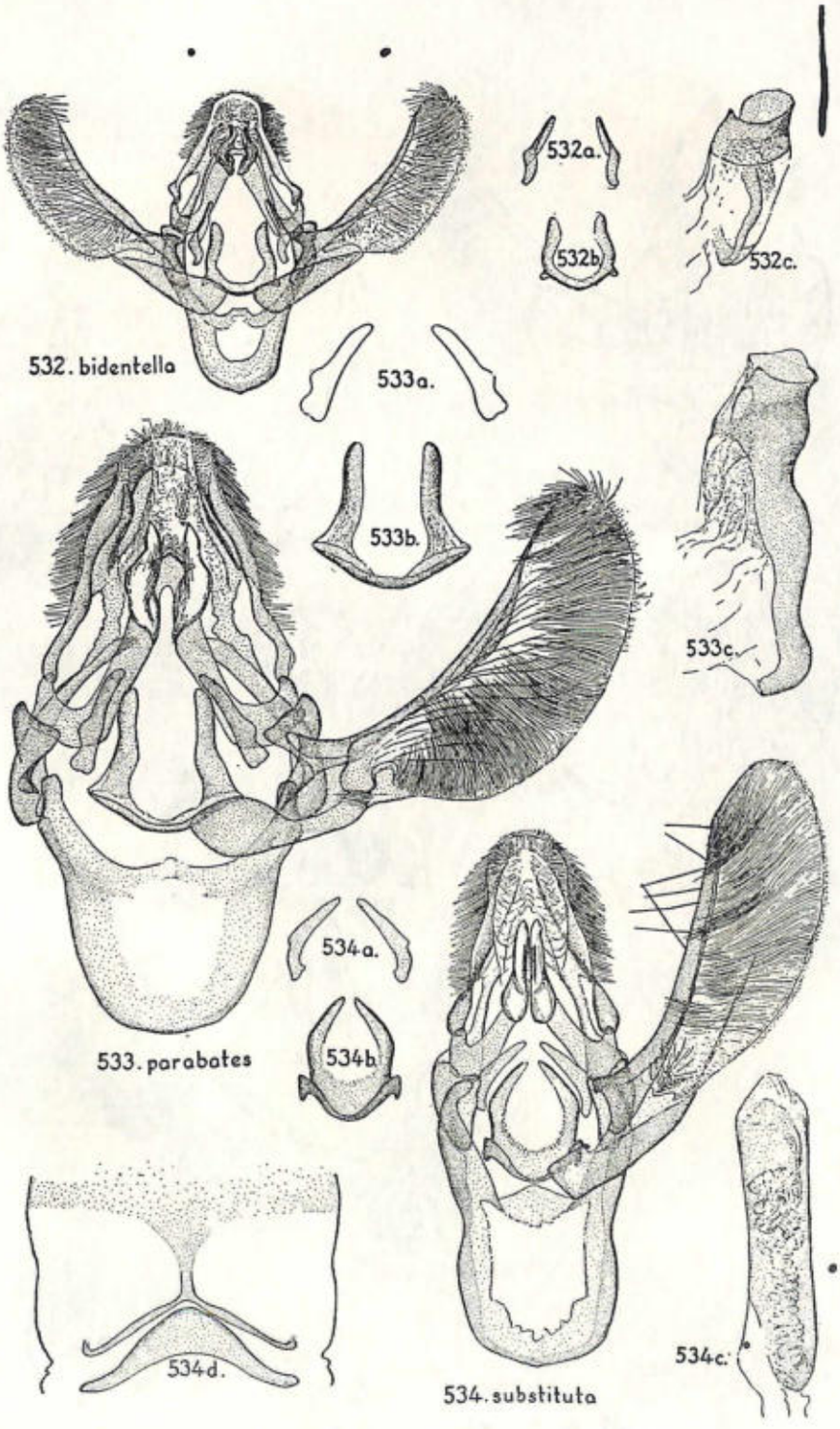
FIGURES 529–531.—MALES.

529. *Olycella junctolineella* (Hulst); 529a, anellus; 529b, elements of transtilla; 529c, aedeagus.

530. *Olycella junctolineella pectinatella* (Hampson), gnathos.

531. *Olyca phryganoides* Walker, specimen from Azuda, Santo Domingo; 531a, elements of transtilla; 531b, aedeagus; 531c, anellus.





FIGURES 532–534.—MALES.

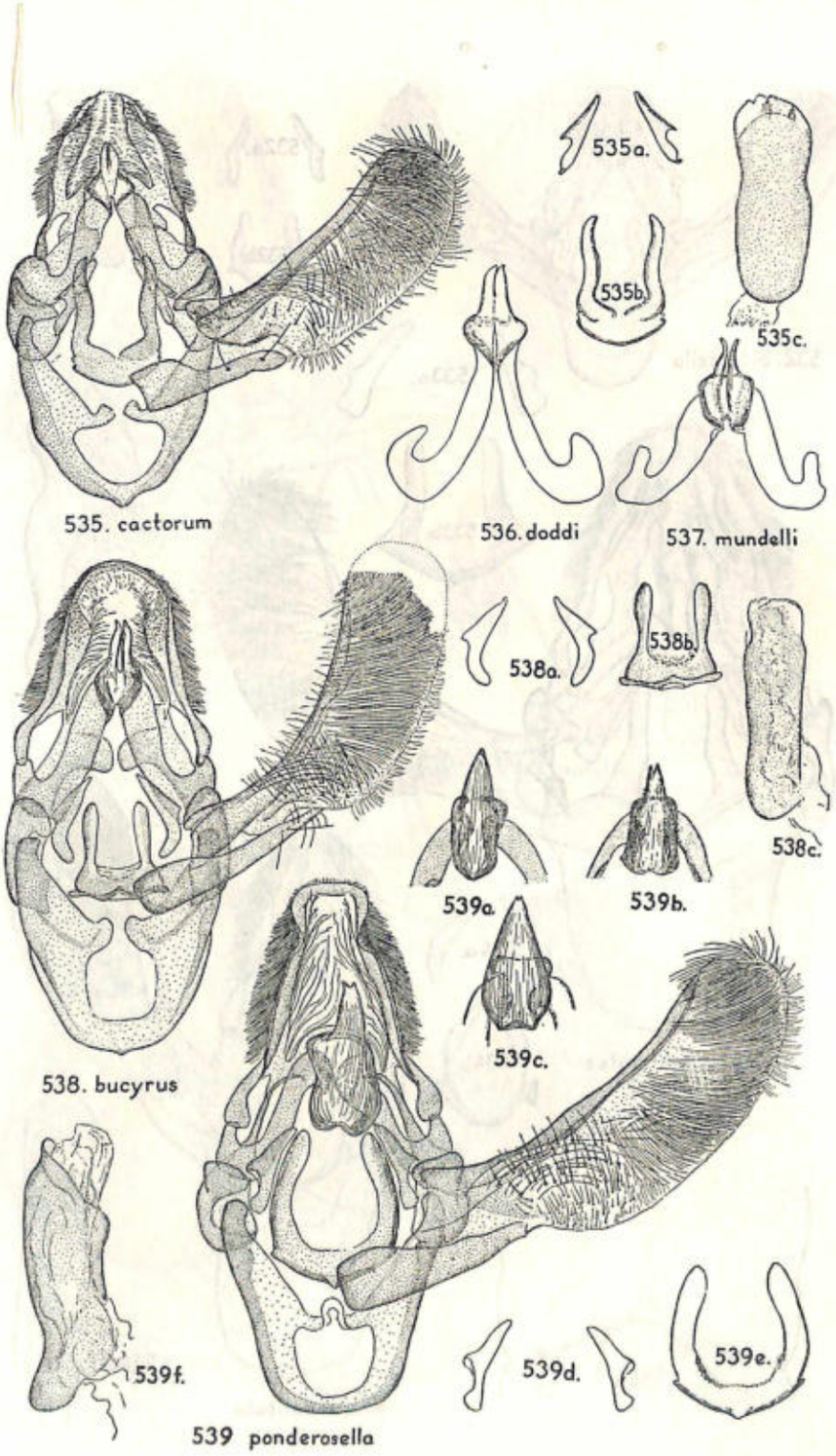
532. *Alberada bidentella* (Dyar), aedeagus omitted; 532a, elements of transtilla; 532b, anellus; 532c, aedeagus.

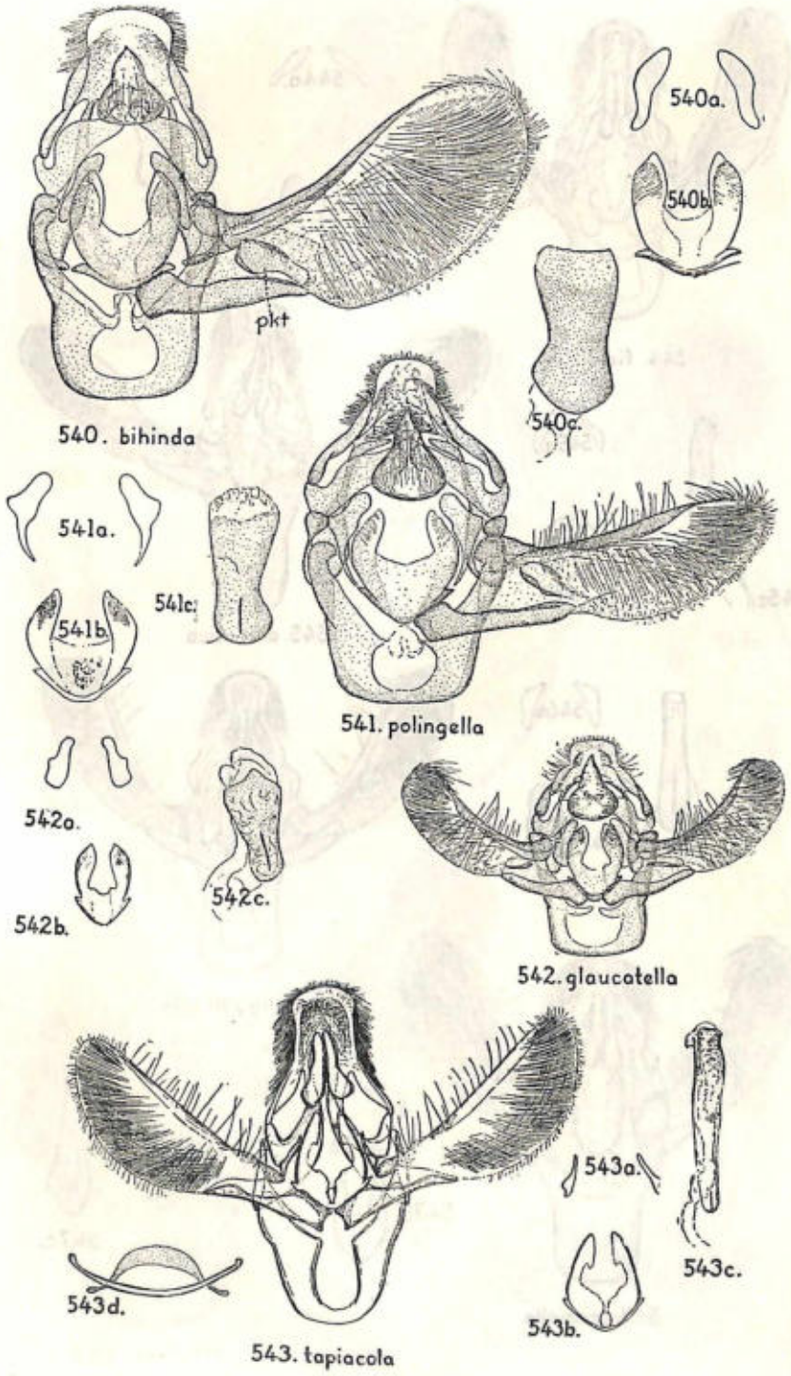
533. *Alberada parabates* (Dyar); 533a, elements of transtilla; 523b, anellus; 533c, aedeagus.

534. *Nanaia substituta* Heinrich, type; 534a, elements of transtilla; 534b, anellus; 534c, aedeagus; 534d, sternite and tergite of eighth abdominal segment.

FIGURES 535–539.—MALES.

535. *Cactoblastis cactorum* (Berg); 535a, elements of transtilla; 535b, anellus; 535c, aedeagus.
536. *Cactoblastis doddi* Heinrich, gnathos.
537. *Cactoblastis mundelli* Heinrich, gnathos.
538. *Cactoblastis bucyrus* Dyar: 538a, elements of transtilla; 538b, anellus; 538c, aedeagus.
539. *Cahela ponderosella* (Barnes and McDunnough), type; 539a-c, various modifications of apical process of gnathos; 539d, elements of transtilla; 539e anellus; 539f, aedeagus.





FIGURES 540–543.—MALES.

540. *Rumatha bihinda* (Dyar), showing subbasal sclerotized pocket (pkt.); 540a, elements of transtilla; 540b, anellus; 540c, aedeagus.

541. *Rumatha polingella* (Dyar); 541a, elements of transtilla; 541b, anellus; 541c, aedeagus.

542. *Rumatha glaucatella* (Hulst), aedeagus omitted; 542a, elements of transtilla; 542b, anellus; 542c, aedeagus.

543. *Tucumania tapiacola* Dyar, aedeagus omitted, vinculum somewhat foreshortened; 543a, elements of transtilla; 543b, anellus; 543c, aedeagus; 543d, sternite and tergite of eighth abdominal segment.

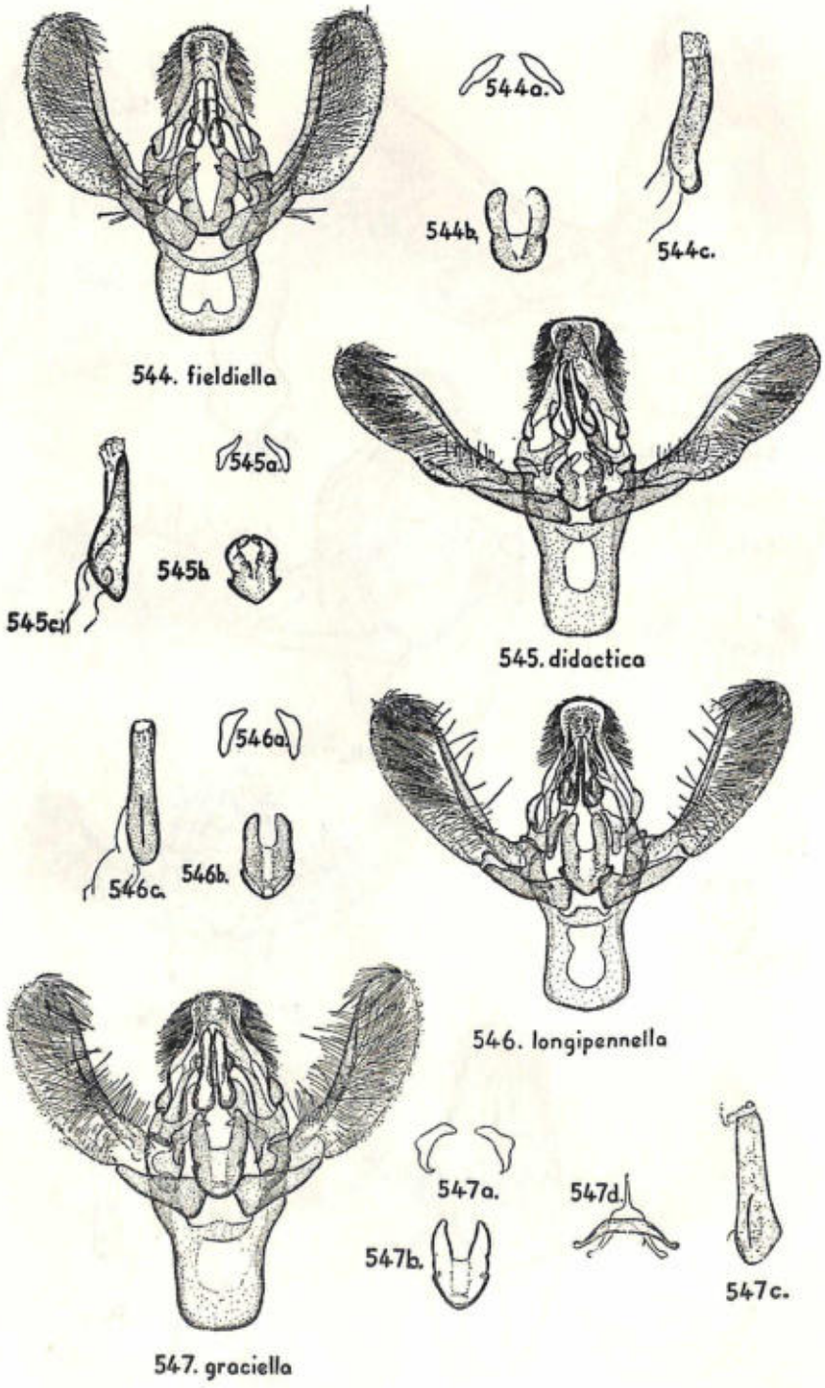
FIGURES 544–547.—MALES.

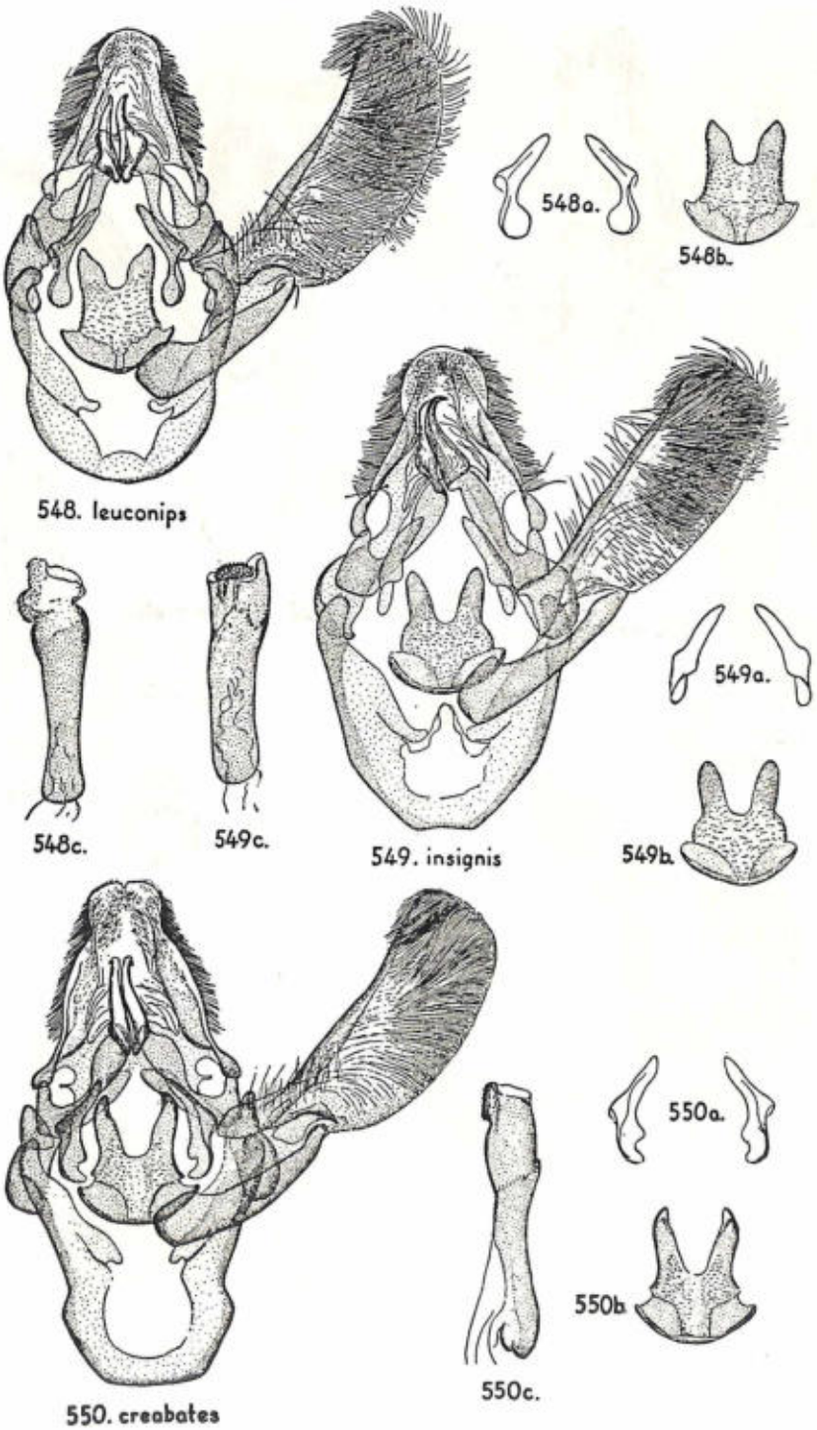
544. *Yosemitia fieldiella* (Dyar), aedeagus omitted; 544a, elements of transtilla; 544b, anellus; 544c, aedeagus.

545. *Yosemitia didactica* Dyar, aedeagus omitted; 545a, elements of transtilla; 545b, anellus; 545c, aedeagus.

546. *Yosemitia longipennella* (Hulst), aedeagus omitted; 546a, elements of transtilla; 546b, anellus; 546c, aedeagus.

547. *Yosemitia graciella* (Hulst), aedeagus omitted; 547a, elements of transtilla; 547b, anellus; 547c, aedeagus; 547d, sternite and tergite of eighth abdominal segment.





FIGURES 548–550.—MALES.

548. *Eremberga leuconips* (Dyar); 548a, elements of transtilla; 548b, anellus; 548c, aedeagus.

549. *Eremberga insignis* Heinrich, type; 549a, elements of transtilla; 549b, anellus; 549c, aedeagus.

550. *Eremberga creabates* (Dyar), type; 550a, elements of transtilla; 550b, anellus; 550c, aedeagus.

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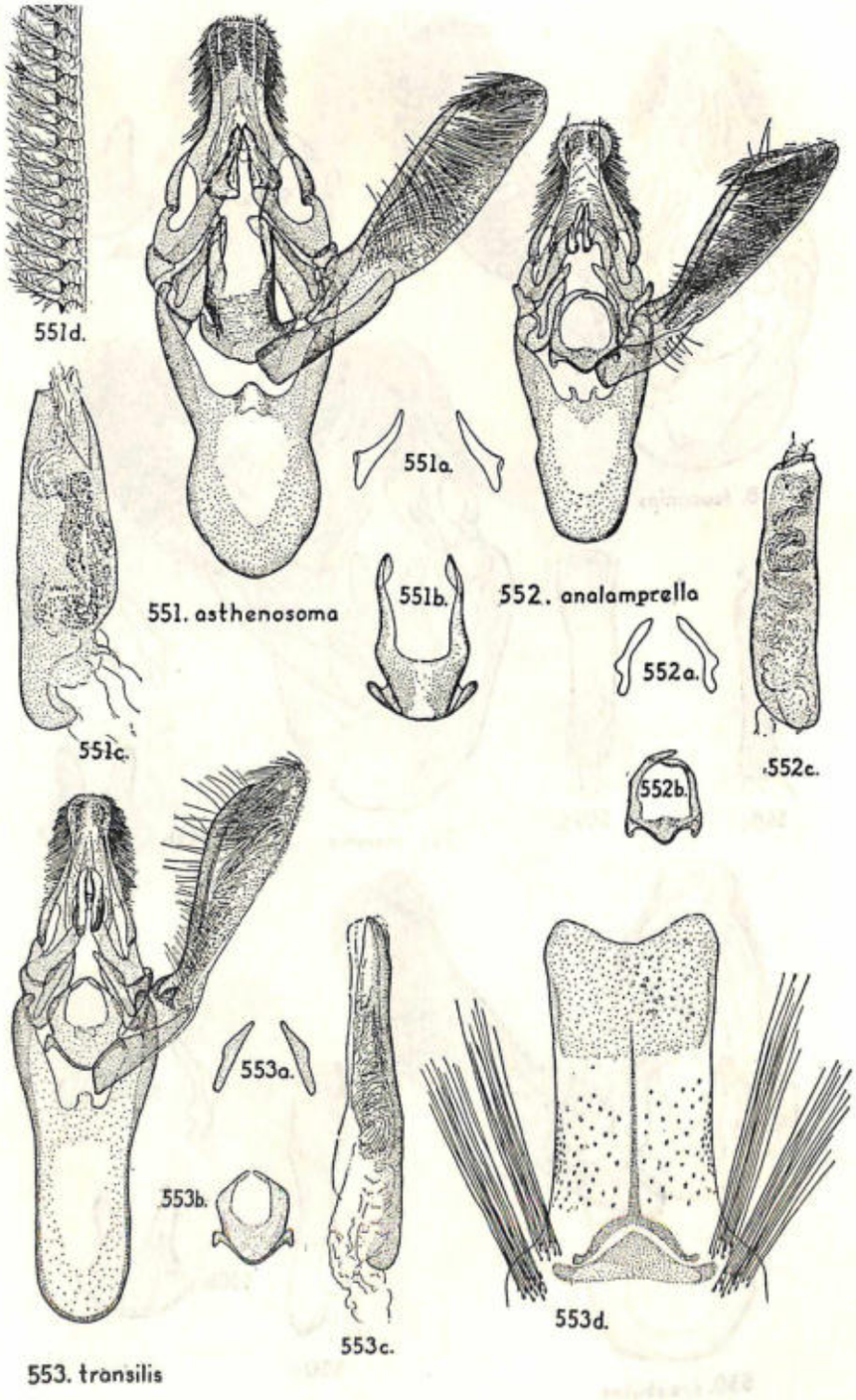
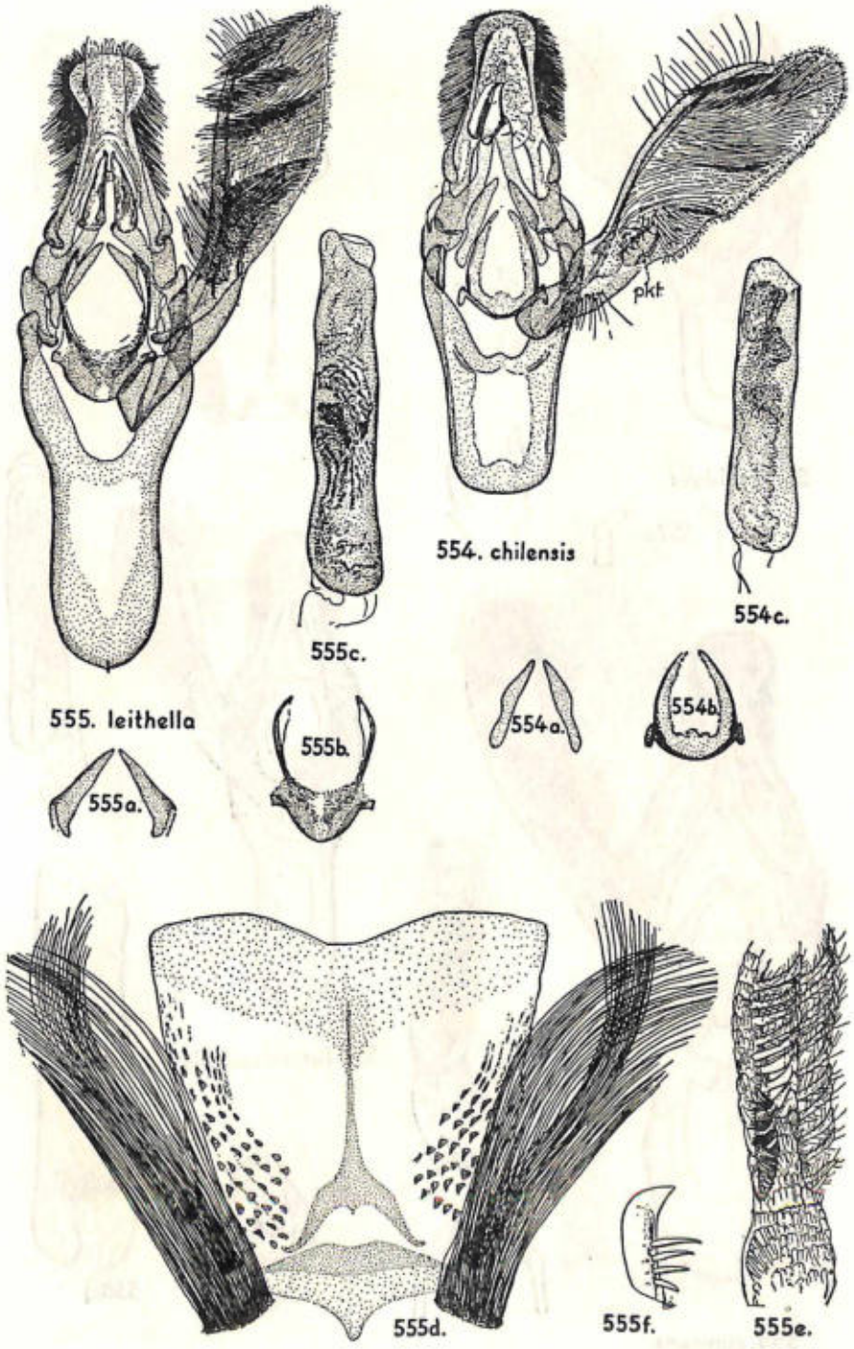
FIGURES 551–553.—MALES.

551. *Parolyca asthenosoma* (Dyar), type; 551a, elements of transtilla; 551b, anellus; 551c, aedeagus; 551d, part of shaft of antenna.

552. *Salambona analamprella* (Dyar); 552a, elements of transtilla; 552b, anellus; 552c, aedeagus.

553. *Sigelgaita transilis* Heinrich, type; 553a, elements of transtilla; 553b, anellus; 553c, aedeagus; 553d, eighth abdominal segment, showing hair tufts.





FIGURES 554, 555.—MALES.

554. *Sigelgaita chilensis* Heinrich; 554a, elements of transtilla; 554b, anellus; 554c, aedeagus.

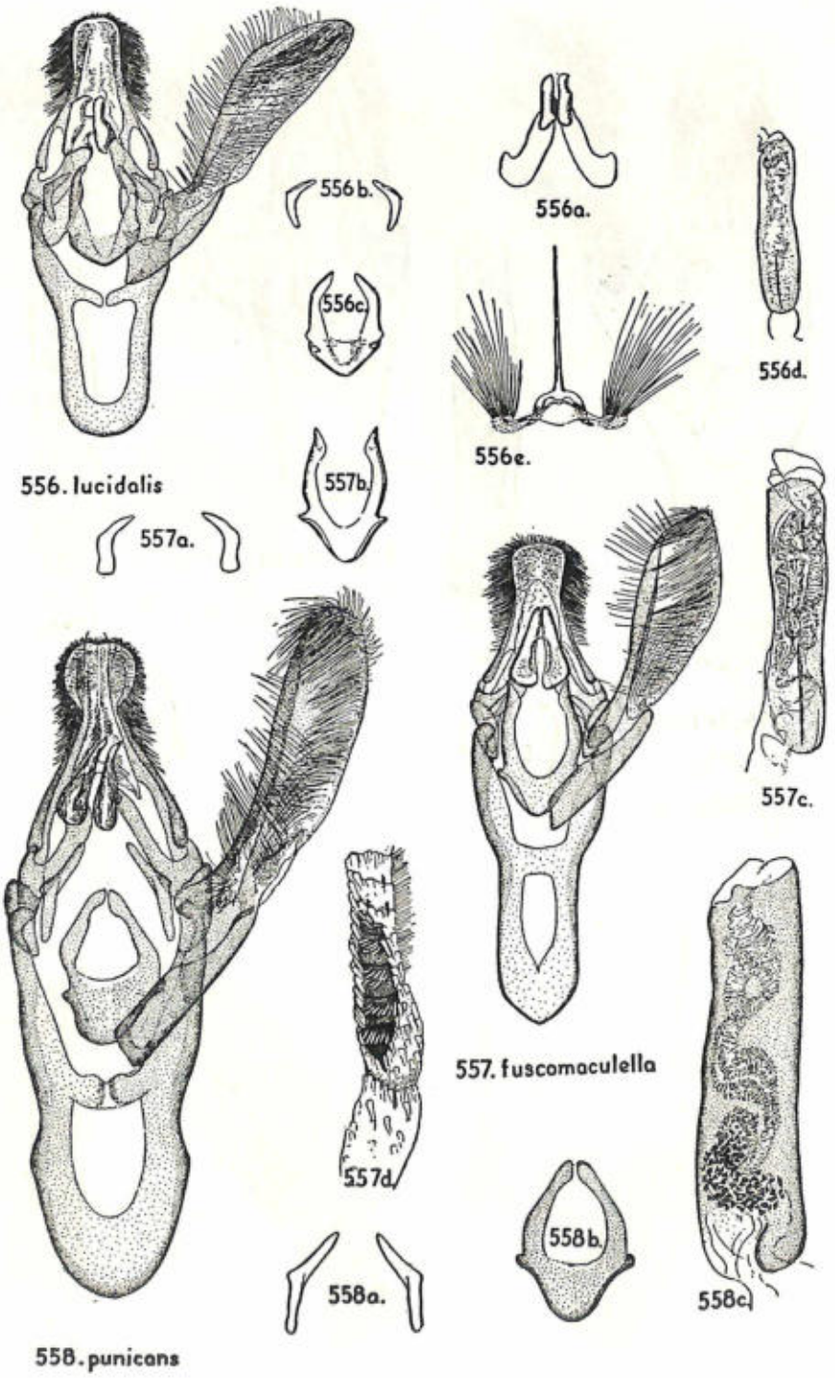
555. *Amalafrida leithella* (Dyar); 555a, elements of transtilla; 555b, anellus; 555c, aedeagus; 555d, eighth abdominal segment, showing hair tufts; 555e, basal segments of antenna; 555f, inner pectination from one of basal segments of antennal shaft, showing attachment of modified setae (greatly enlarged).

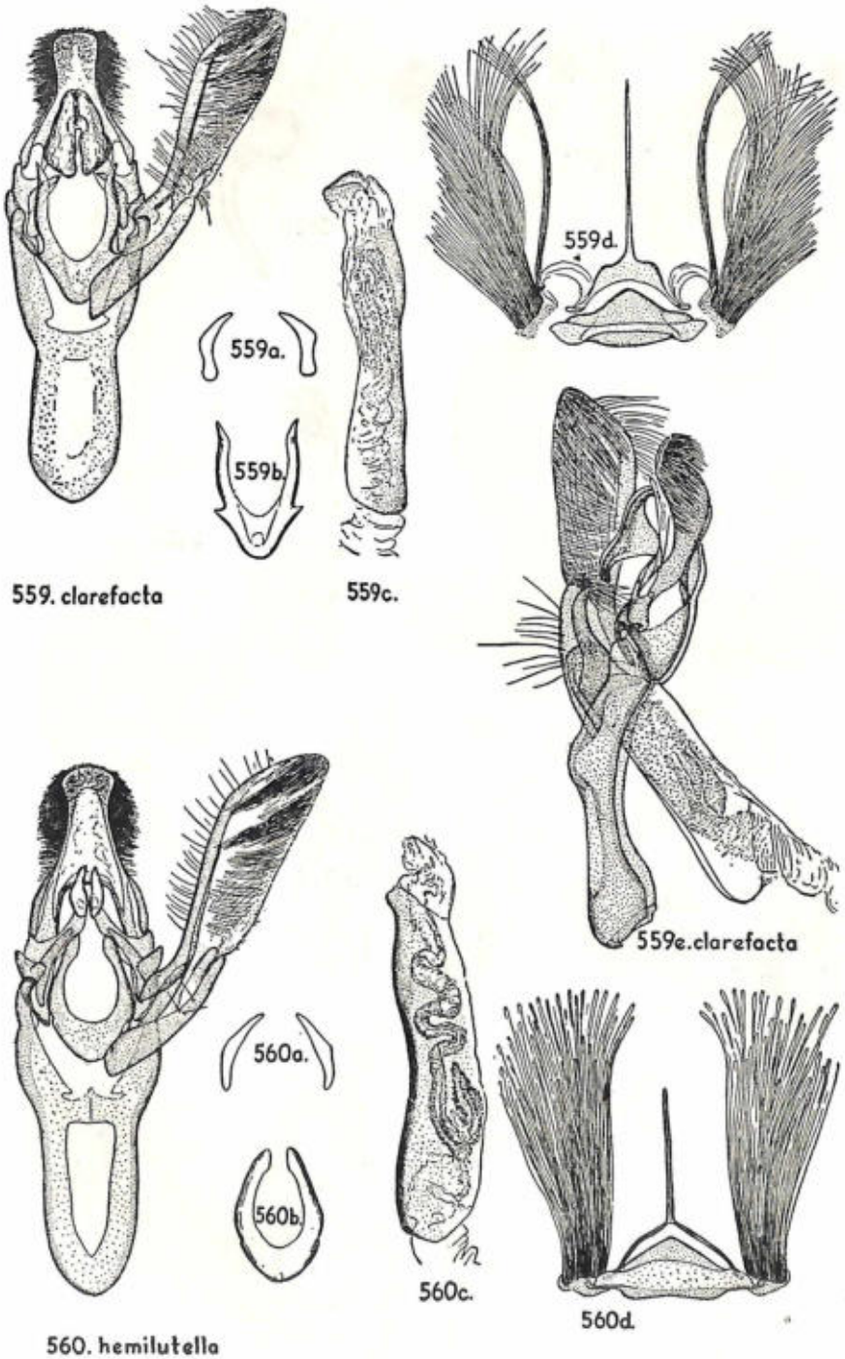
FIGURES 556–558.—MALES.

556. *Ozamia lucidalis* (Walker); 556a, gnathos, ventral view; 556b, elements of transtilla; 556c, anellus; 556d, aedeagus; 556e, eighth abdominal segment, showing hair tufts.

557. *Ozamia fuscomaculella* (Wright); 557a, elements of transtilla; 557b, anellus; 557c, aedeagus; 557d, basal segments of antenna.

558. *Ozamia punicans* Heinrich: 558a, elements of transtilla; 558b, anellus; 558c, aedeagus.





FIGURES 559, 560.—MALES.

559. *Ozamia fuscomaculella clarefacta* Dyar; 559a, elements of transtilla; 559b, anellus; 559c, aedeagus; 559d, eighth abdominal segment, showing hair tufts; 559e, lateral view of genitalia with one harpe omitted.

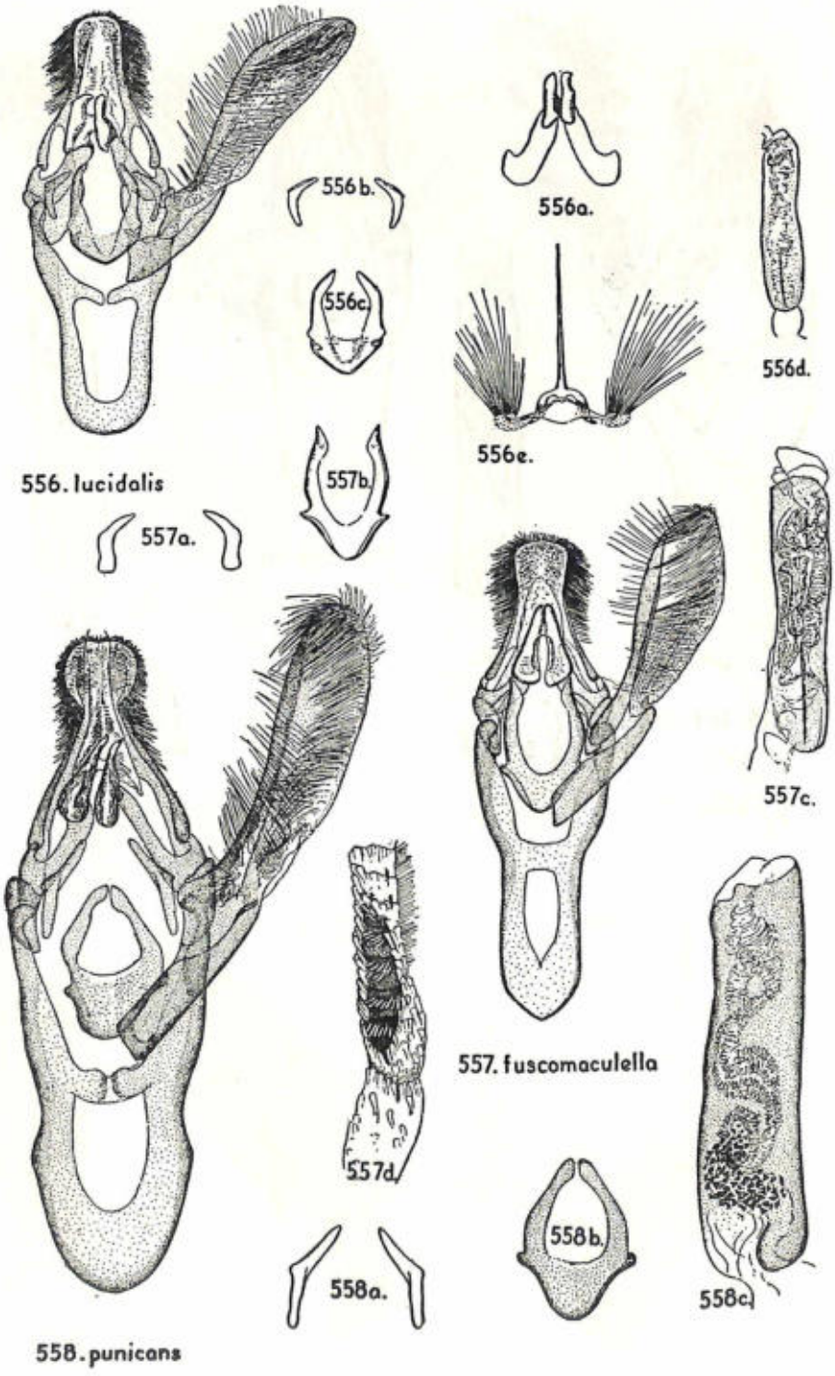
560. *Ozamia hemilutella* Dyar; 560a, elements of transtilla; 560b, anellus; 560c, aedeagus; 560d, eighth abdominal segment, showing hair tufts.

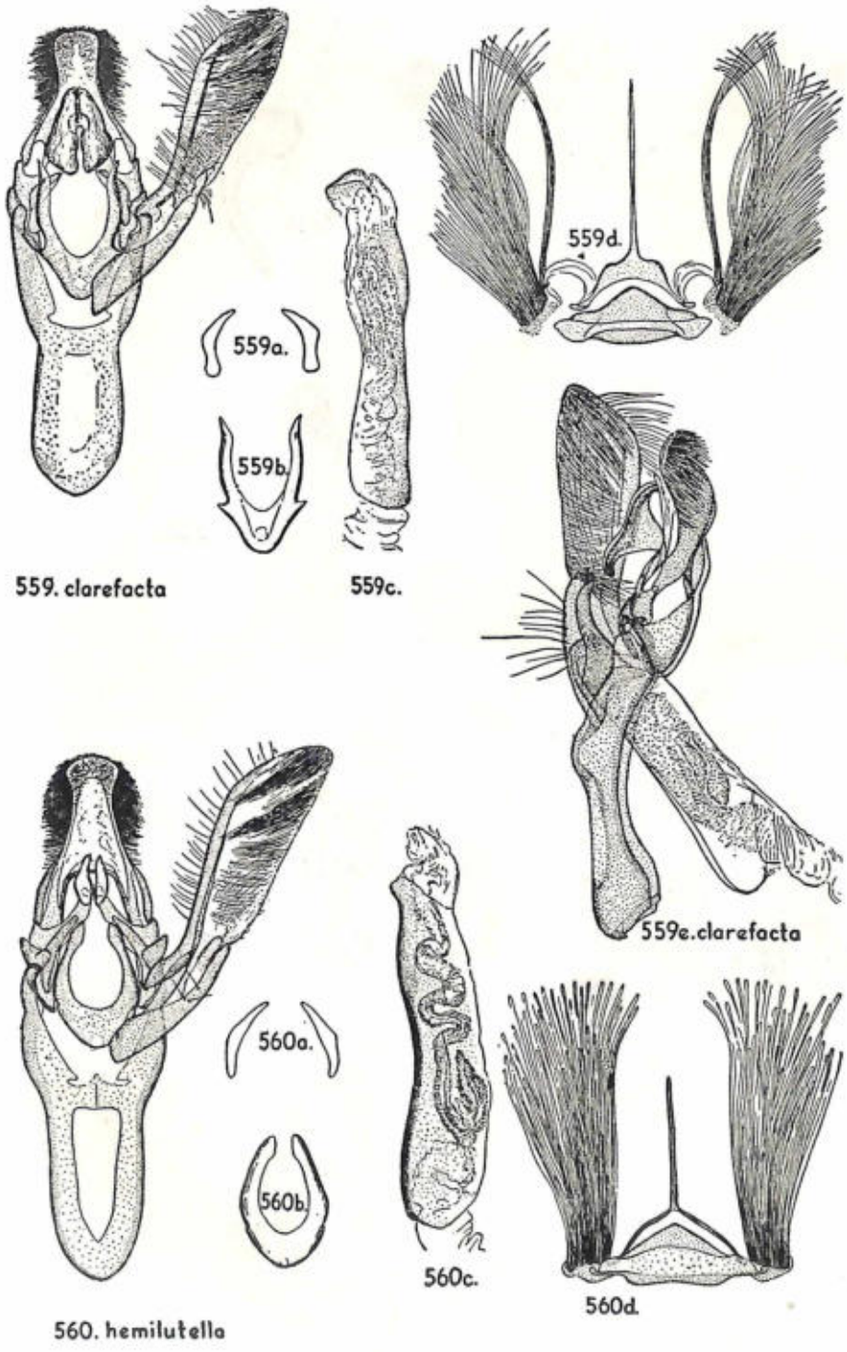
FIGURES 556–558.—MALES.

556. *Ozamia lucidalis* (Walker); 556a, gnathos, ventral view; 556b, elements of transtilla; 556c, anellus; 556d, aedeagus; 556e, eighth abdominal segment, showing hair tufts.

557. *Ozamia fuscomaculella* (Wright); 557a, elements of transtilla; 557b, anellus; 557c, aedeagus; 557d, basal segments of antenna.

558. *Ozamia punicans* Heinrich: 558a, elements of transtilla; 558b, anellus; 558c, aedeagus.





FIGURES 559, 560.—MALES.

559. *Ozamia fuscomaculella clarefacta* Dyar; 559a, elements of transtilla; 559b, anellus; 559c, aedeagus; 559d, eighth abdominal segment, showing hair tufts; 559e, lateral view of genitalia with one harpe omitted.

560. *Ozamia hemilutella* Dyar; 560a, elements of transtilla; 560b, anellus; 560c, aedeagus; 560d, eighth abdominal segment, showing hair tufts.

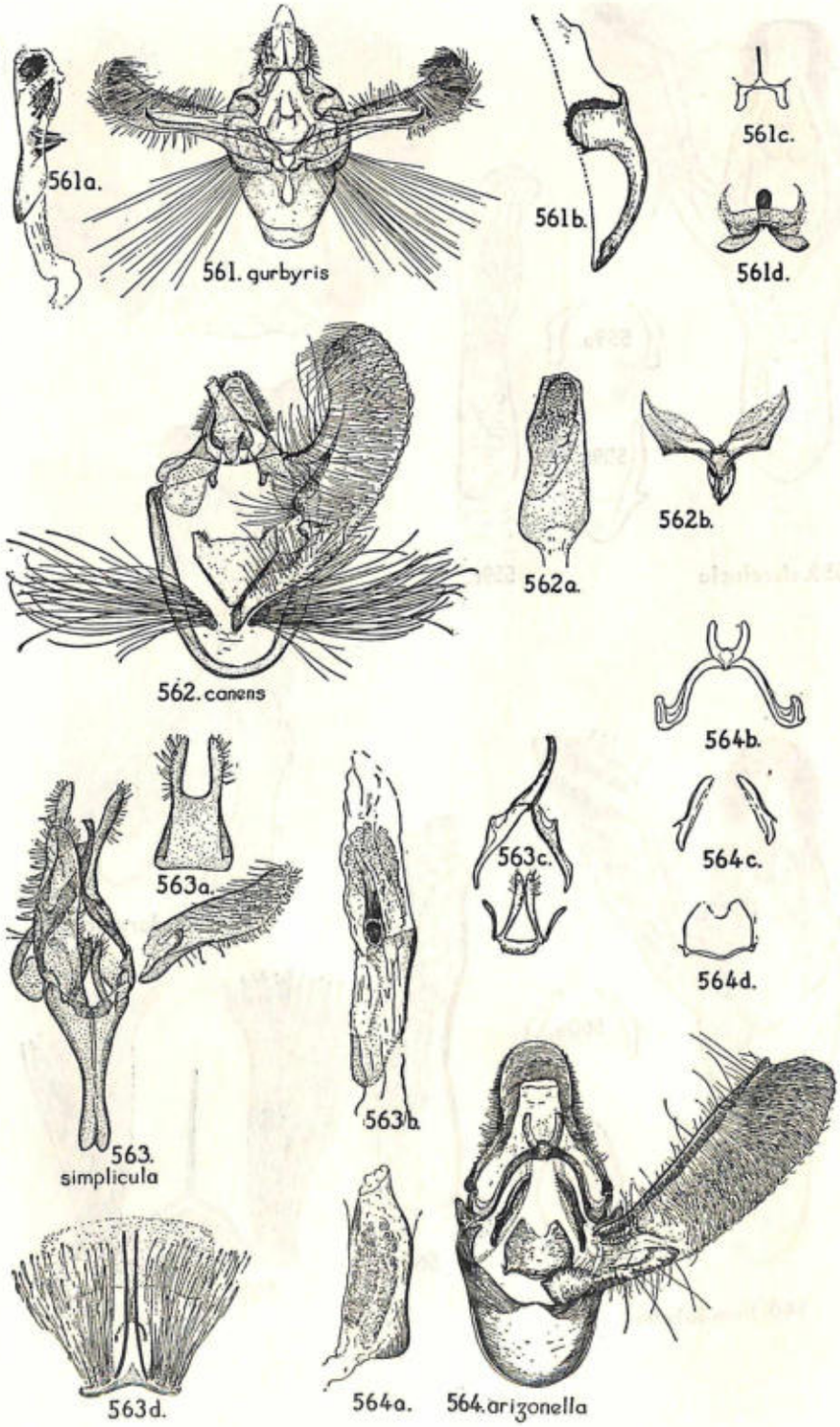
FIGURES 561–564.—MALES.

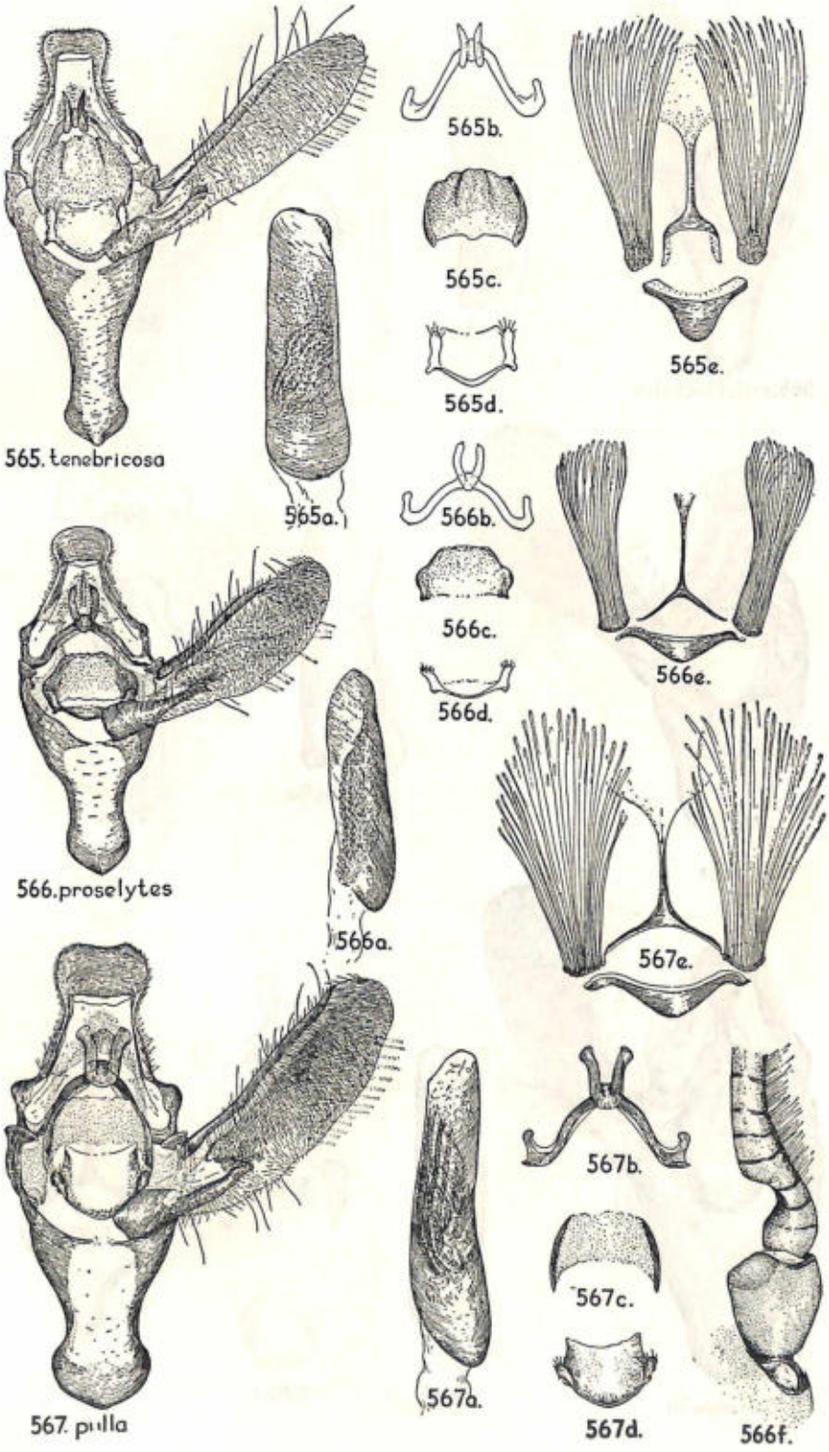
561. *Illatila gurbyris* Dyar, aedeagus omitted, vinculum foreshortened; 561a, aedeagus; 561b, lateral view of tegumen showing serrate production from base; 561c, gnathos; 561d, sternite of eighth abdominal segment.

562. *Lascelina canens* Heinrich, new species, type; 562a, aedeagus; 562b, sternite of eighth abdominal segment.

563. *Metlphestia simplicula* (Zeller); 563a, uncus; 563b, aedeagus; 563c, gnathos and anellus; 563d, tufts of eighth abdominal segment.

564. *Selga arizonella* (Hulst); 564a, aedeagus; 564b, gnathos; 564c, elements of transtilla; 564d, anellus.





FIGURES 565–567.—MALES.

565. *Diatomocera tenebricosa* (Zeller), example from French Guiana, placed here to show affinities in genitalic structure of *Diatomocera* and *Entmemacornis;* 565a, aedeagus; 565b, gnathos; 565c, transtilla; 565d, anellus; 565e, tufts of eighth abdominal segment.

566. *Entmemacornis proselytes* Dyar; 566a, aedeagus; 566b, gnathos; 566c, transtilla; 566d, anellus; 566e, tufts of eighth abdominal segment; 566f, basal segments of antenna, denuded.

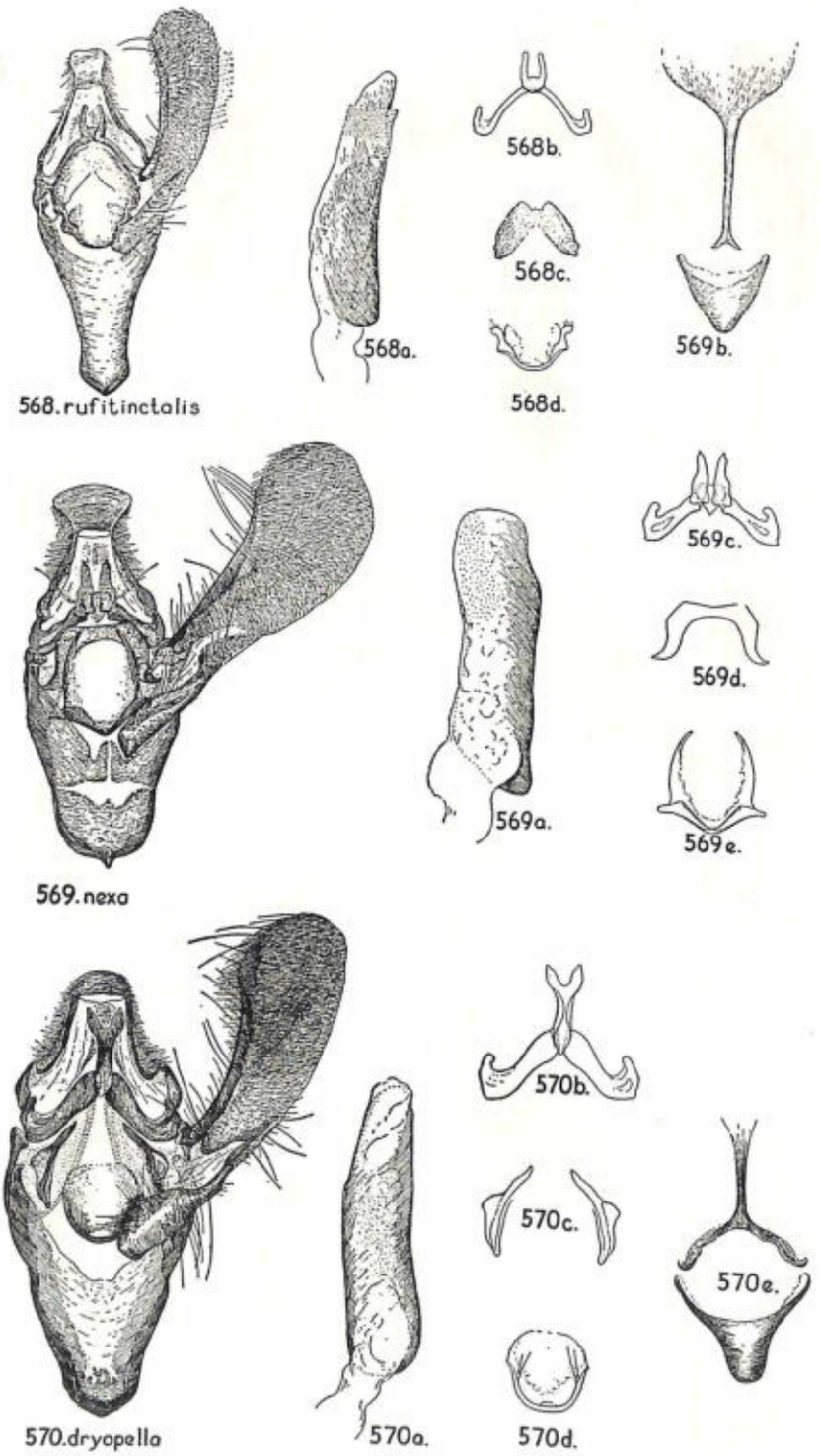
567. *Entmemacornis pulla* Heinrich, new species, type; 567a, aedeagus; 567b, gnathos; 567c, transtilla; 567d, anellus; 567e, tufts of eighth abdominal segment.

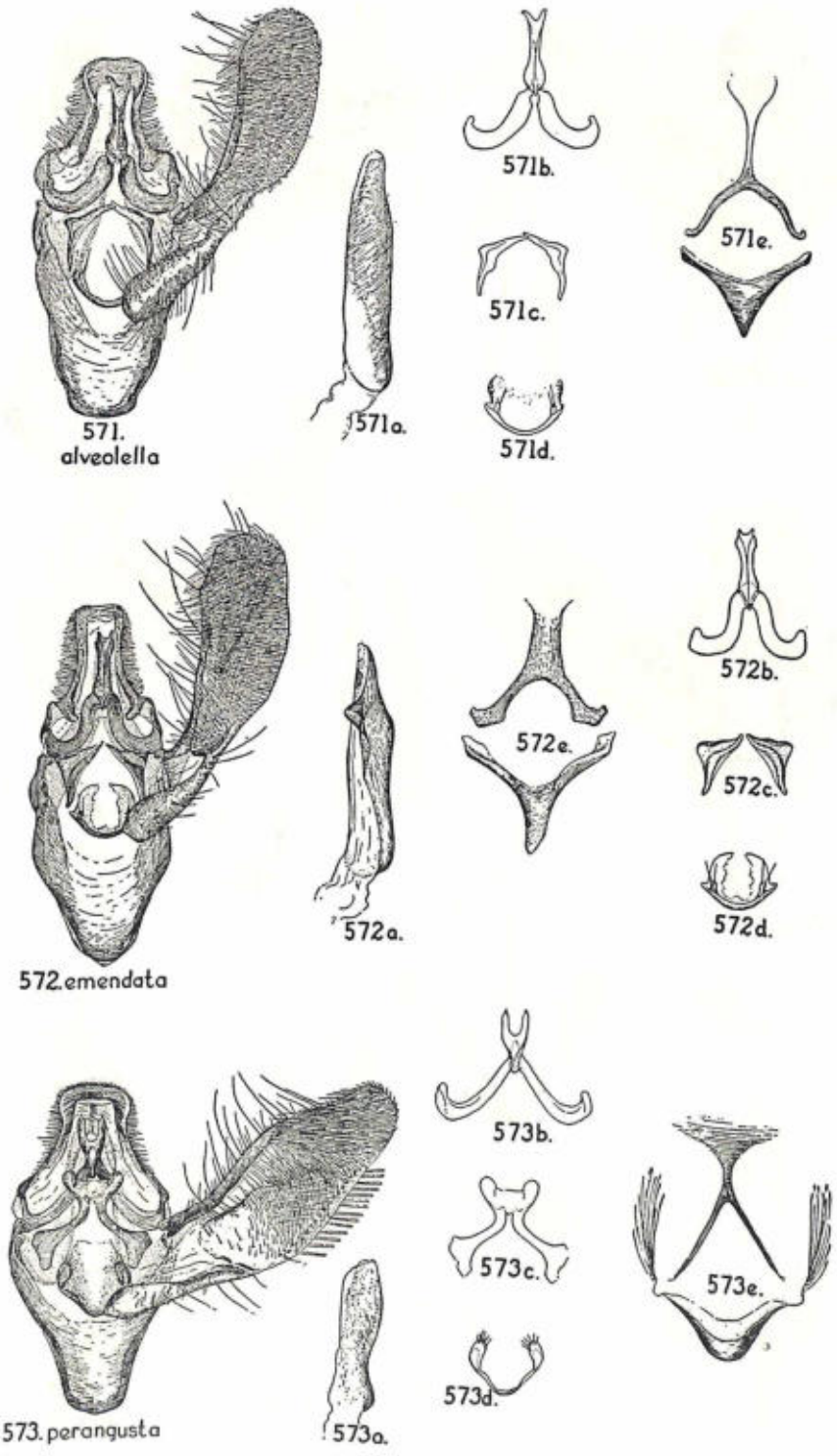
FIGURES 568–570.—MALES.

568. *Cayennia rufitinctalis* Hampson; 568a, aedeagus; 568b, gnathos; 568c, transtilla; 568d, anellus.

569. *Rioja nexa* Heinrich, new species, type; 569a, aedeagus; 569b, tergite and sternite of eighth abdominal segment; 569c, gnathos; 569d, transtilla; 569e, anellus.

570. *Moerbes dryopella* (Schaus), type; 570a, aedeagus; 570b, gnathos; 570c, elements of transtilla; 570d, anellus; 570e, tergite and sternite of eighth abdominal segment.





FIGURES 571–573.—MALES.

571. *Moerbes alveolella* (Ragonot); 571a, aedeagus; 571b, gnathos; 571c, transtilla; 571d, anellus; 571e, tergite and sternite of eighth abdominal segment.

572. *Moerbes emendata* Heinrich, new species; 572a, aedeagus; 572b, gnathos; 572c, transtilla; 572d, anellus; 572e, tergite and sternite of eighth abdominal segment.

573. *Moodnopsis perangusta* (Dyar), type; 573a, aedeagus; 573b, gnathos; 573c, transtilla; 573d, anellus; 573e, tergite, sternite and hair tufts of eighth abdominal segment.

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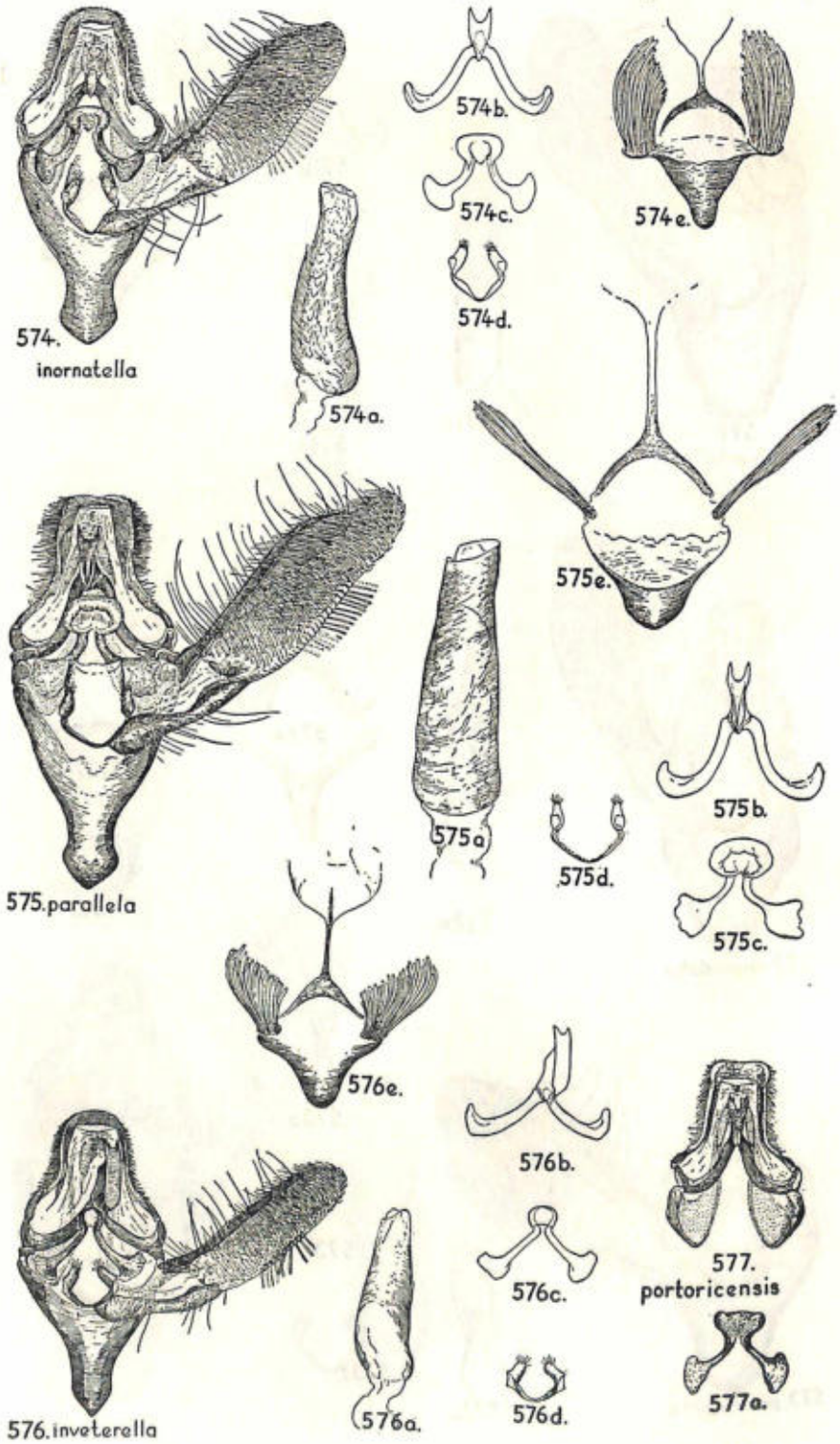
FIGURES 574–577.—MALES.

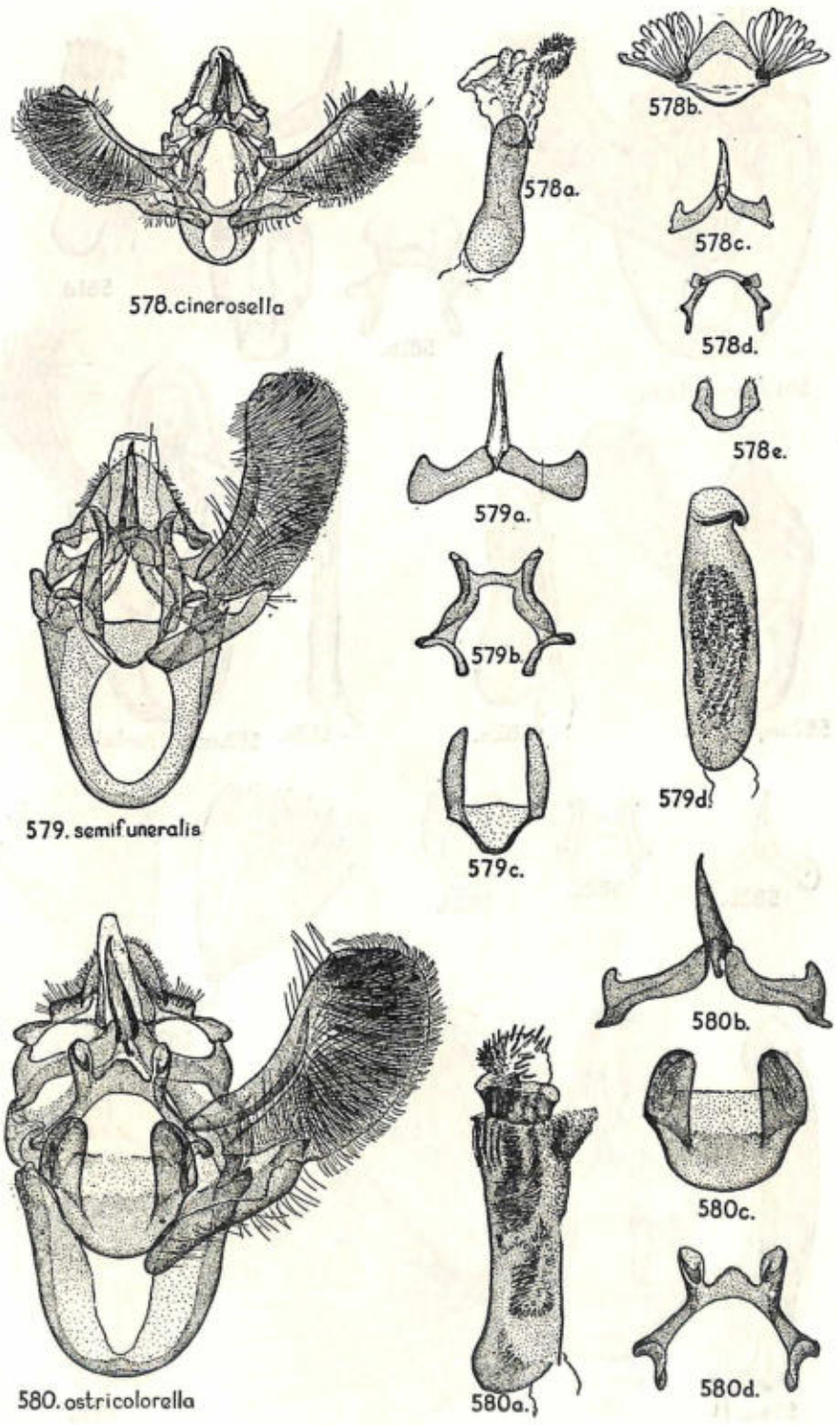
574. *Moodnopsis inornatella* (Ragonot); 574a, aedeagus; 574b, gnathos; 574c, transtilla; 574d, anellus; 574e, tergite, sternite, and tufts of eighth abdominal segment.

575. *Moodnopsis parallela* Heinrich, new species; 575a, aedeagus; 575b, gnathos; 575c, transtilla; 575d, anellus; 575e, tergite, sternite, and tufts of eighth abdominal segment.

576. *Moodnopsis inveterella* (Dyar); 576a, aedeagus; 576b, gnathos; 576c, transtilla; 576d, anellus; 576e, tergite, sternite, and tufts of eighth abdominal segment.

577. *Moodnopsis portoricensis* Heinrich, new species, uncus, gnathos, and tegumen of male genitalia; 577a, transtilla.





FIGURES 578–580.—MALES.

578. *Euzophera cinerosella* (Zeller), aedeagus omitted; 578a, aedeagus; 578b, tufts of eighth abdominal segment; 578c, gnathos; 578d, transtilla; 578e, anellus.

579. *Euzophera semifuneralis* (Walker); 579a, gnathos; 579b, transtilla; 579c, anellus; 579d, aedeagus.

580. *Euzophera ostricolorella* Hulst; 580a, aedeagus; 580b, gnathos; 580c, anellus; 580d, transtilla.

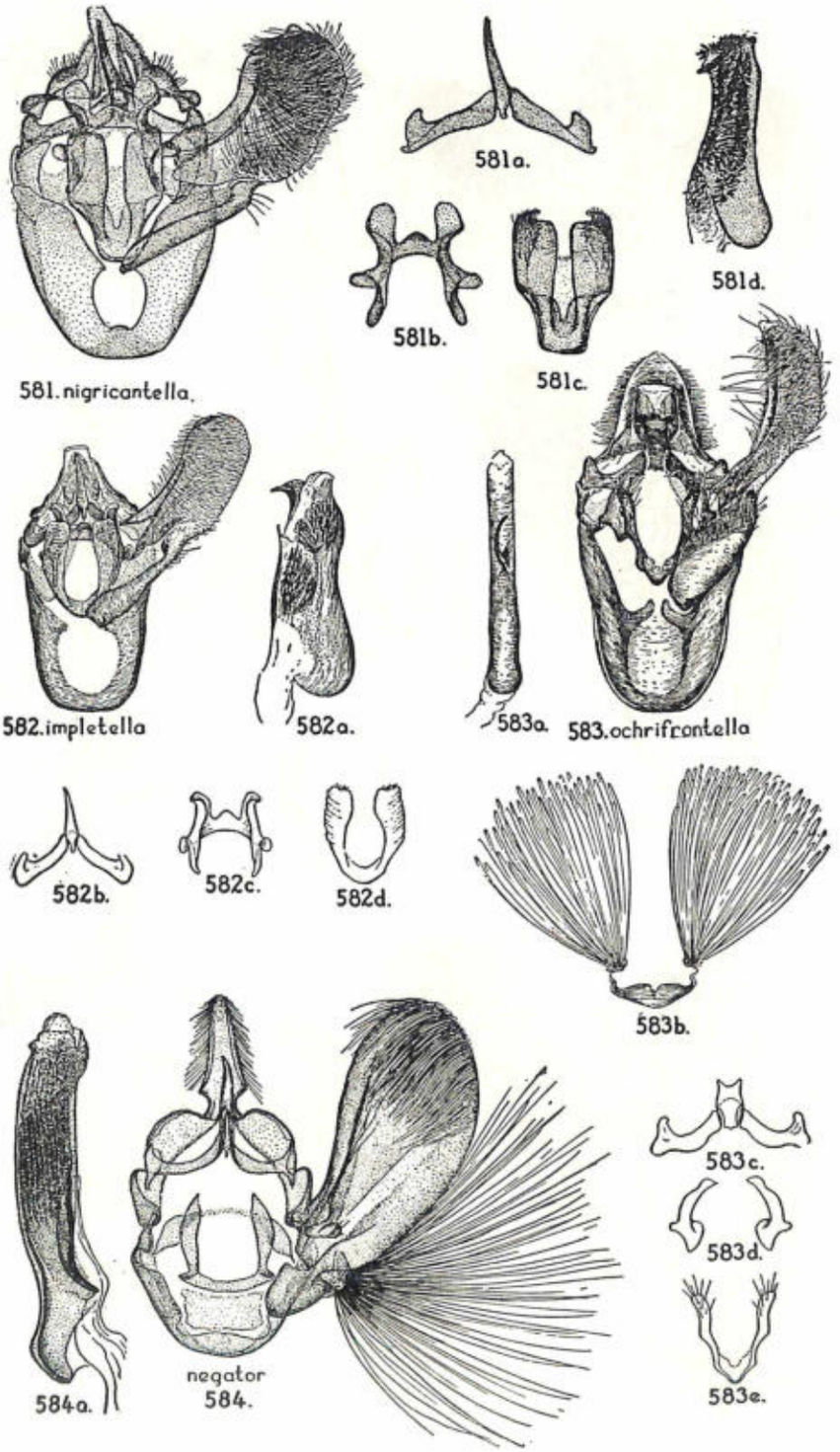
FIGURES 581–584.—MALES.

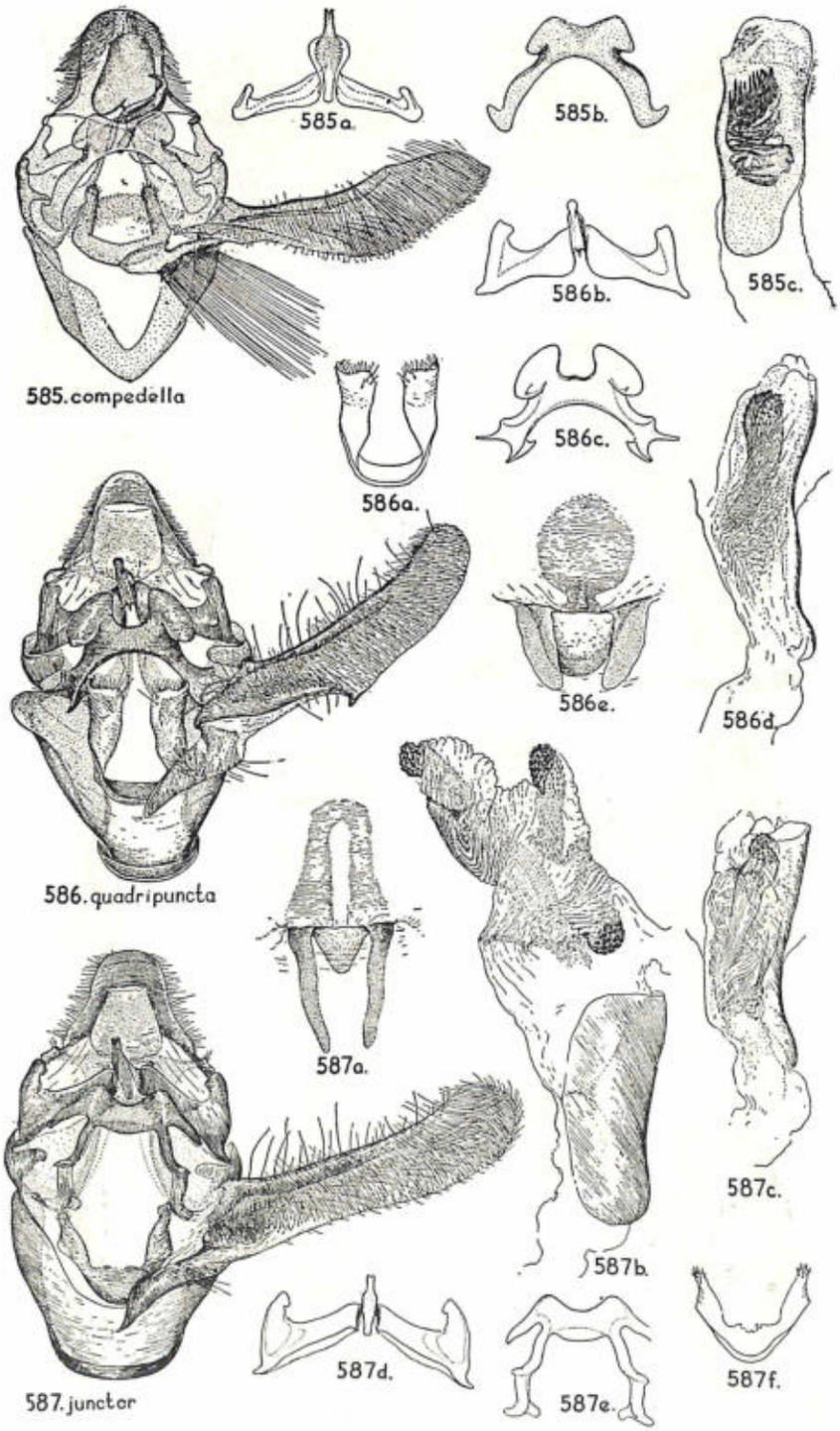
581. *Euzophera nigricantella* Ragonot; 581a, gnathos; 581b, transtilla, 581c, anellus; 581d, aedeagus.

582. *Prosoeuzophera impletella* (Zeller), paratype (in BM); 582a, aedeagus; 582b, gnathos; 582c, transtilla; 582d, anellus.

583. *Eulogia ochrifrontella* (Zeller); 583a, aedeagus; 583b, tufts of eighth abdominal segment of male; 583c, gnathos; 583d, elements of transtilla; 583e, anellus.

584. *Exuperius negator* Heinrich, type; 584a, aedeagus.





FIGURES 585–587.—MALES.

585. *Edulica compedella* (Zeller); 585a, gnathos; 585b, transtilla; 585c, aedeagus.

586. *Farnobia quadripuncta* (Zeller); 586a, anellus; 586b, gnathos; 586c, transtilla; 586d, aedeagus; 586e, sternite of eighth abdominal segment.

587. *Gennadius junctor* Heinrich, new species; 587a, sternite of eighth abdominal segment; 587b, aedeagus with penis extruded; 587c, aedeagus with penis in normal position; 587d, gnathos; 587e, transtilla; 587f, anellus.

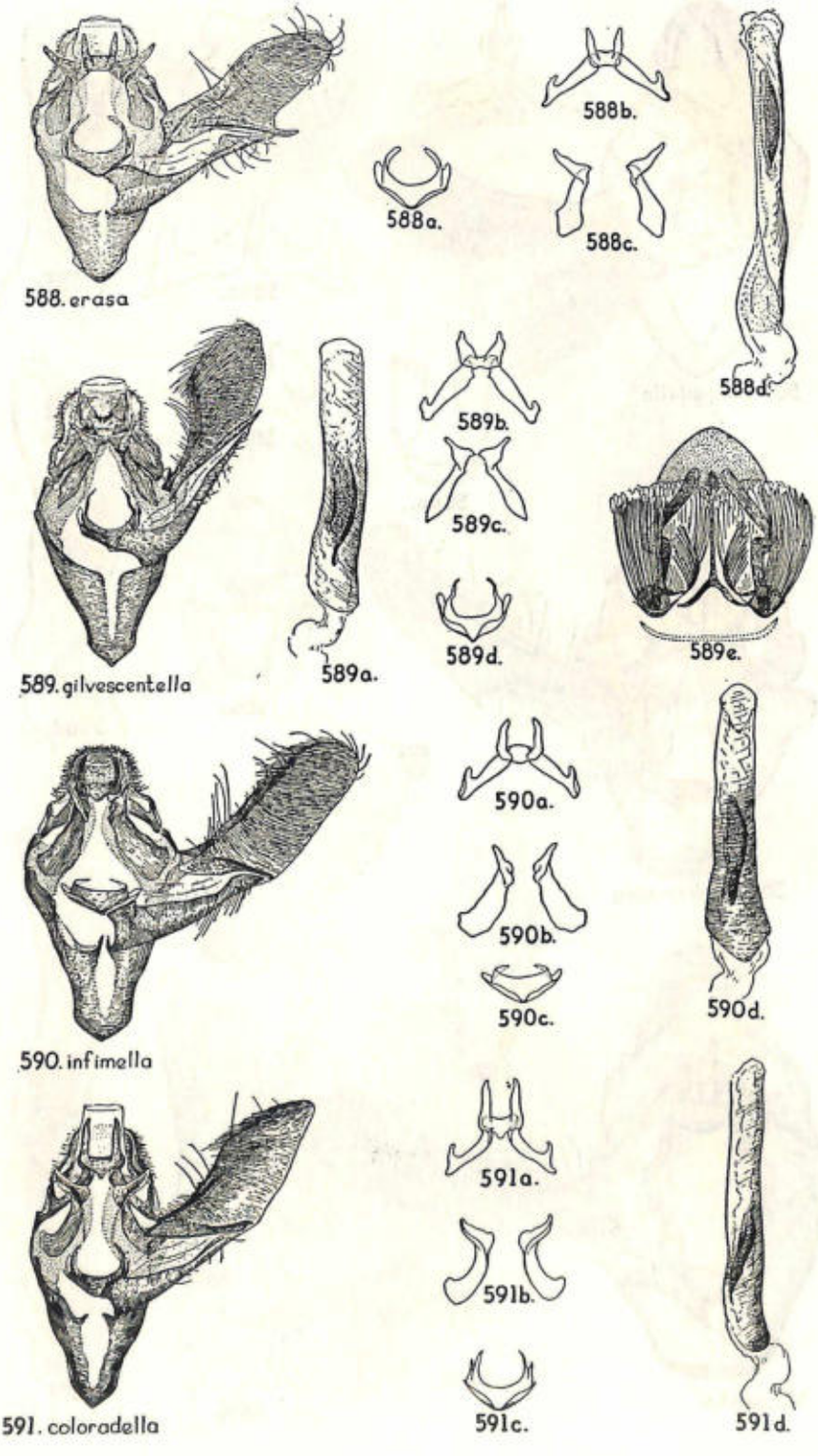
FIGURES 588–591.—MALES.

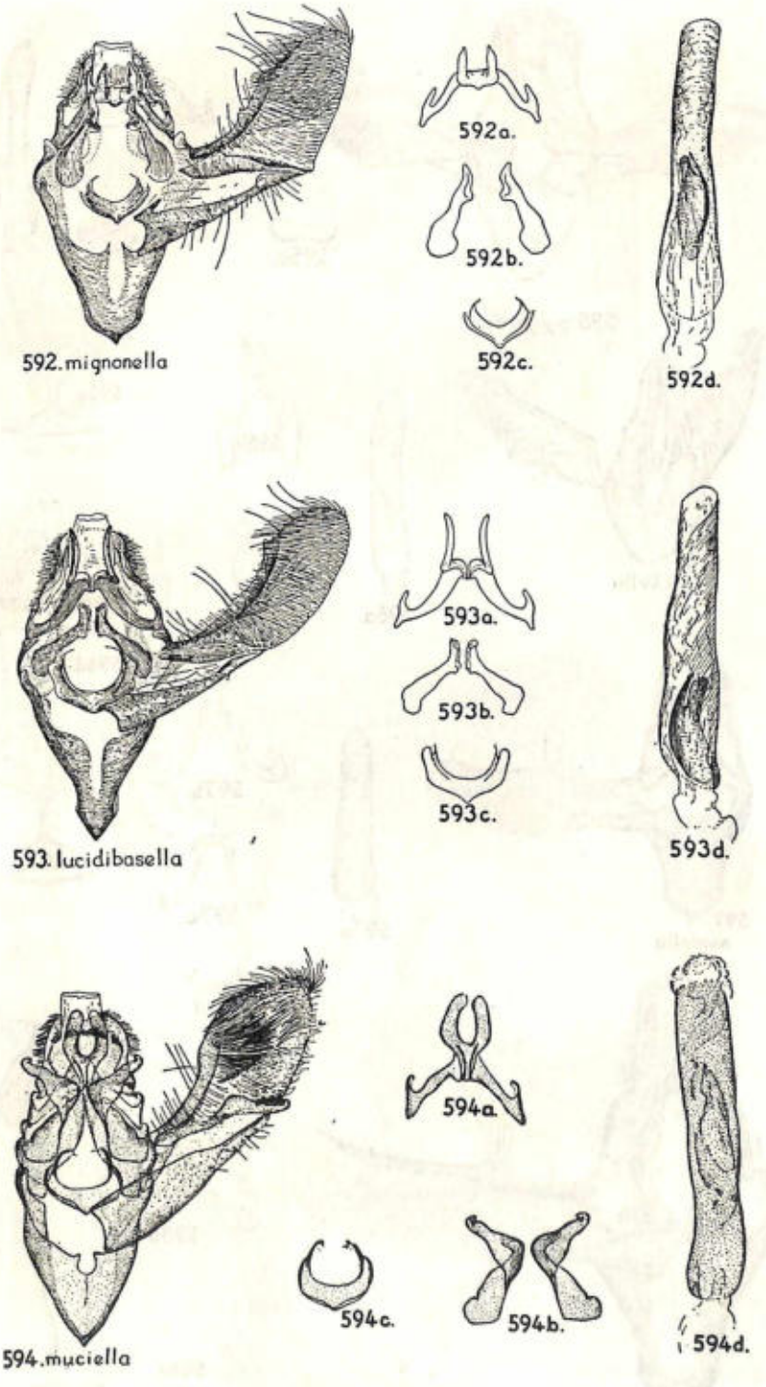
588. *Ephestiodes erasa* Heinrich, new species, type; 588a, anellus; 588b, gnathos; 588c, elements of transtilla; 588d, aedeagus.

589. *Ephestiodes gilvescentella* Ragonot; 589a, aedeagus; 589b, gnathos; 589c, elements of transtilla; 589d, anellus; 589e, tufts of eighth abdominal segment.

590. *Ephestiodes infimella* Ragonot; 590a, gnathos; 590b, elements of transtilla; 590c, anellus; 590d, aedeagus.

591. *Eurythmia coloradella* Hulst, a synonym of *Ephestiodes erythrella* Ragonot; 591a, gnathos; 591b, elements of transtilla; 591c, anellus; 591d, aedeagus.





FIGURES 592–594.—MALES.

592. *Ephestiodes mignonella* Dyar; 592a, gnathos, 592b, elements of transtilla; 592c, anellus; 592d, aedeagus.

593. *Ephestiodes lucidibasella* Ragonot, type; 593a, gnathos; 593b, elements of transtilla; 593c, anellus; 593d, aedeagus.

594. *Azaera muciella* Schaus; 594a, gnathos; 594b, elements of transtilla; 594c, anellus; 594d, aedeagus.

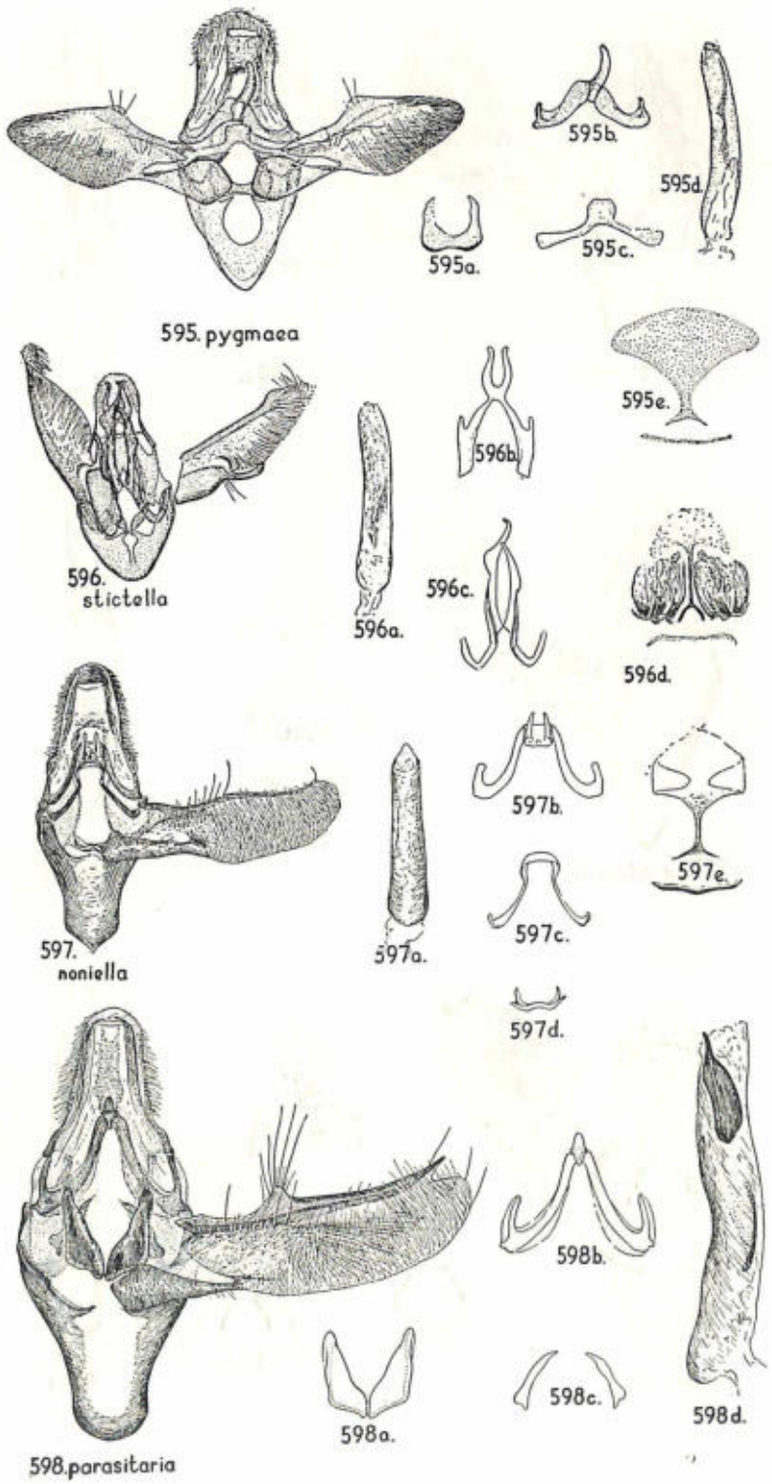
FIGURES 595–598.—MALES.

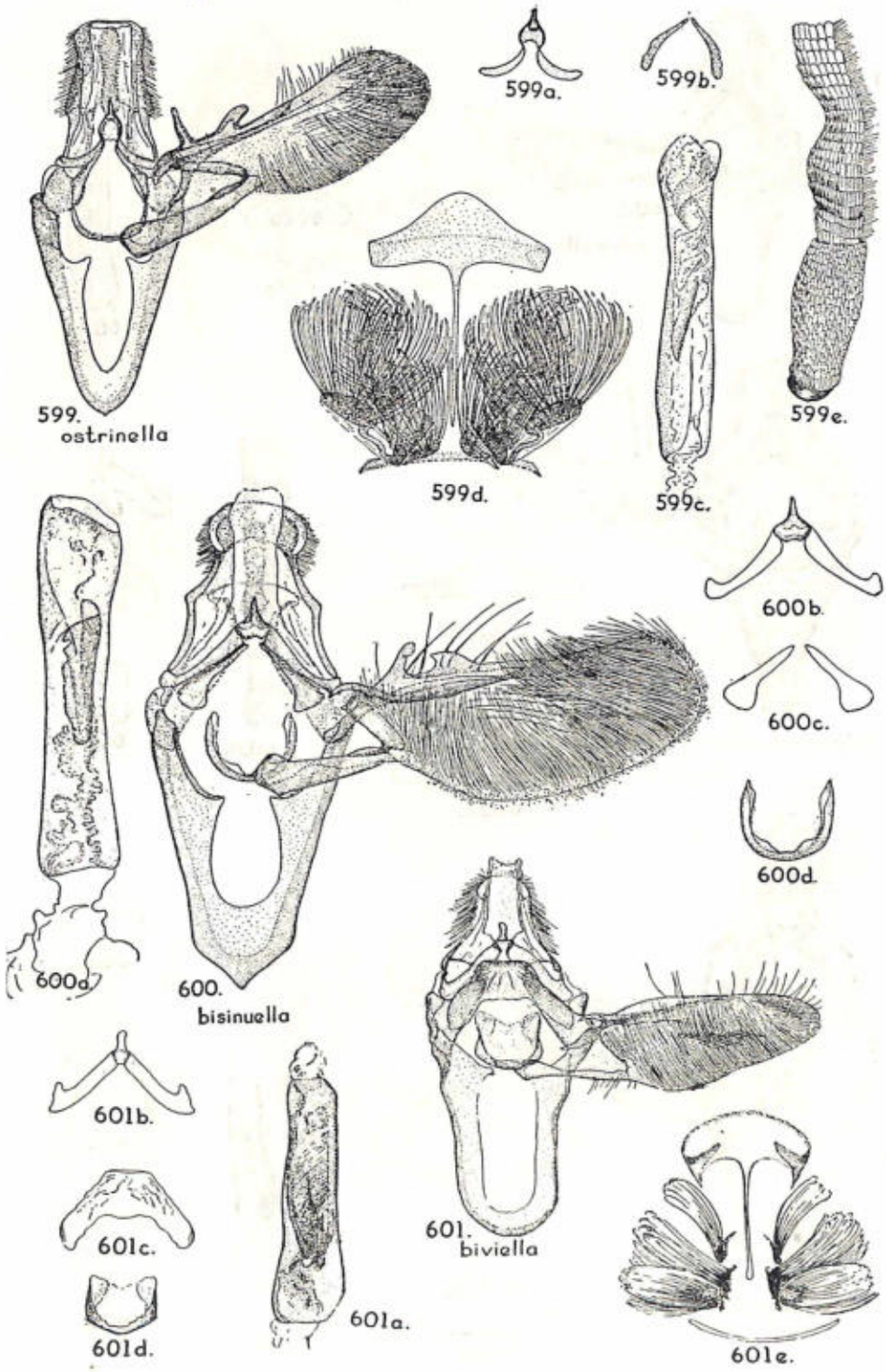
595. *Micromescinia pygmaea* Dyar, aedeagus omitted; 595a, anellus; 595b, gnathos; 595c, transtilla; 595d, aedeagus; 595e, tergite and sternite of eighth abdominal segment.

596. *Ephestiodes stictella* (Hampson), one harpe detached and aedeagus omitted; 596a, aedeagus; 596b, gnathos; 596c, transtilla; 596d, tufts of eighth abdominal segment.

597. *Ephestiodes noniella* Dyar, 597a, aedeagus; 597b, gnathos; 597c, transtilla; 597d, anellus; 597e, tergite and sternite of eighth abdominal segment.

598. *Vezina parasitaria* Heinrich, new species, type; 598a, anellus; 598b, gnathos; 598c, elements of transtilla; 598d, aedeagus.





FIGURES 599–601.—MALES.

599. *Moodna ostrinella* (Clemens); 599a, gnathos; 599b, elements of transtilla; 599c, aedeagus; 599d, tufts of eighth abdominal segment; 599e, basal segment of antenna.

600. *Moodna bisinuella* Hampson; 600a, aedeagus; 600b, gnathos; 600c, elements of transtilla; 600d, anellus.

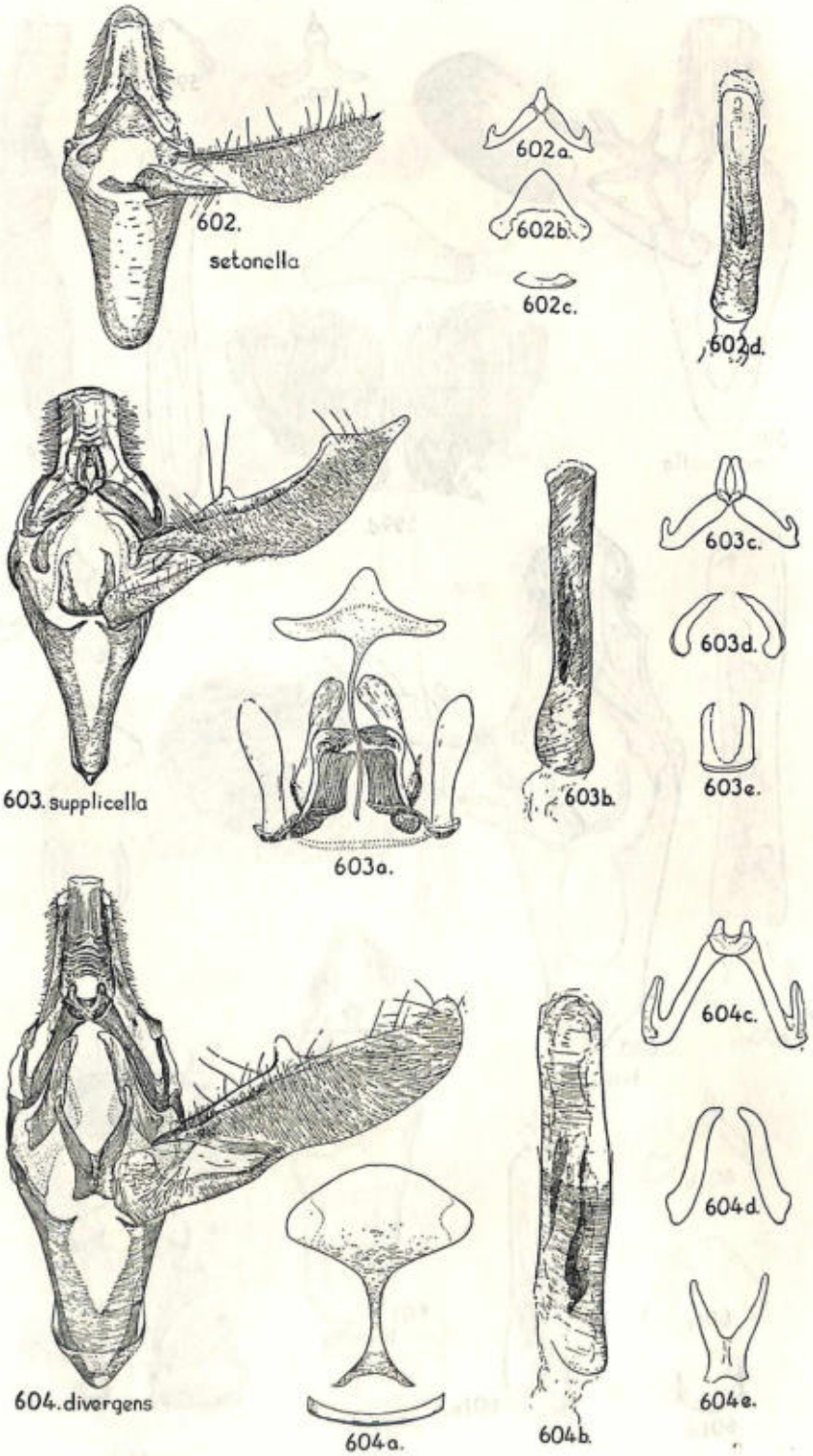
601. *Manhatta biviella* (Zeller); 601a, aedeagus; 601b, gnathos; 601c, transtilla; 601d, anellus; 601e, tufts on eighth abdominal segment.

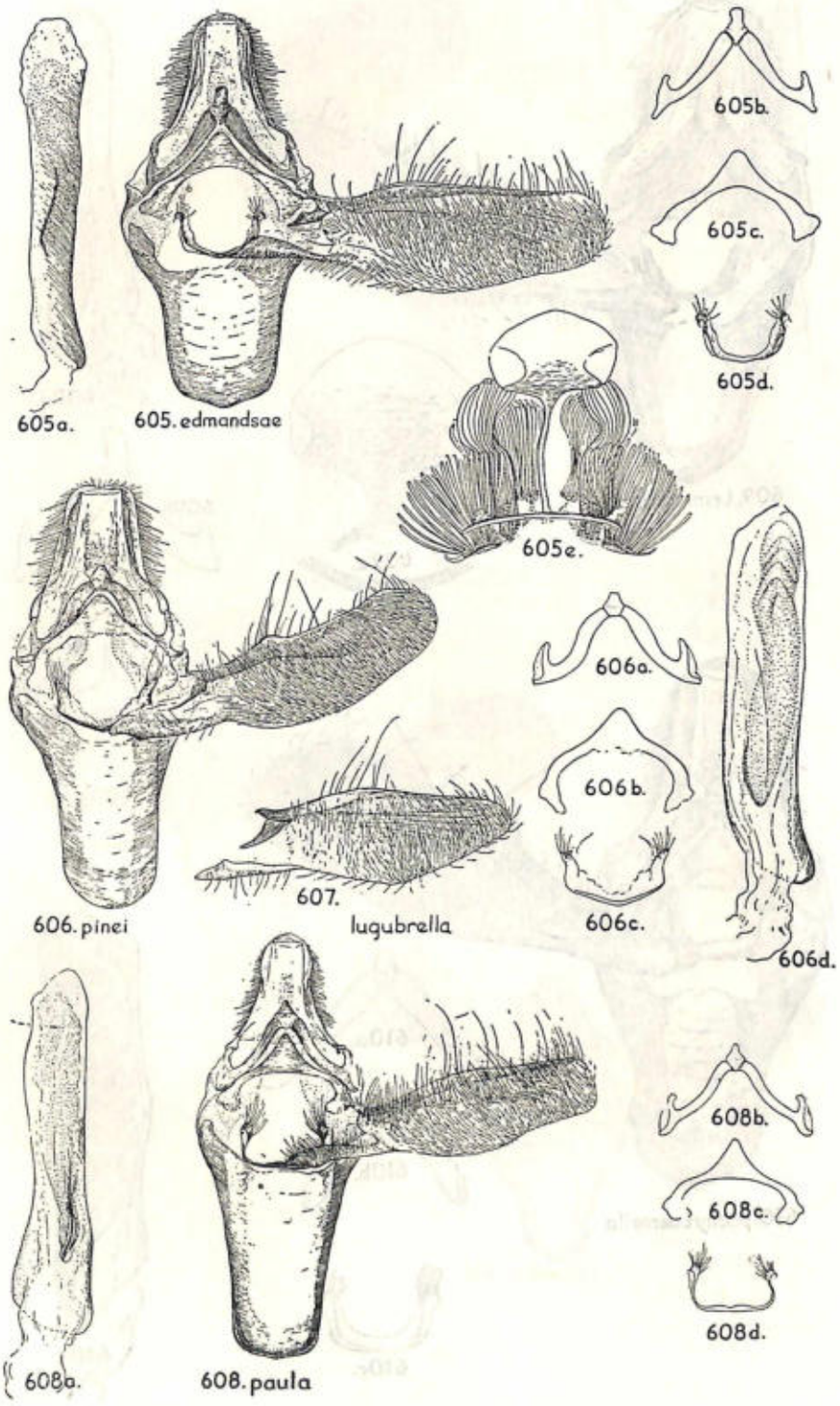
FIGURES 602–604.—MALES.

602. *Manhatta setonella* (McDunnough), specimen from Utah; 602a, gnathos; 602b, transtilla; 602c, anellus; 602d, aedeagus.

603. *Verina supplicella* (Dyar); 603a, tergite, sternite, and tufts of eighth abdominal segment; 603b, aedeagus; 603c, gnathos; 603d, elements of transtilla; 603e, anellus.

604. *Vagobanta divergens* (Butler); 604a, tergite and sternite of eighth abdominal segment; 604b, aedeagus; 604c, gnathos; 604d, elements of transtilla; 604e, anellus.





FIGURES 605–608.—MALES.

605. *Vitula edmandsae* (Packard); 605a, aedeagus; 605b, gnathos; 605c, transtilla; 605d, anellus; 605e, tergite, sternite, and tufts of eighth abdominal segment.

606. *Vitula pinei* Heinrich, new species; 606a, gnathos; 606b, transtilla; 606c, anellus; 606d, aedeagus.

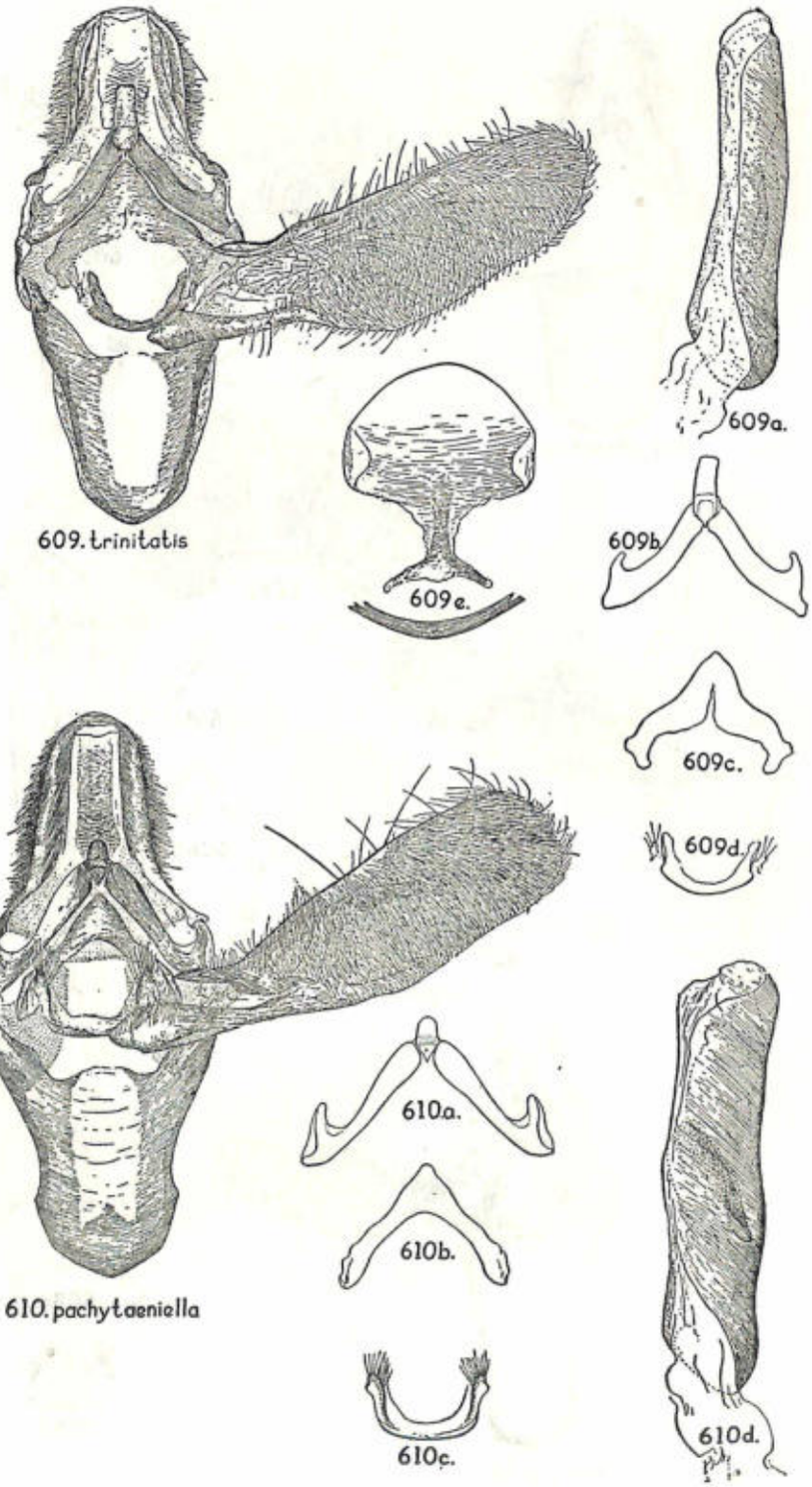
607. *Vitula lugubrella* (Ragonot), harpe.

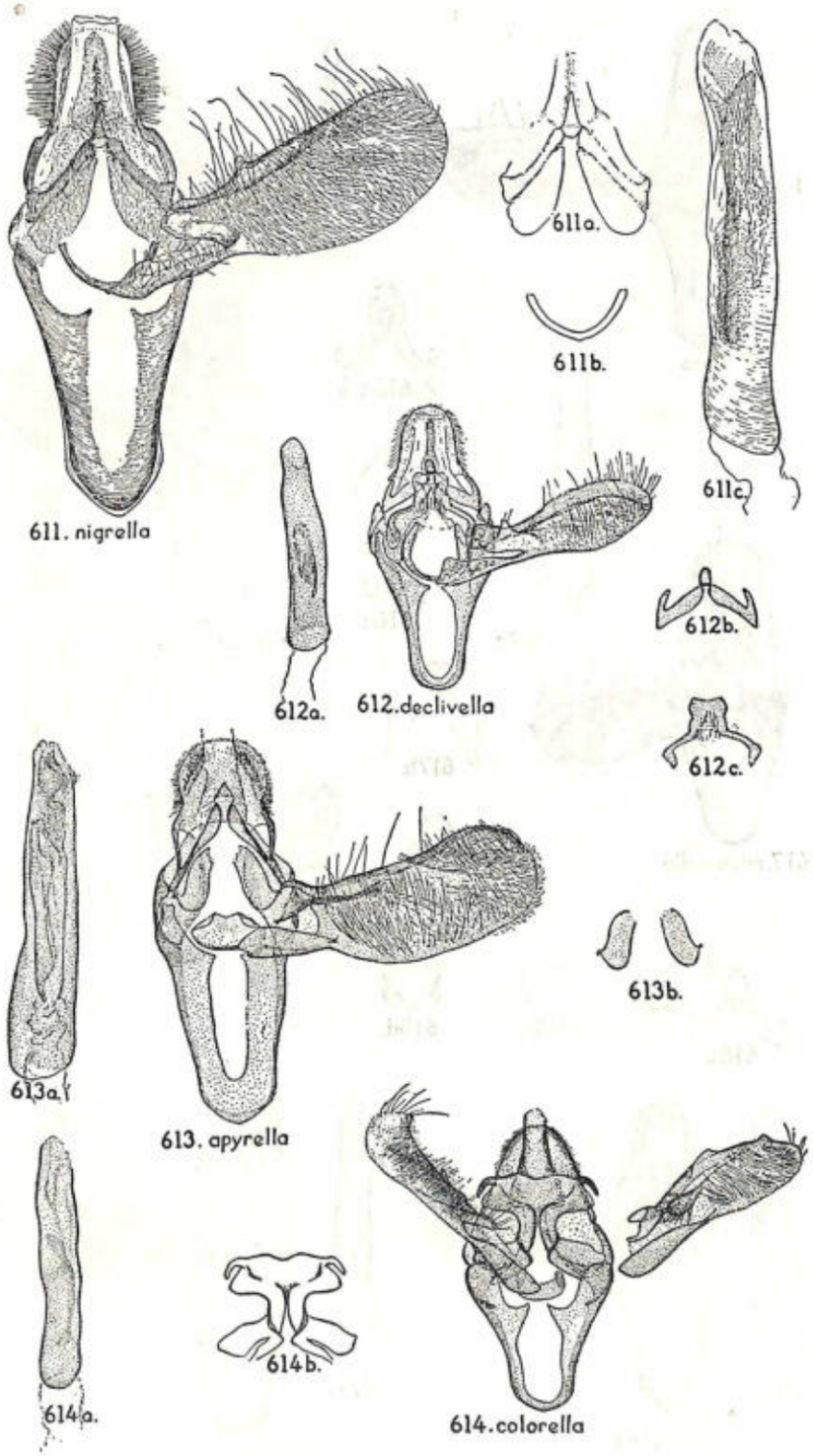
608. *Moodnella paula* Heinrich, type; 608a, aedeagus; 608b, gnathos; 608c, transtilla; 608d, anellus.

FIGURES 609, 610.—MALES.

609. *Volatica trinitatis* Heinrich, new species; 609a, aedeagus; 609b, gnathos, 609c, transtilla; 609d, anellus; 609e, tergite and sternite of eighth abdominal segment.

610. *Volatica pachytaeniella* (Ragonot); 610a, gnathos; 610b, transtilla; 610c, anellus; 610d, aedeagus.





FIGURES 611–614.—MALES.

611. *Caudellia nigrella* (Hulst), type; 611a, gnathos plus transtilla; 611b, anellus; 611c, aedeagus.

612. *Caudellia declivella* (Zeller); 612a, aedeagus; 612b, gnathos; 612c, transtilla.

613. *Caudellia apyrella* Dyar, type; 613a, aedeagus; 613b, elements of transtilla.

614. *Caudellia colorella* (Dyar), one harpe detached and aedeagus omitted; 614a, aedeagus; 614b, transtilla.

FIGURES 615–619.—MALES.

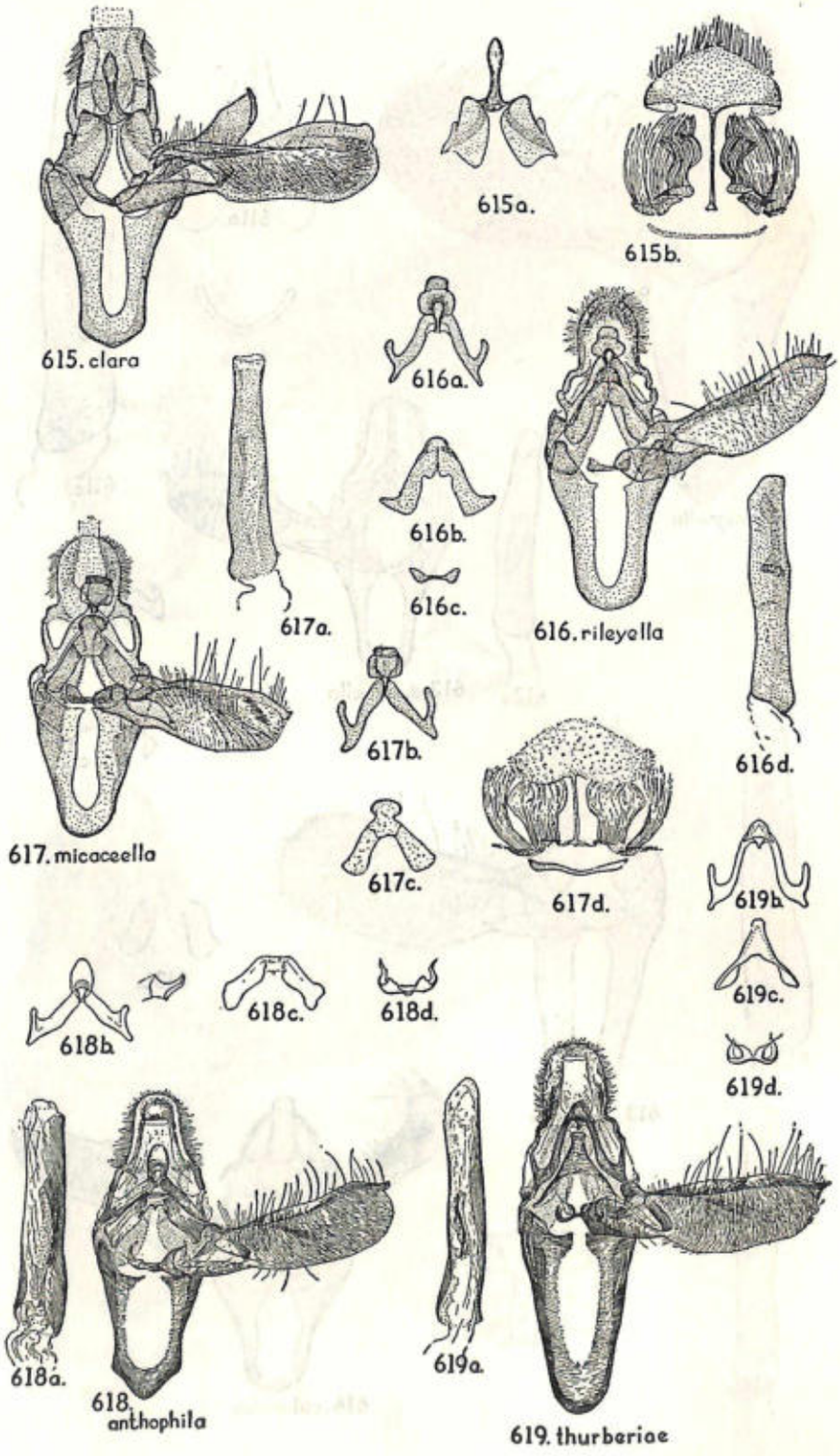
615. *Caudellia clara* Heinrich, type; 615a, gnathos; 615b, eighth abdominal segment, showing dorsal tufts.

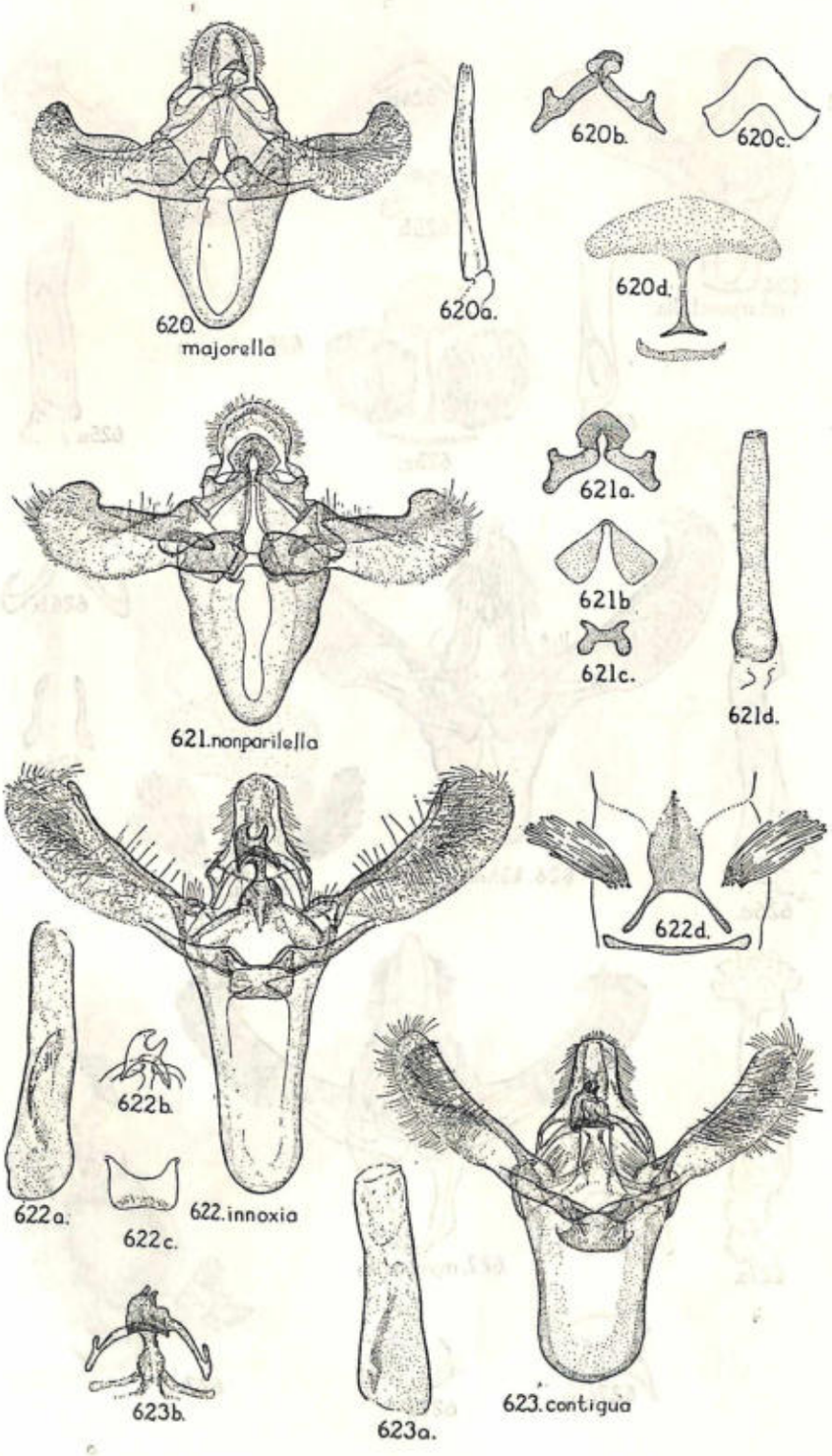
616. *Sosipatra rileyella* (Ragonot); 616a, gnathos; 616b, transtilla; 616c, anellus; 616d, aedeagus.

617. *Sosipatra micaceella* (Hampson); 617a, aedeagus; 617b, gnathos; 617c, transtilla; 617d, eighth abdominal segment, showing dorsal tufts.

618. *Sosipatra anthophila* (Dyar), type; 618a, aedeagus; 618b, gnathos with side sketch showing apical projection in lateral view; 618c, transtilla; 618d, anellus.

619. *Sosipatra thurberiae* (Dyar), type; 619a, aedeagus; 619b, gnathos; 619c, transtilla; 619d, anellus.





FIGURES 620–623.—MALES.

620. *Sosipatra majorella* (Dyar), aedeagus omitted; 620a, aedeagus; 620b, gnathos; 620c, transtilla; 620d, tergite and sternite of eighth abdominal segment.

621. *Sosipatra nonparilella* (Dyar), type, aedeagus omitted; 621a, gnathos; 621b, transtilla; 621c, anellus; 621d, aedeagus.

622. *Ribua innoxia* Heinrich, aedeagus omitted; 622a, aedeagus; 622b, apical projection of gnathos; 622c, anellus; 622d, tergite, sternite, and dorsal tufts of eighth abdominal segment.

623. *Ribua contigua* Heinrich, new species, aedeagus omitted; 623a, aedeagus; 623b, fused gnathos and transtilla.

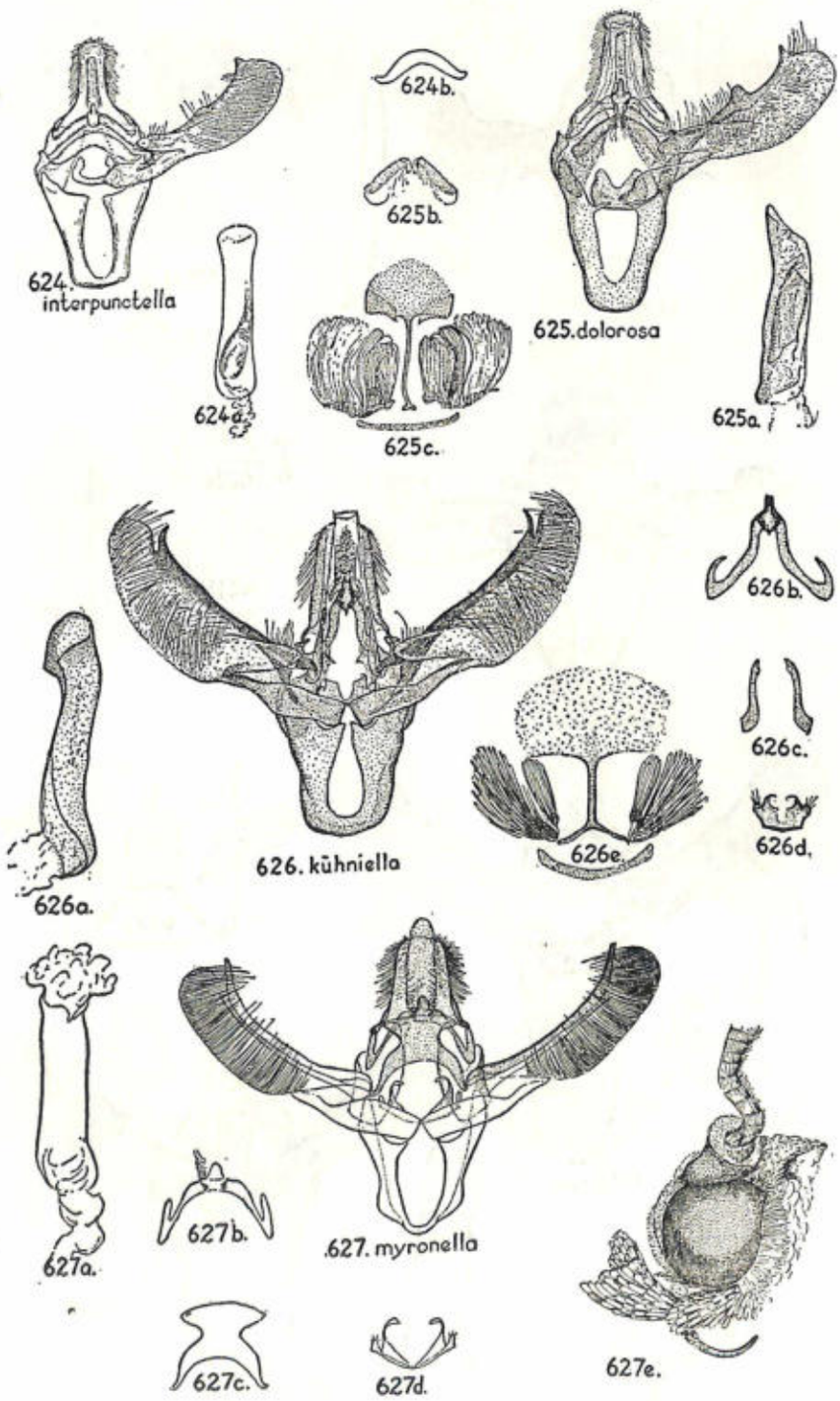
FIGURES 624–627.—MALES.

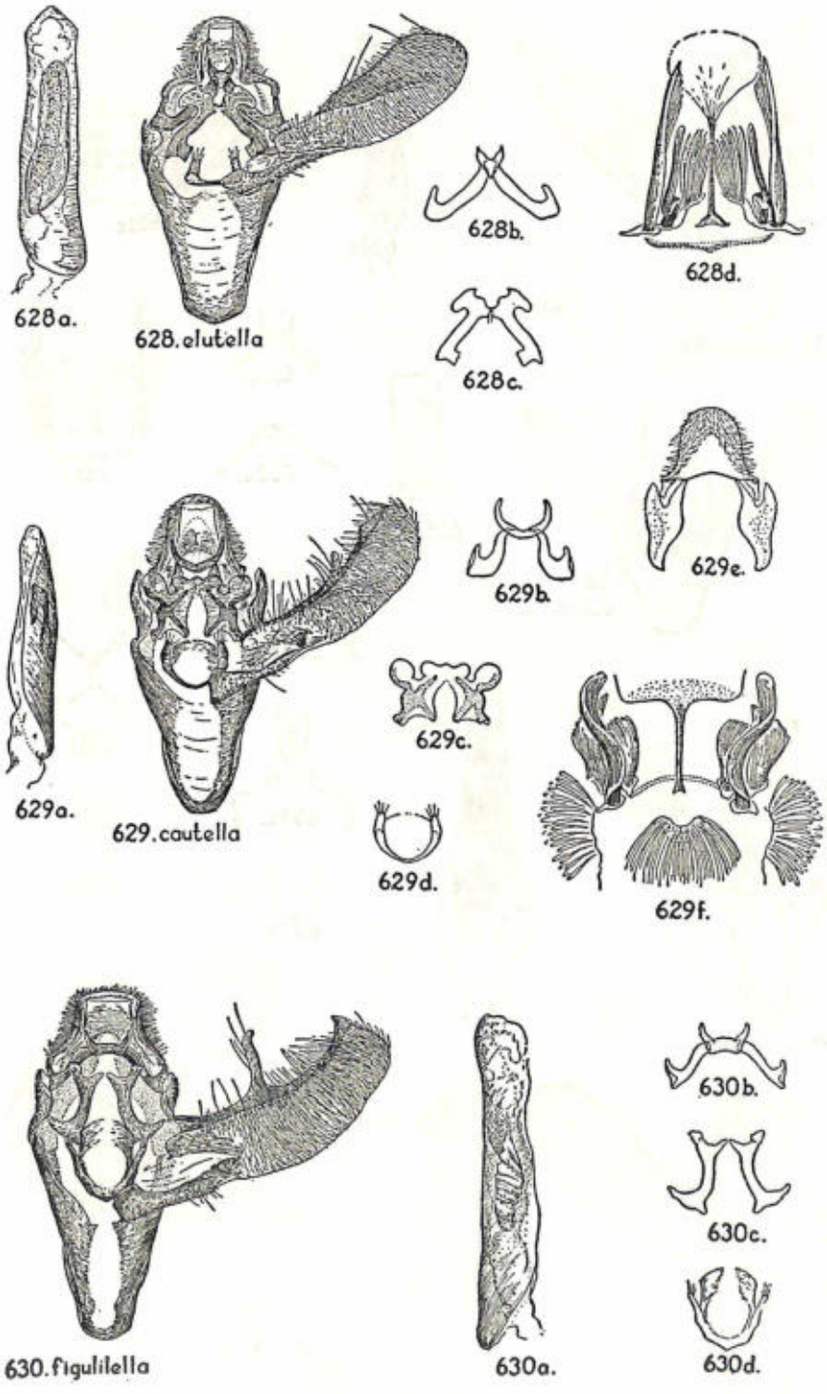
624. *Plodia interpunctella* (Hübner); 624a, aedeagus; 624b, transtilla.

625. *Plodia dolorosa* Dyar; 625a, aedeagus; 625b, transtilla; 625c, tergite, sternite, and dorsal tufts of eighth abdominal segment.

626. *Anagasta kühniella* (Zeller), aedeagus omitted; 626a, aedeagus; 626b, gnathos; 626c, elements of transtilla; 626d, anellus; 626e, tergite, sternite, and dorsal tufts of eighth abdominal segment.

627. *Cabnia myronella* Dyar, aedeagus omitted; 627a, aedeagus; 627b, gnathos; 627c, transtilla; 627d, anellus; 627e, lateral view of head.





FIGURES 628–630.—MALES.

628. *Ephestia elutella* (Hübner); 628a, aedeagus; 628b, gnathos; 628c, transtilla; 628d, eighth abdominal segment, showing dorsal tufts.

629. *Ephestia cautella* (Walker); 629a, aedeagus; 629b, gnathos; 629c, transtilla; 629d, anellus; 629e, dorsal view of uncus and tegumen; 629f, eighth abdominal segment, showing dorsal tufts.

630. *Ephestia figulilella* Gregson; 630a, aedeagus; 630b, gnathos; 630c, transtilla: 630d, anellus.

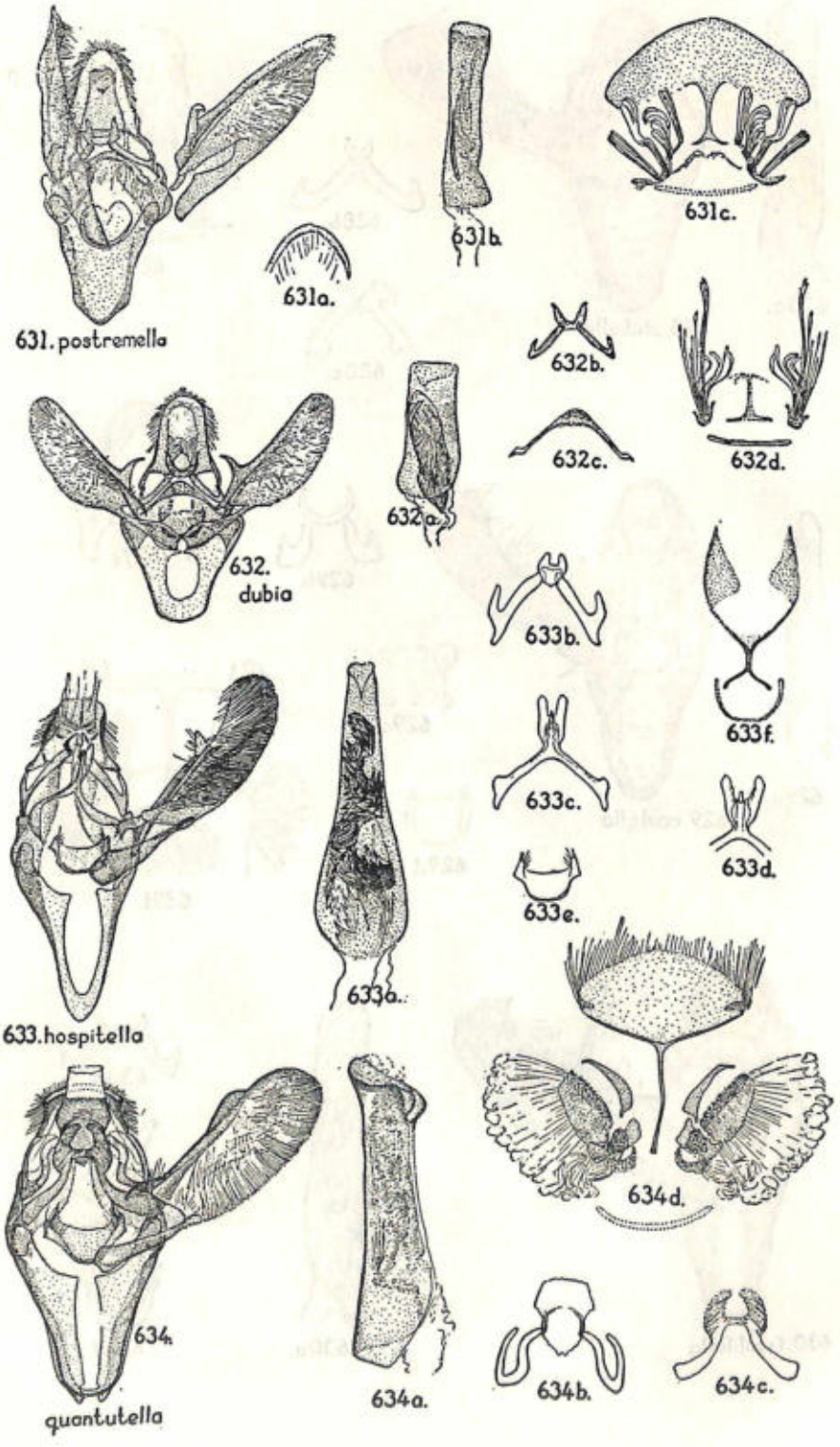
FIGURES 631–634.—MALES

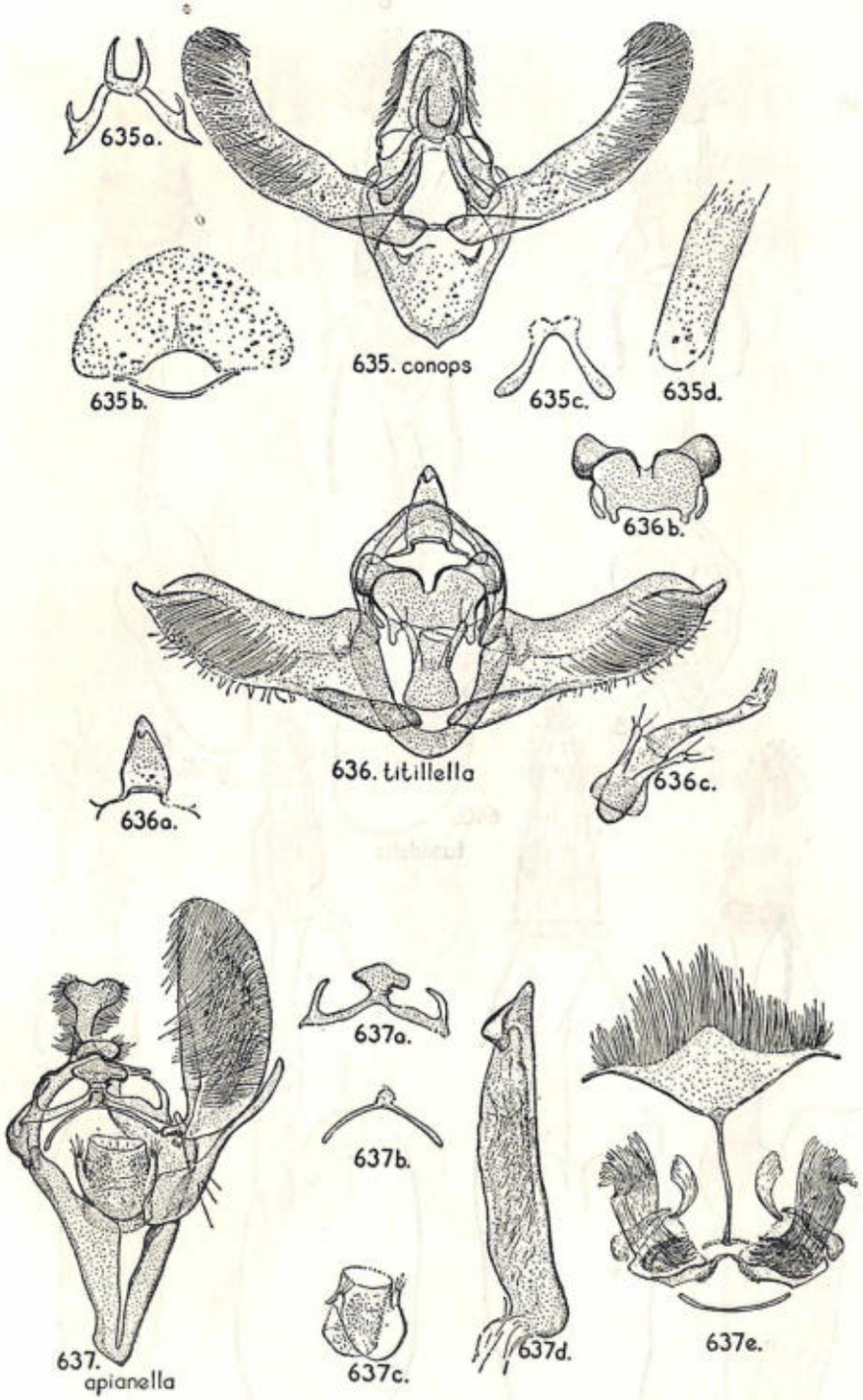
631. *Varneria postremella* Dyar, one harpe detached and aedeagus omitted; 631a, transtilla; 631b, aedeagus; 631c, eighth abdominal segment, showing dorsal tufts.

632. *Varneria dubia* Heinrich, new species, aedeagus omitted; 632a, aedeagus; 632b, gnathos; 632c, transtilla; 632d, eighth abdominal segment, showing dorsal tufts.

633. *Eurythmia hospitella* (Zeller); 633a, aedeagus; 633b, gnathos; 633c, transtilla; 633d, a slight modification of the central projection of transtilla drawn from an example of *angulella* Ely (-*diffusella* Ely); 633e, anellus; 633f, sclerotizations of eighth abdominal segment.

634. *Erelieva quantulella* (Hulst); 634a, aedeagus; 634b, gnathos; 634c, transtilla; 634d, eighth abdominal segment, showing dorsal tufts.





FIGURES 635–637.—MALES

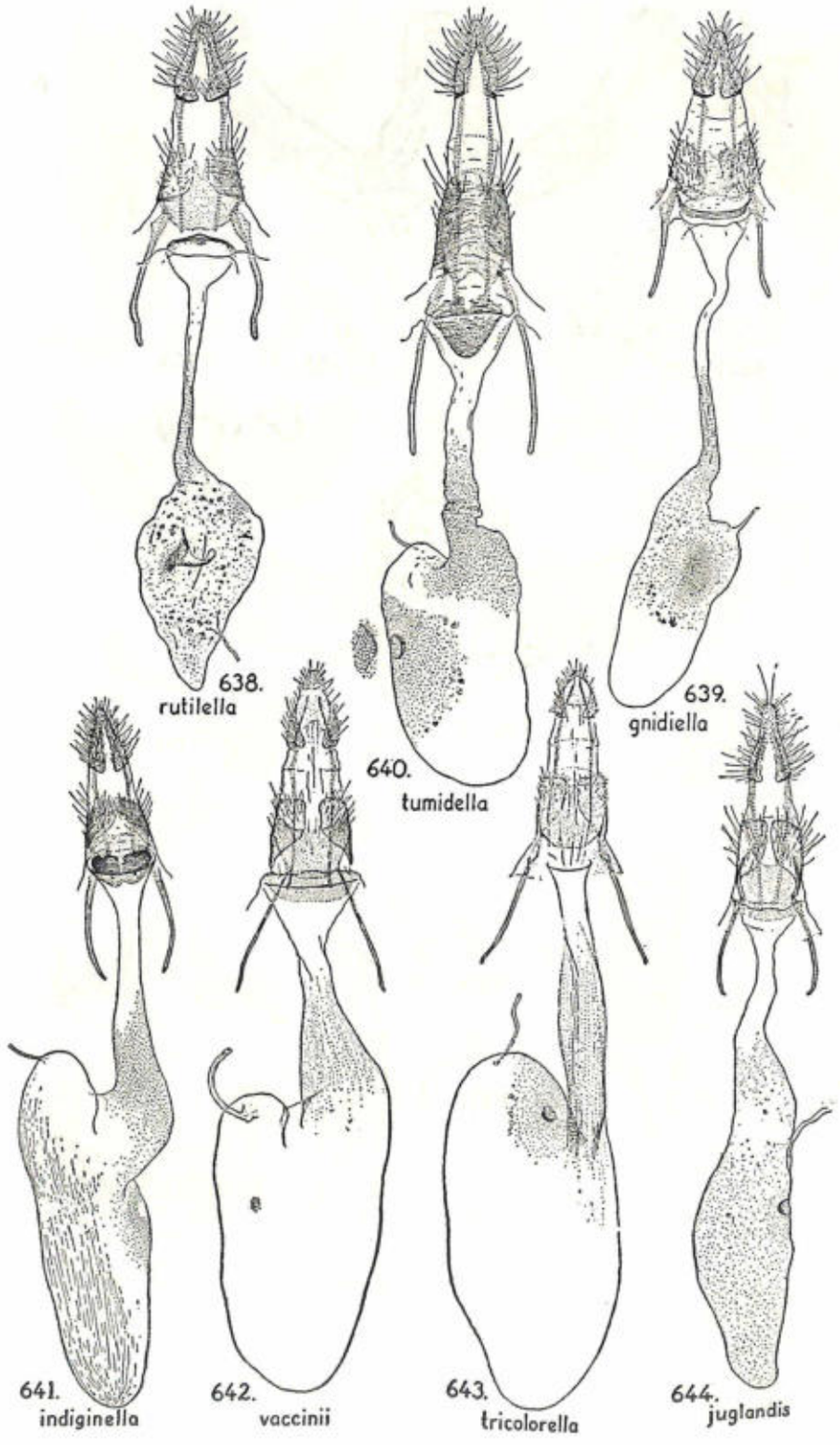
635. *Rabiria conops* (Dyar), type, aedeagus omitted; 635a, gnathos; 635b, eighth abdominal segment; 635c, transtilla; 635d, aedeagus.

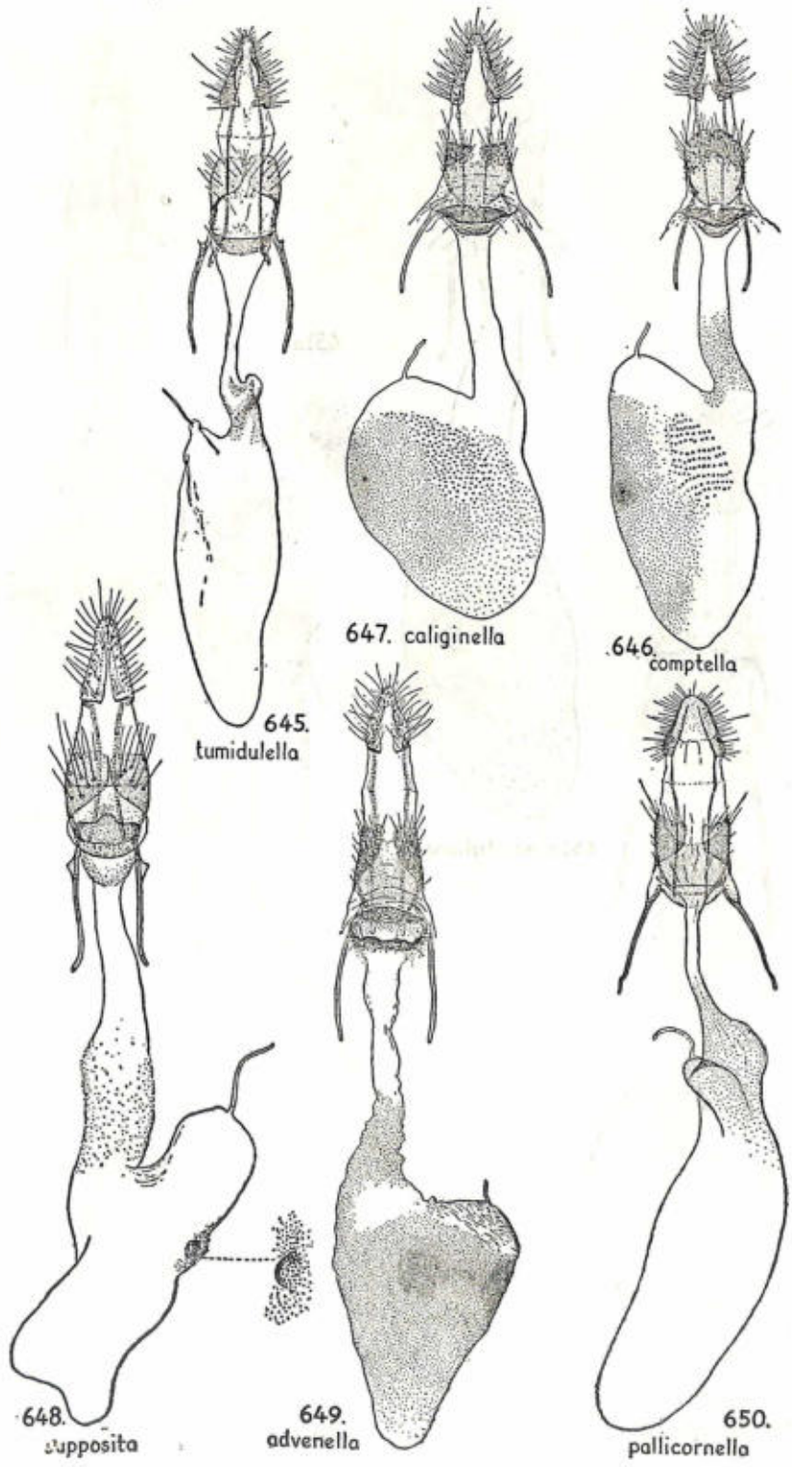
636. *Microphycita titillella* Dyar, aedeagus omitted; 636a, gnathos; 636b, transtilla; 636c, aedeagus and anellus.

637. *Nicetiodes apianella* Schaus, type; 637a, gnathos; 637b, transtilla; 637c, anellus; 637d, aedeagus; 637e, eighth abdominal segment showing tufts.

FIGURES 638–644.—FEMALE GENITALIA.

638. *Cryptoblades rutilella* Zeller.
639. *Cryptoblades gnidiella* (Millière).
640. *Acrobasis tumidella* (Zincken).
641. *Acrobasis indigenella* (Zeller).
642. *Acrobasis vaccinii* Riley.
643. *Acrobasis tricolorella* Grote.
644. *Acrobasis juglandis* (LeBaron), specimen reared from pecan.



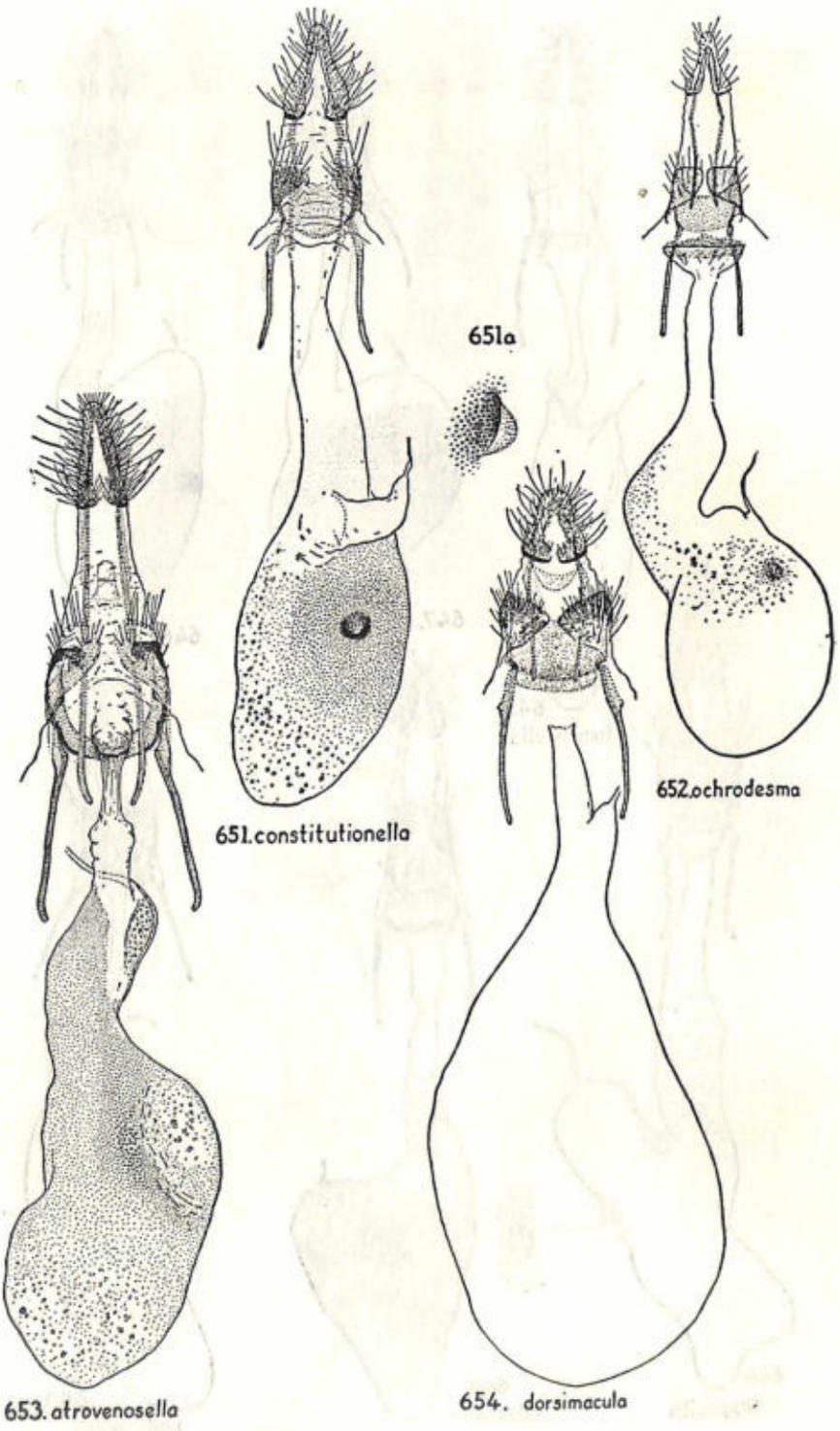


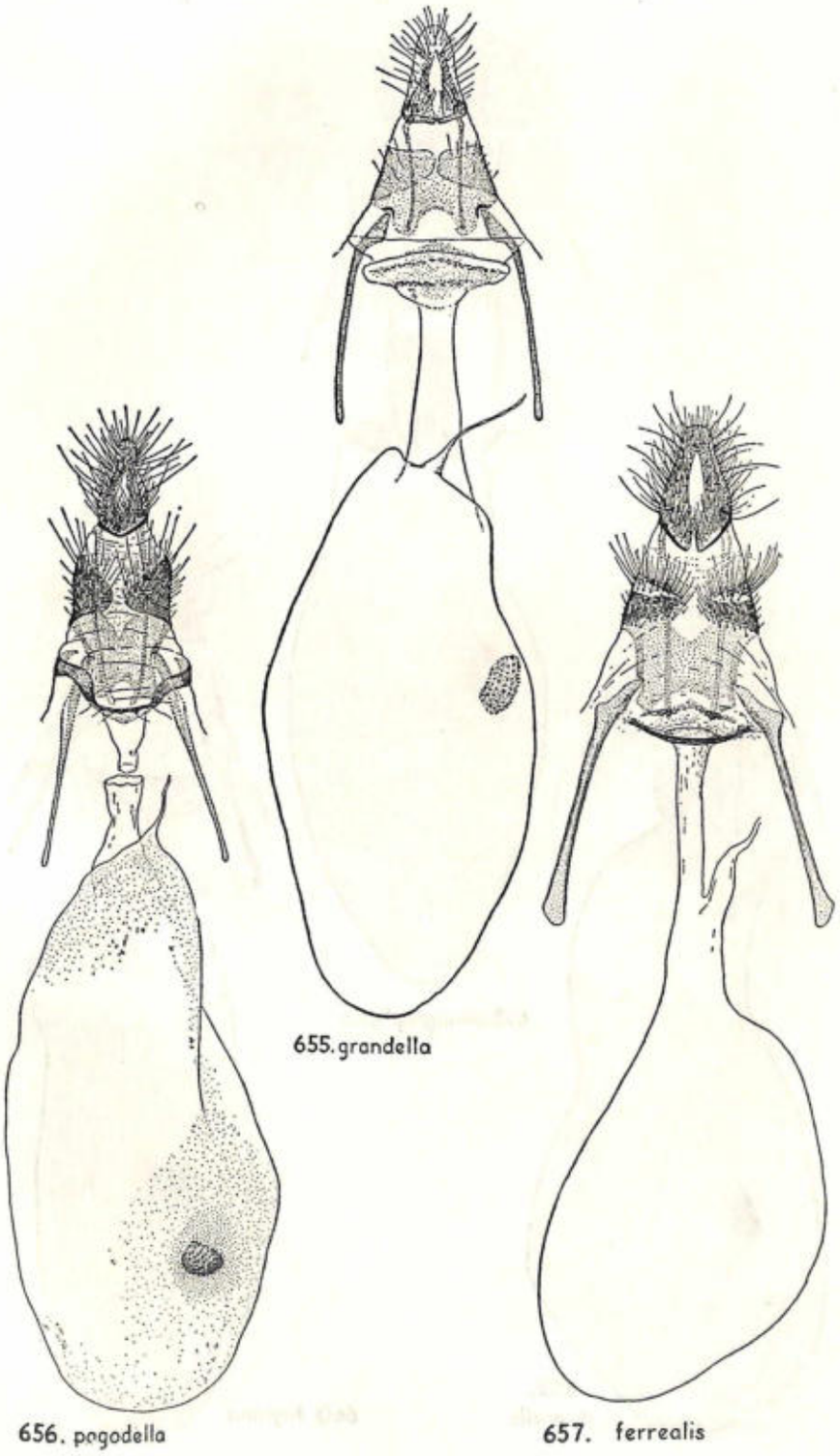
FIGURES 645–650.—FEMALE GENITALIA.

645. *Acrobasis tumidulella* (Ragonot), type.
646. *Acrobasis comptella* Ragonot.
647. *Rhodophœa caliginella* (Hulst), type.
648. *Rhodophaea supposita* (Heinrich).
649. *Rhodophaea advenella* (Zincken).
650. *Trachycera pallicornella* (Ragonot).

FIGURES 651–654.—FEMALE GENITALIA.

651. *Mildrixia constitutionella* Dyar; 651a, signum of bursa, enlarged.
652. *Anabasis ochrodesma* (Zeller).
653. *Sematoneura atrovenosella* (Ragonot).
654. *Hypsipyla dorsimacula* (Schaus).



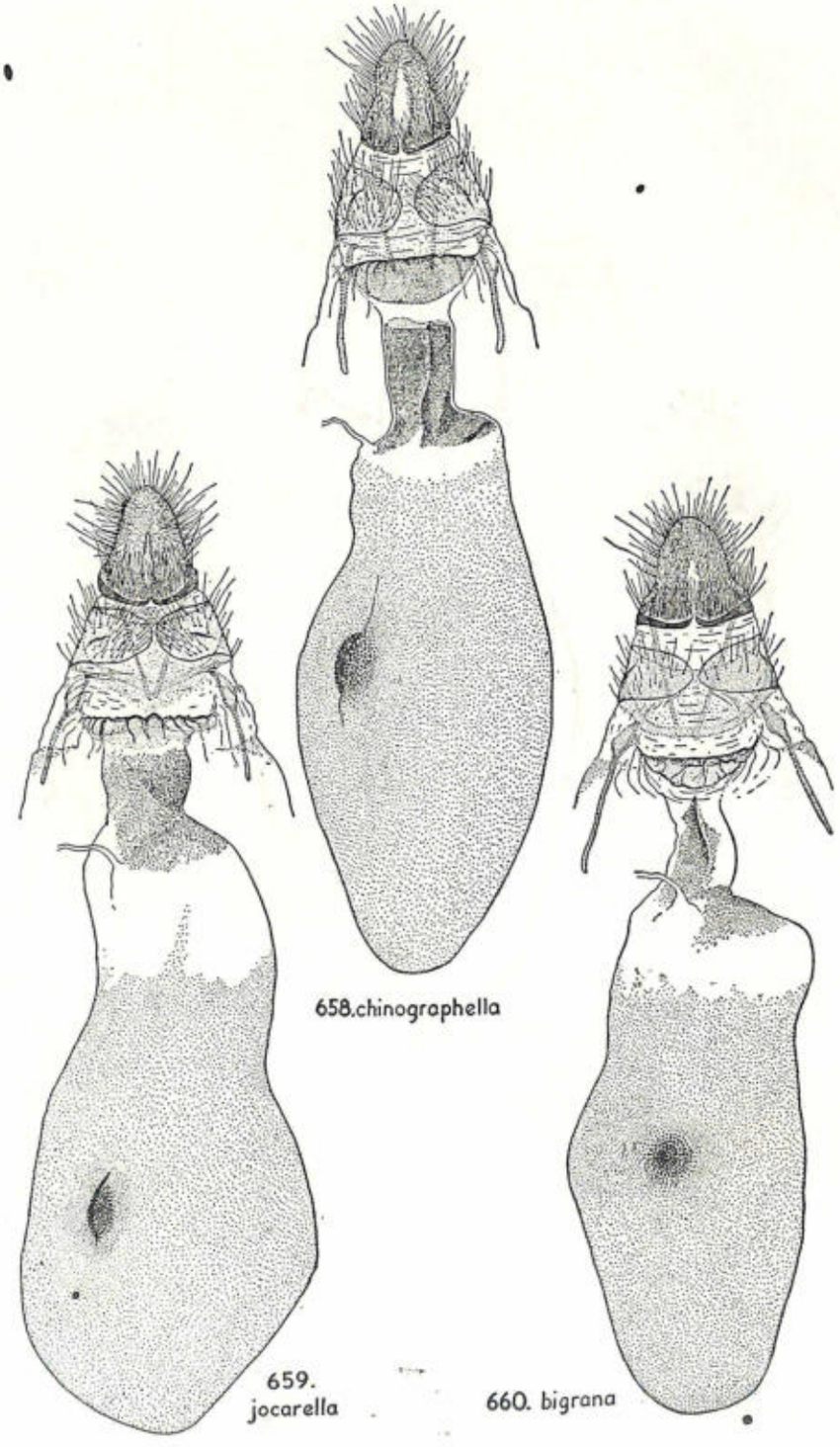


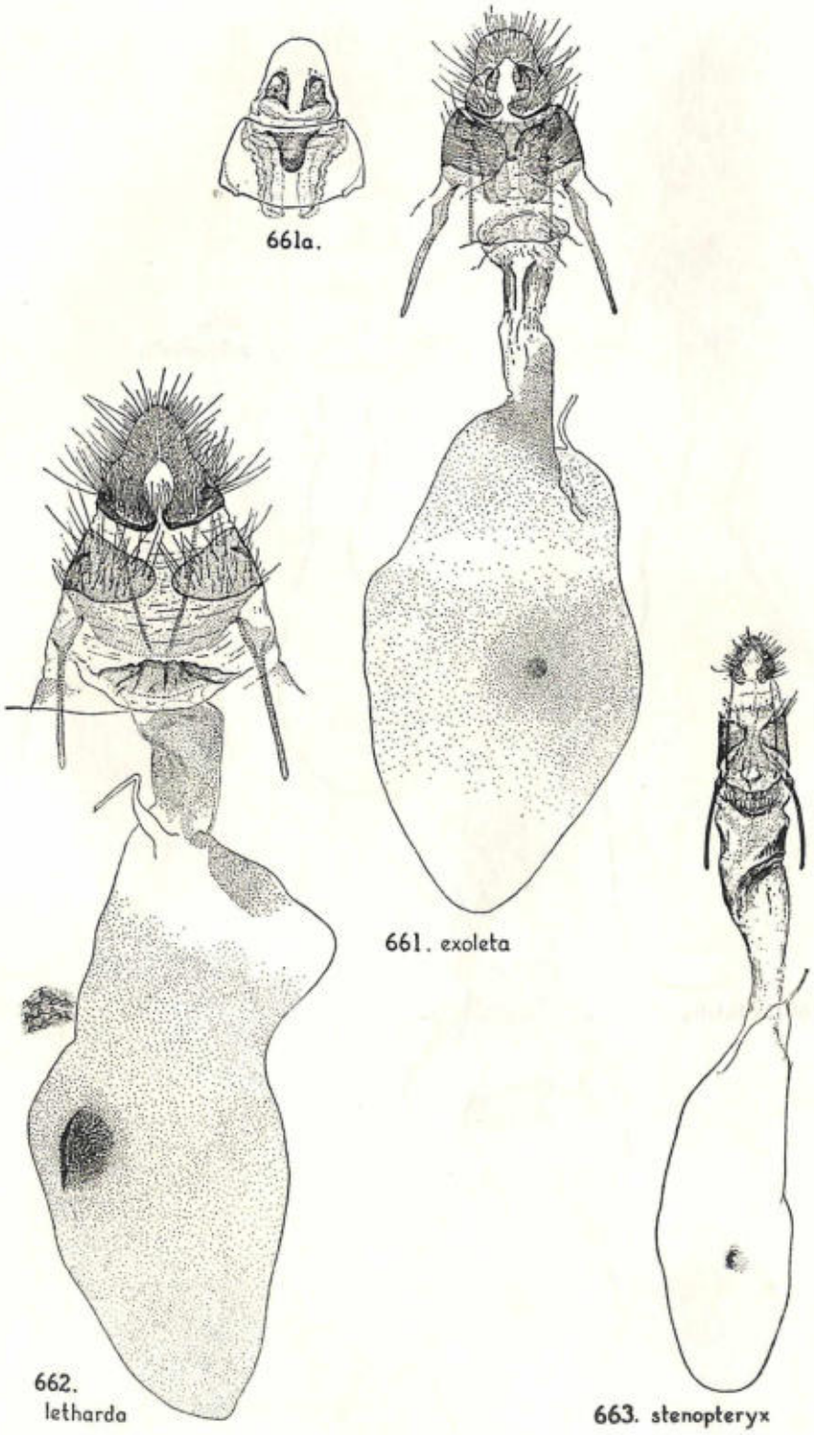
FIGURES 655–657.—FEMALE GENITALIA.

655. *Hypsipyla grandella* (Zeller).
656. *Hypsipyla pagodella* Ragonot.
657. *Hypsipyla ferrealis* (Hampson).

FIGURES 658–660.—FEMALE GENITALIA.

658. *Hemiptilocera chinographella* Ragonot.
659. *Hemiptilocera jocarella* (Schaus), type.
660. *Hemiptilocera bigrana* (Zeller).





FIGURES 661–663.—FEMALE GENITALIA.

661. *Hemiptilocera exoleta* (Zeller), type; 661a, dorsal view of eighth abdominal segment.

662. *Hemiptilocera letharda* (Schaus), showing to the side of bursa a greatly enlarged figure of the spines of signum.

663. *Crocidomera stenopteryx* (Dyar), specimen from type locality.

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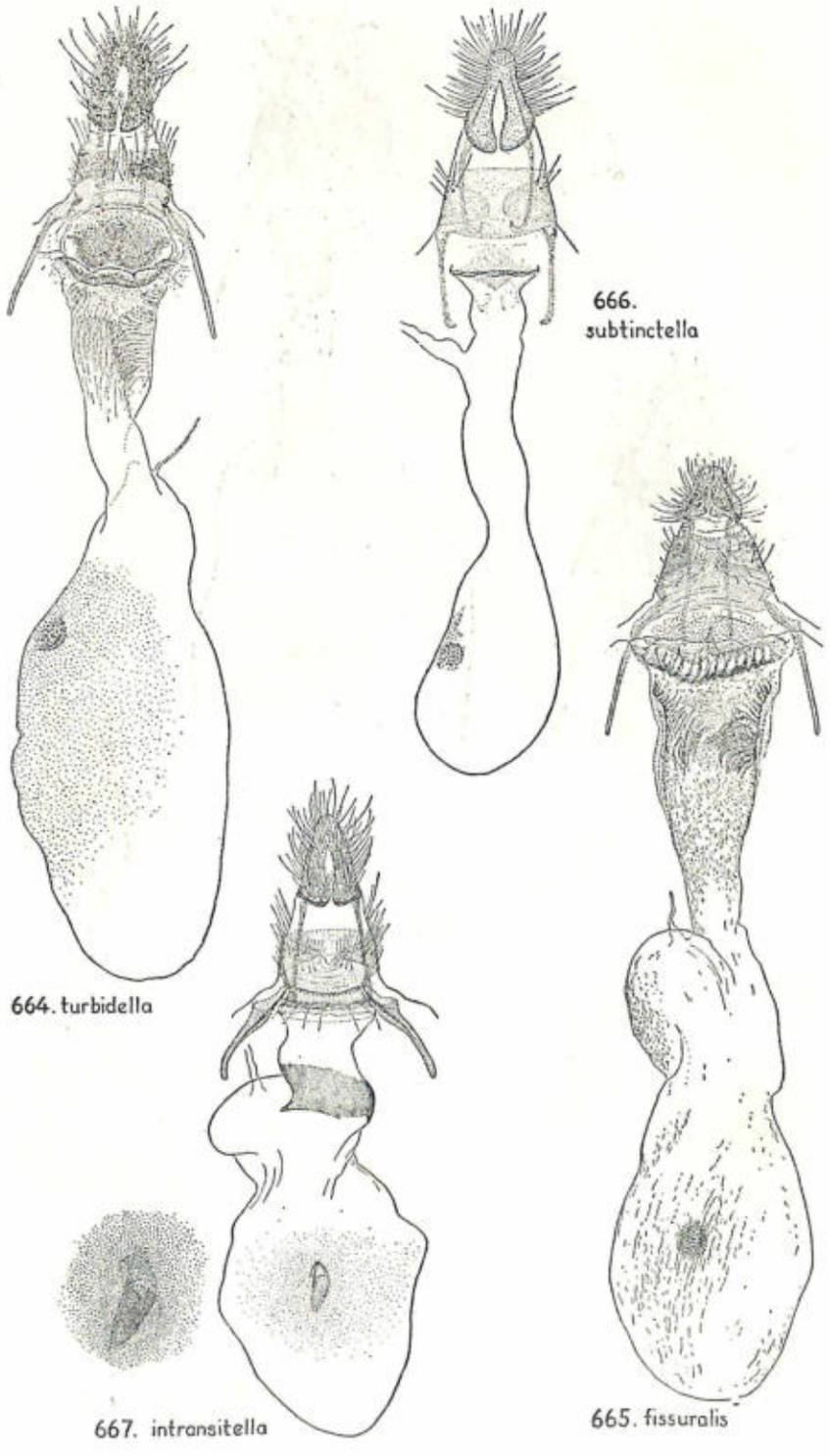
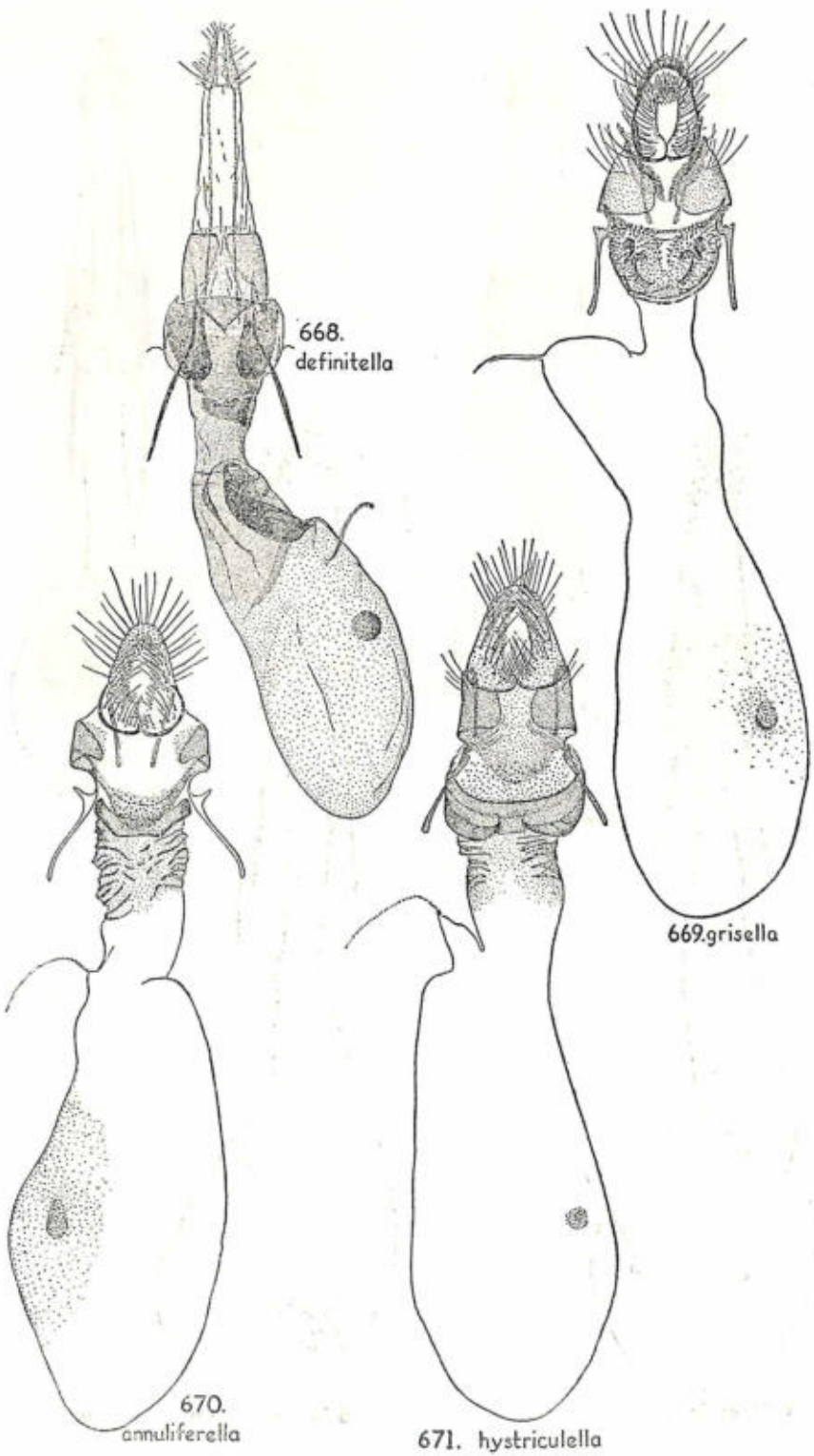
FIGURES 664–667.—FEMALE GENITALIA.

664. *Crocidomera turbidella* Zeller.
665. *Crocidomera fissuralis* (Walker), type.
666. *Cuniberta subtinctella* (Ragonot).
667. *Adanarsa intransitella* (Dyar), showing a great enlargement of signum to one side of bursa.



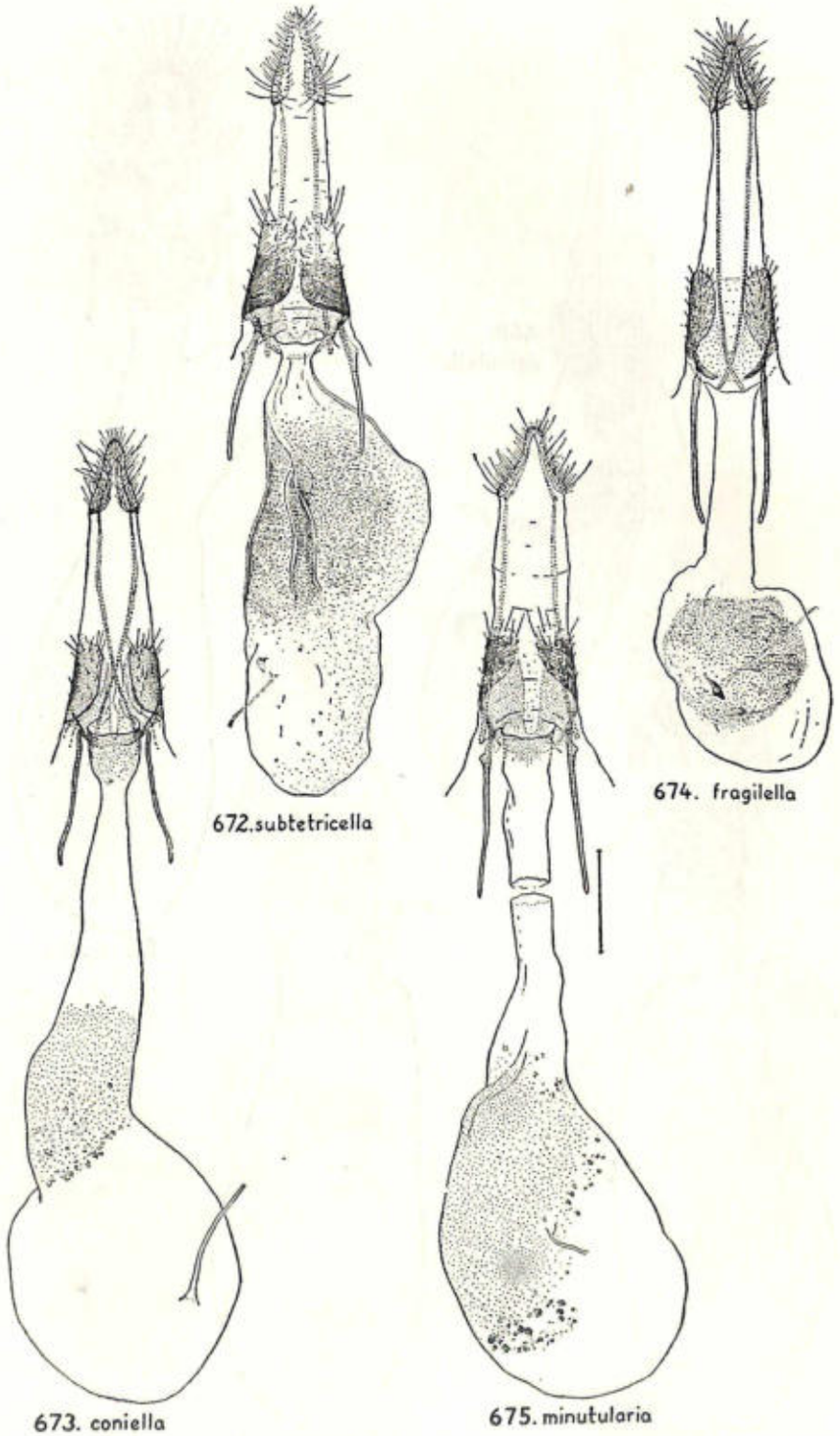


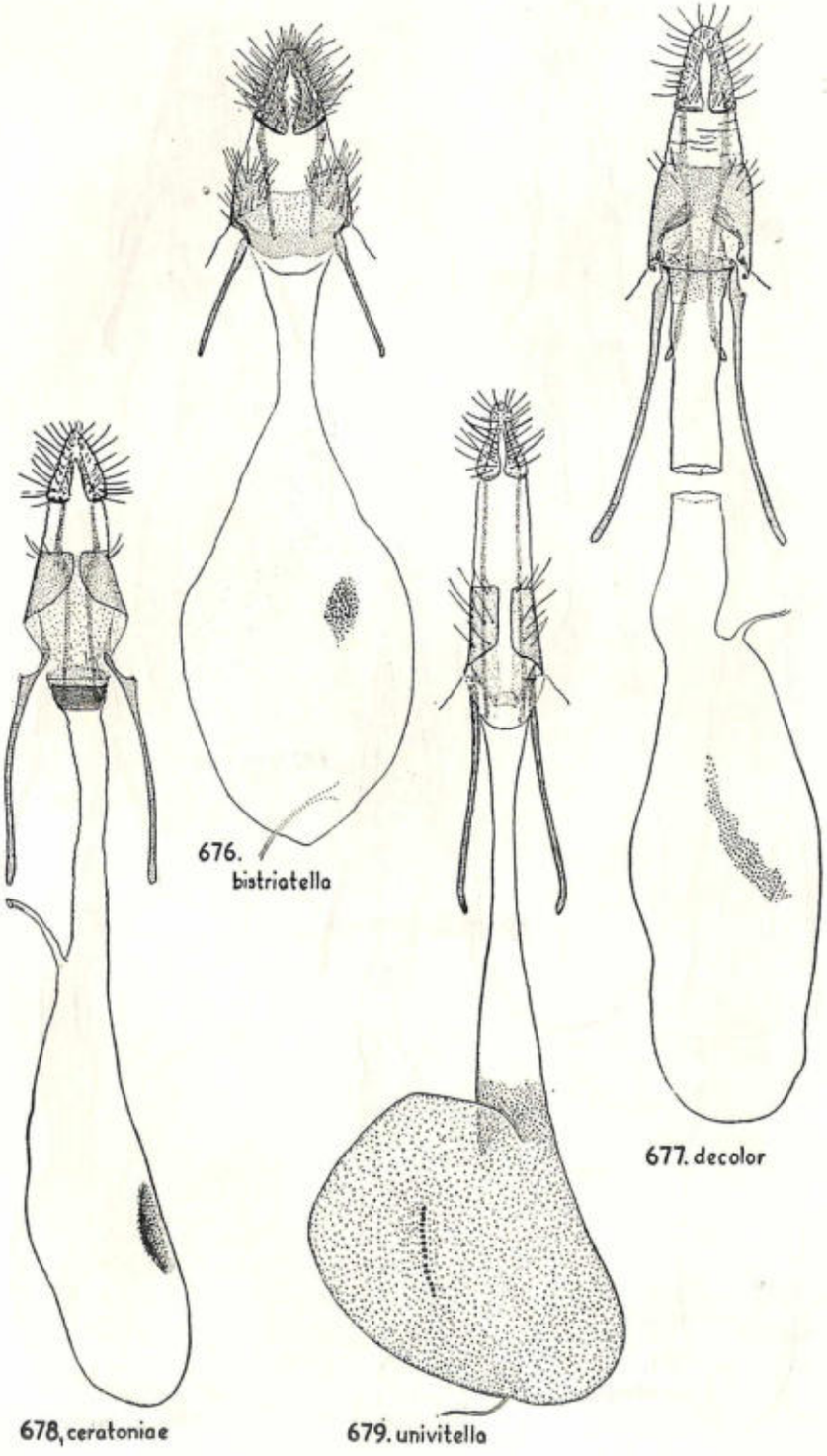
FIGURES 668–671.—FEMALE GENITALIA.

668. *Hypargyria definitella* (Zeller).
669. *Bertelia grisella* Barnes and McDunnough.
670. *Chararica annuliferella* (Dyar).
671. *Chararica hystriculella* (Hulst).

FIGURES 672–675.—FEMALE GENITALIA.

672. *Myelopsis subtetricella* (Ragonot), type.
673. *Myelopsis coniella* (Ragonot).
674. *Myelopsis fragilella* (Dyar), a synonym of *M. alatella* (Hulst).
675. *Myelopsis minutularia* (Hulst), type.



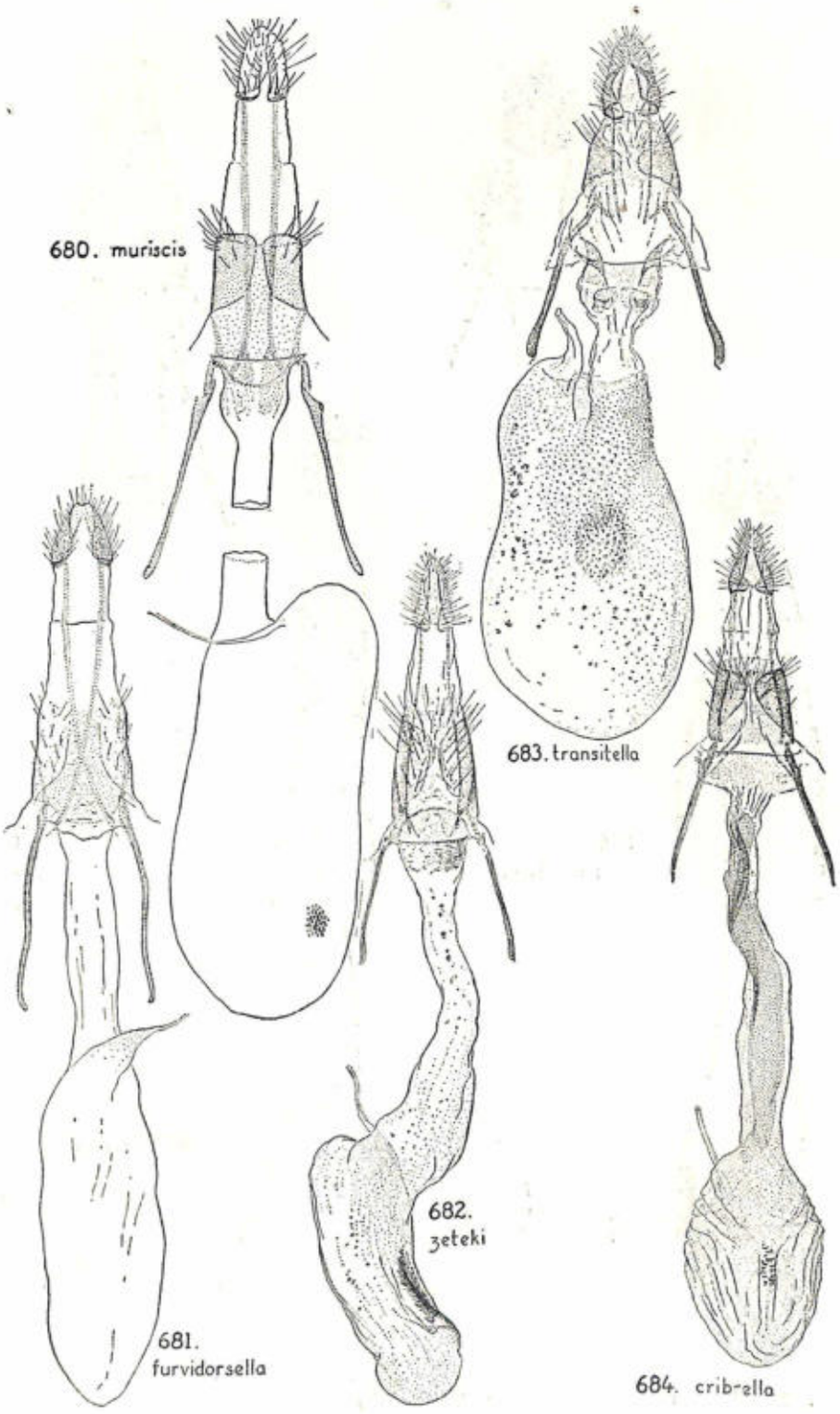


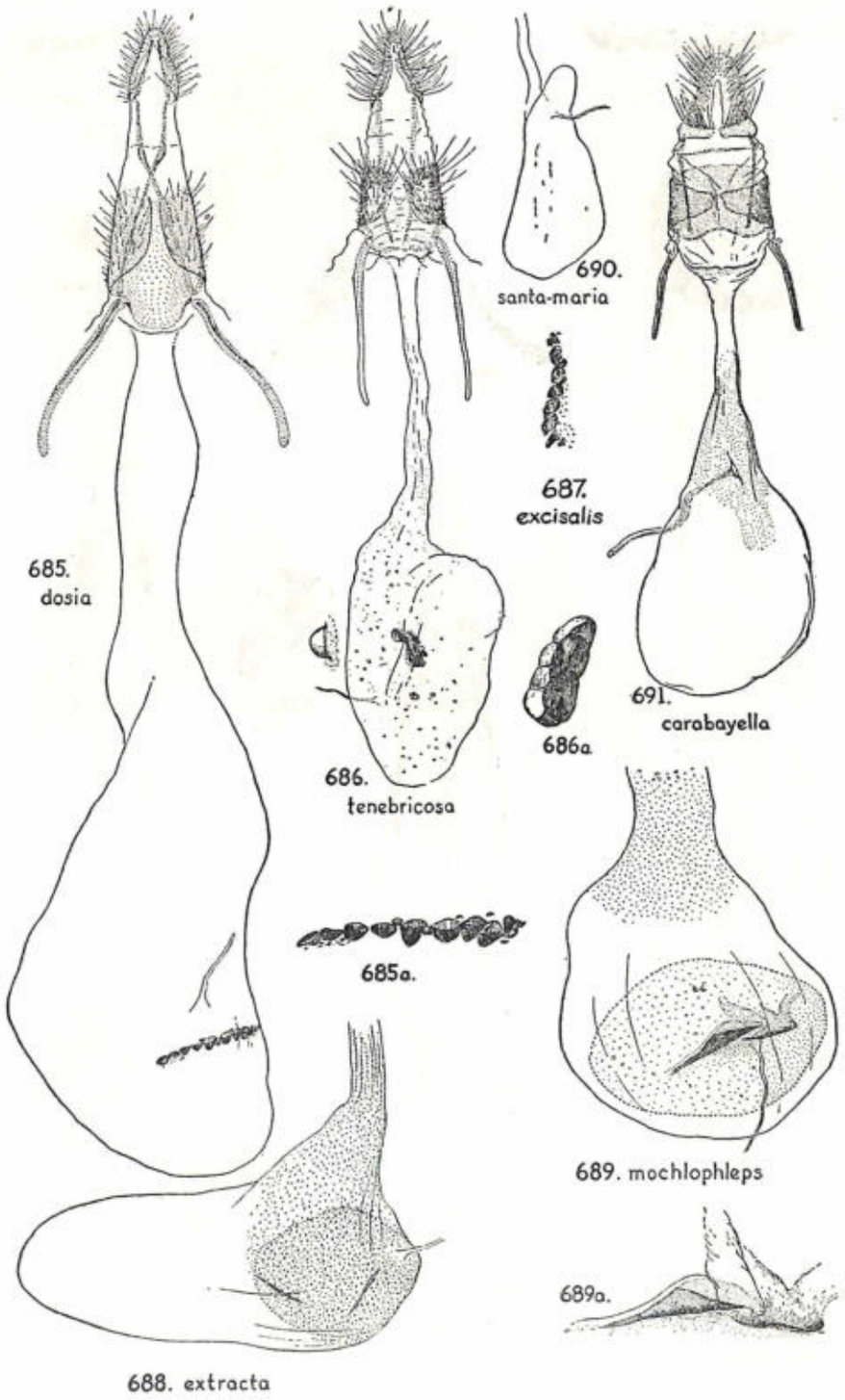
FIGURES 676–679.—FEMALE GENITALIA.

676. *Apomyelois bistriatella* (Hulst).
677. *Ectomyelois decolor* (Zeller).
678. *Ectomyelois ceratoniae* (Zeller).
679. *Anypsipyla univitella* Dyar.

FIGURES 680–684.—FEMALE GENITALIA.

680. *Ectomyelois muriscis* (Dyar).
681. *Ectomyelois furvidorsella* (Ragonot), type.
682. *Ectomyelois zeteki* Heinrich, new species.
683. *Paramyelois transitella* (Walker).
684. *Myelois cribrella* (Hübner).



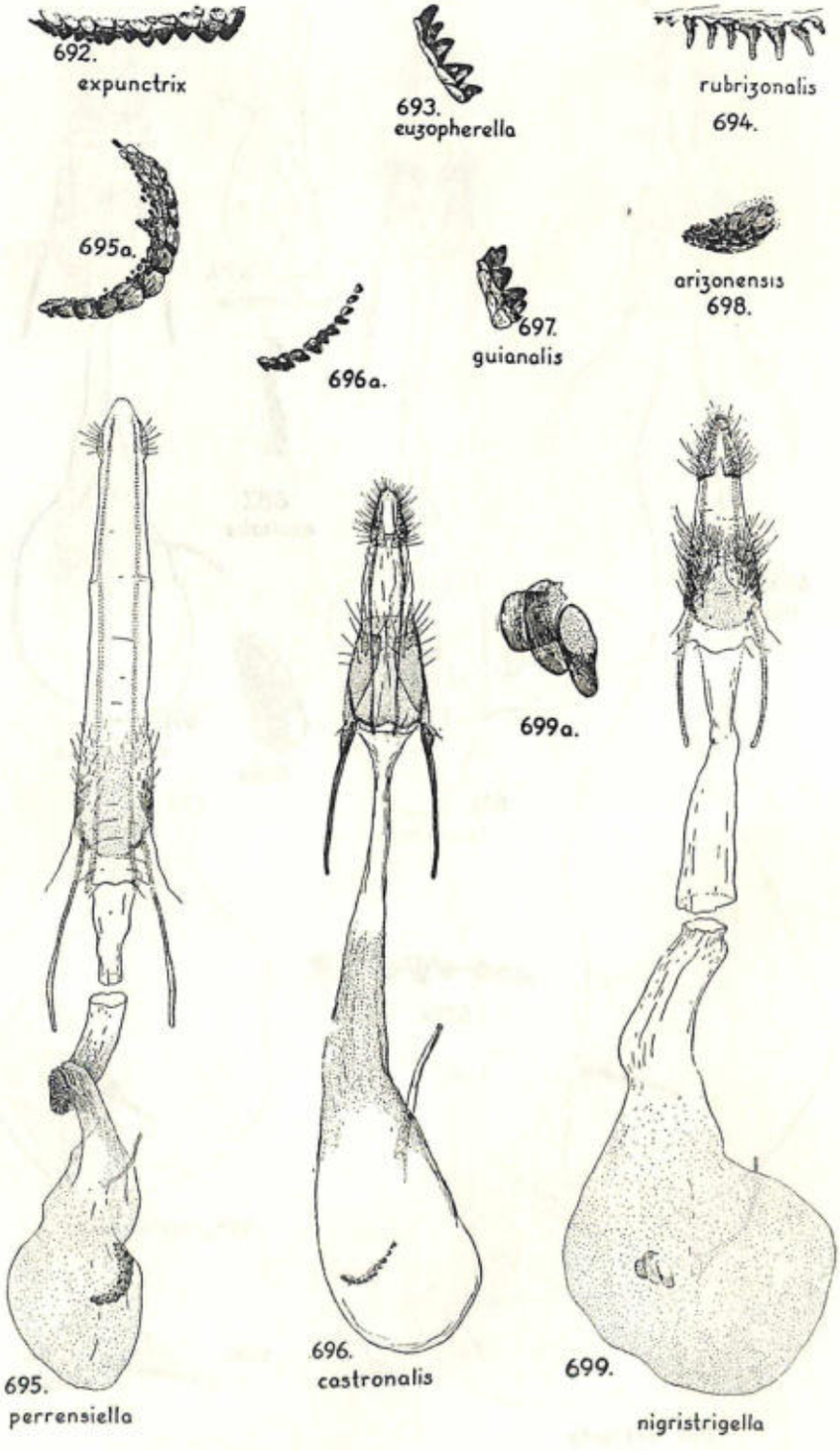


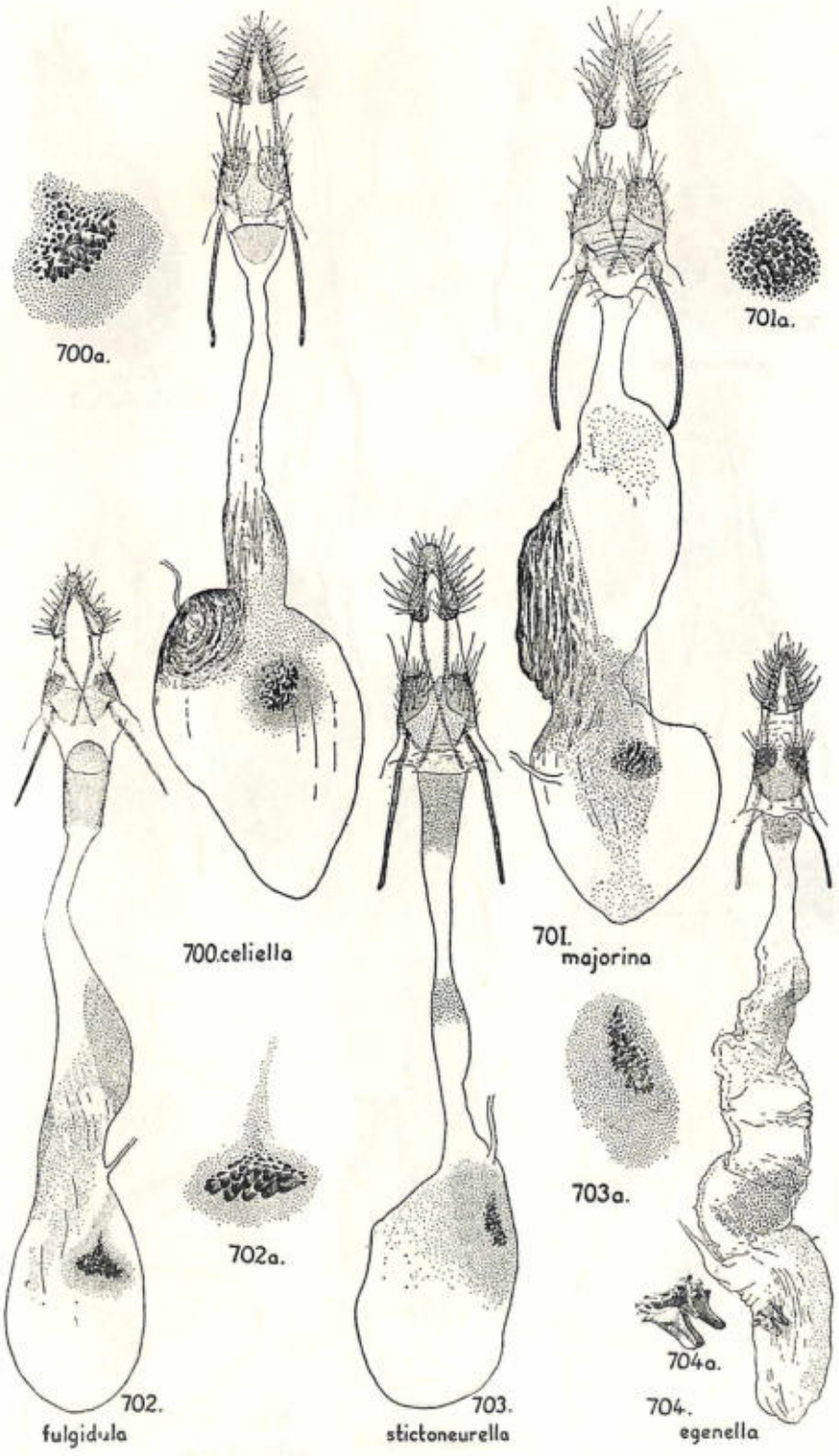
FIGURES 685–691.—FEMALE GENITALIA.

685. *Diatomocera dosia* (Dyar), paratype; 685a, enlargement of signa.
686. *Diatomocera tenebricosa* (Zeller); 686a, enlargement of signa.
687. *Diatomocera excisalis* (Hampson), paratype from Cayenne, French Guiana (in USNM), signa in bursa copulatrix.
688. *Diatomocera extracta* Heinrich, new species, bursa copulatrix.
689. *Diatomocera mochlophleps* (Dyar), bursa copulatrix; 689a, enlargement of signum in bursa.
690. *Pseudodivona santa-maria* Dyar, type, bursa copulatrix.
691. *Pseudodivona carabayella* Dyar, specimen from Incachaca, Bolivia.

FIGURES 692–699.—FEMALE GENITALIA.

692. *Pseudocabima expunctrix* (Dyar and Heinrich), signa of female genitalia.
693. *Pseudocabima euzopherella* (Dyar), signa of female genitalia.
694. *Pseudocabima rubrizonalis* (Hampson), signa of female genitalia.
695. *Pseudocabima perrensiella* (Ragonot), type; 695a, enlargement of signa.
696. *Pseudocabima castronalis* Heinrich, new species, paratype; 696a, enlargement of signa.
697. *Pseudocabima guianalis* Heinrich, new species, signa of female genitalia.
698. *Pseudocabima arizonensis* Heinrich, new species, signa of female genitalia.
699. *Pseudocabima nigristrigella* (Ragonot), specimen in BM; 699a, enlargement of signa.





FIGURES 700–704.—FEMALE GENITALIA AND (a) ENLARGEMENT OF SIGNA.

700. *Hyalospila celiella* Schaus.
701. *Hyalospila majorina* Heinrich, new species.
702. *Hyalospila fulgidula* Heinrich, new species.
703. *Hyalospila stictoneurella* Ragonot.
704. *Hyalospila egenella* (Ragonot), type.

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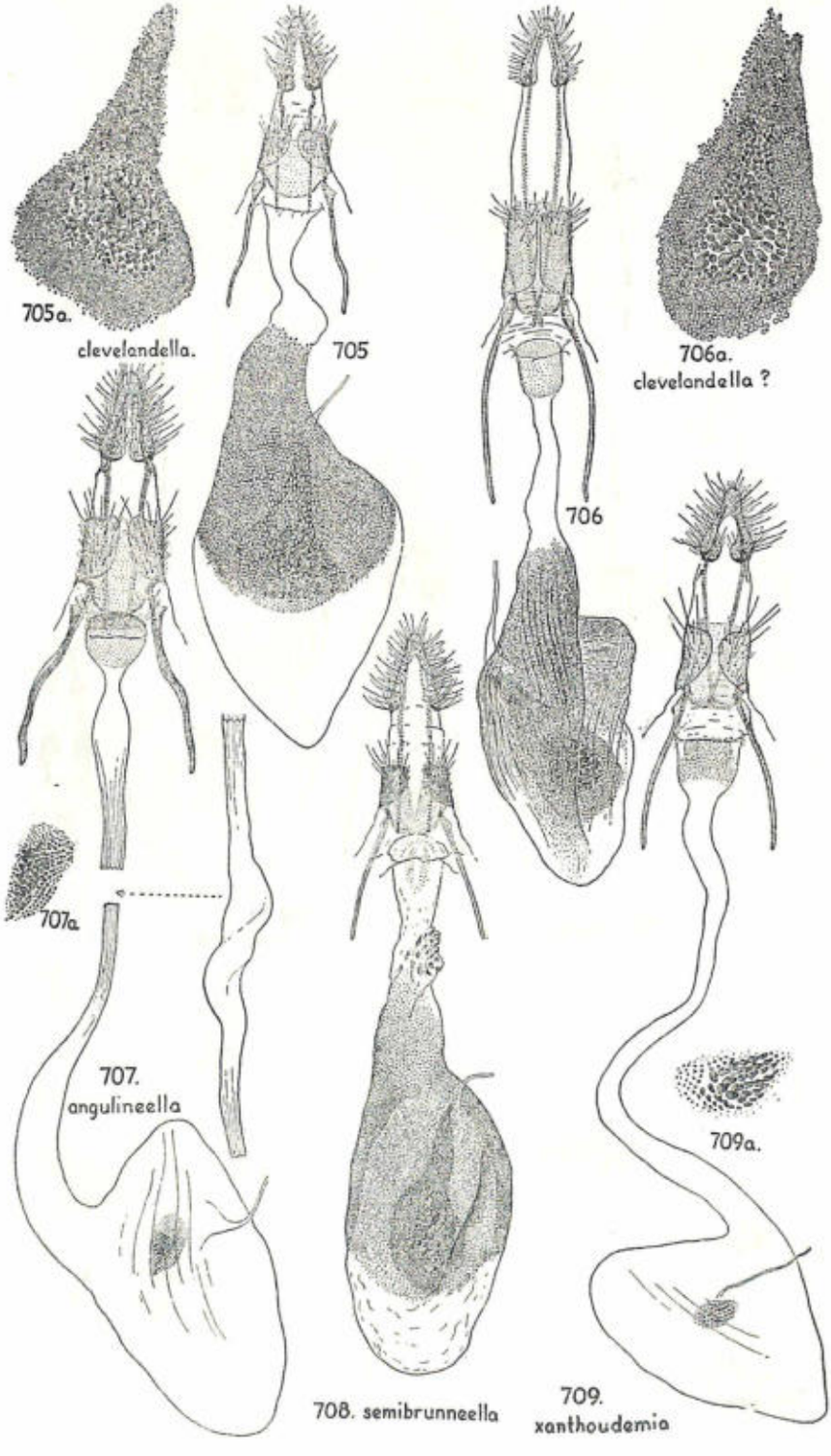
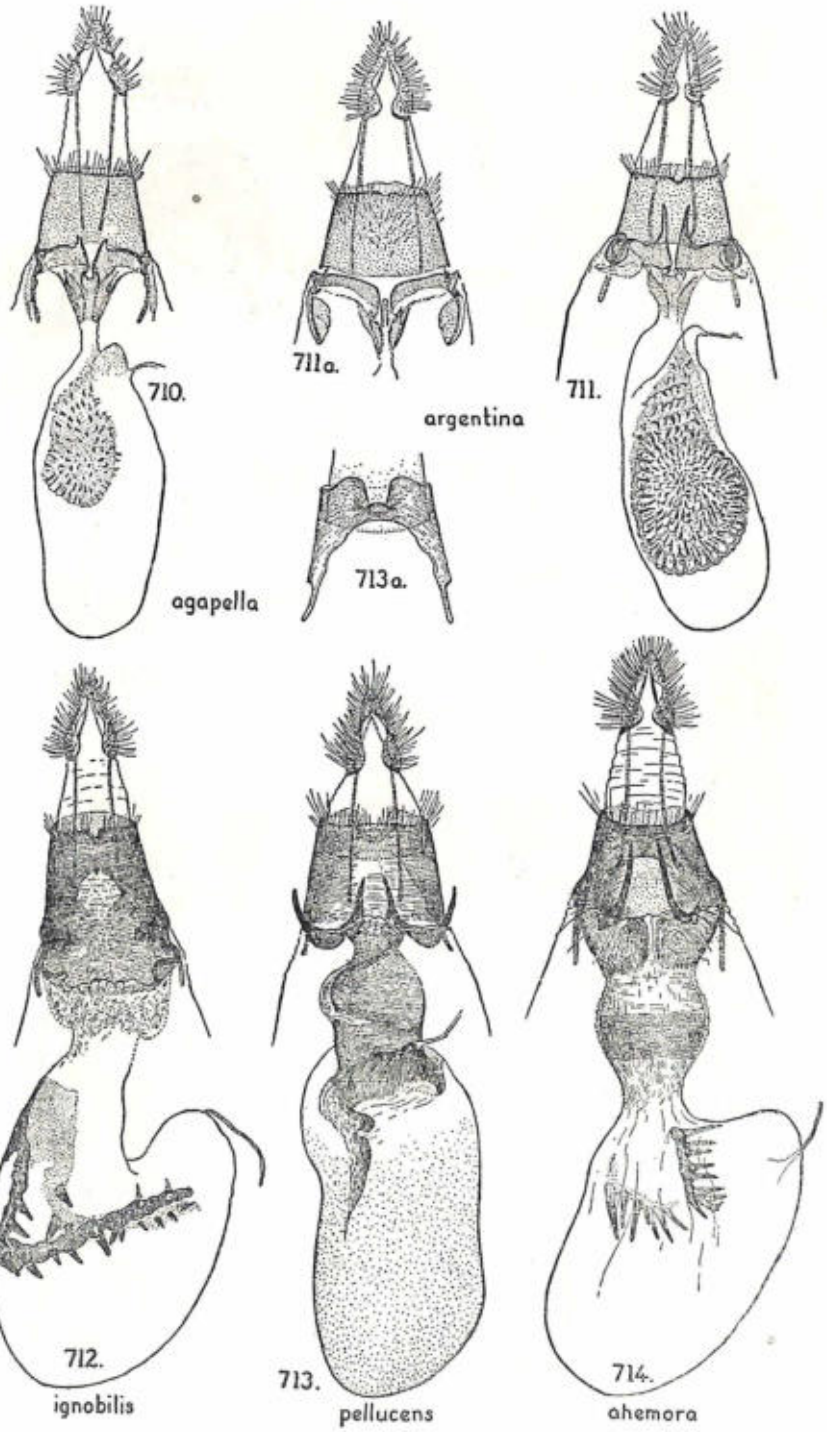
FIGURES 705–709.—FEMALE GENITALIA.

705. *Hyalospila clevelandella* (Dyar), paratype from Porto Bello, Panamá; 705a, enlargement of signum patch.
706. *Hyalospila clevelandella* (Dyar), specimens from México and Guatemala; 706a, enlargement of signum.
707. *Hyalospila angulineella* (Schaus), type; 707a, enlargement of signa.
708. *Hyalospila semibrunneella* (Ragonot), type.
709. *Hyalospila xanthoudemia* (Dyar); 709a, enlargement of signum.



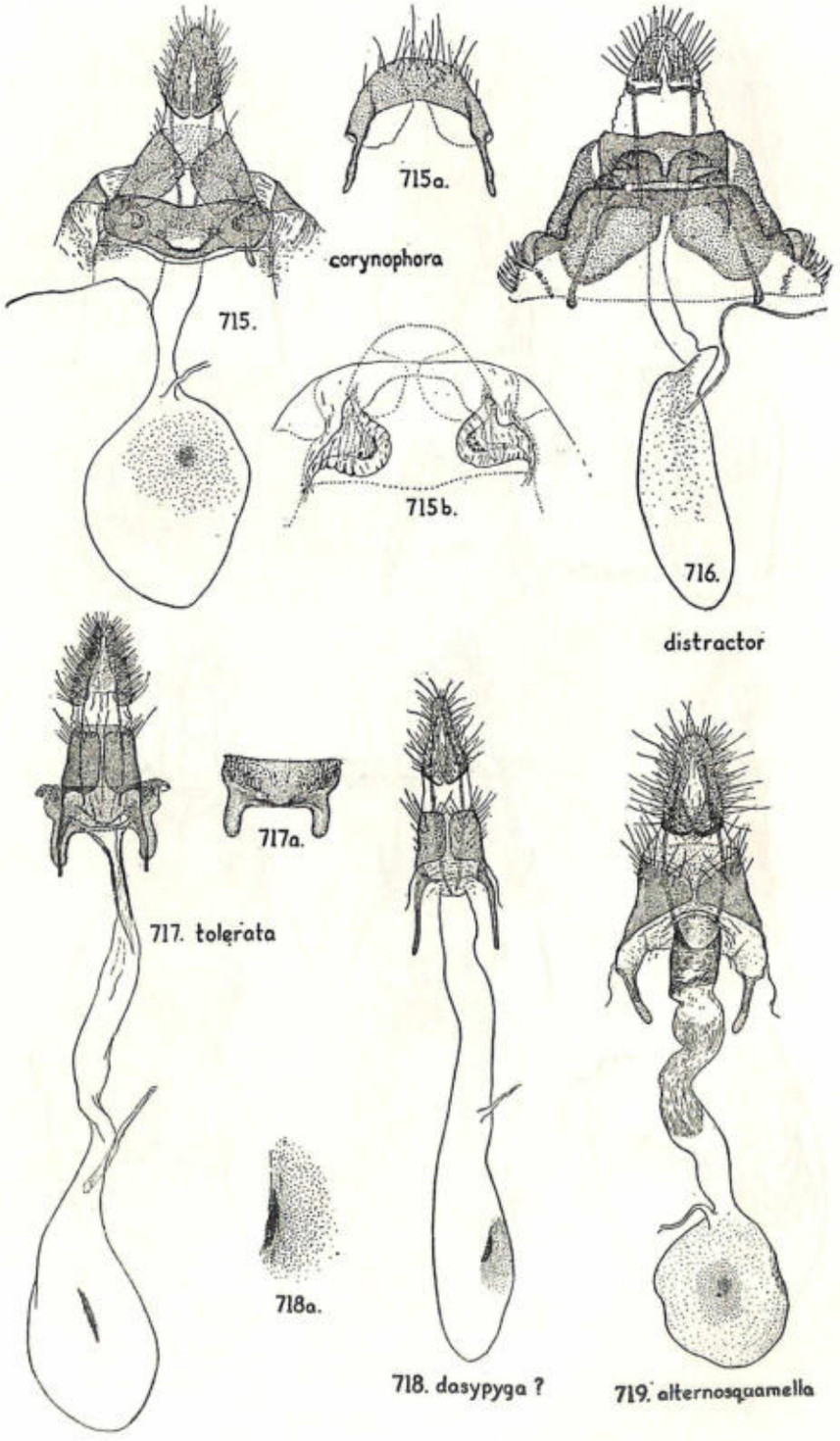


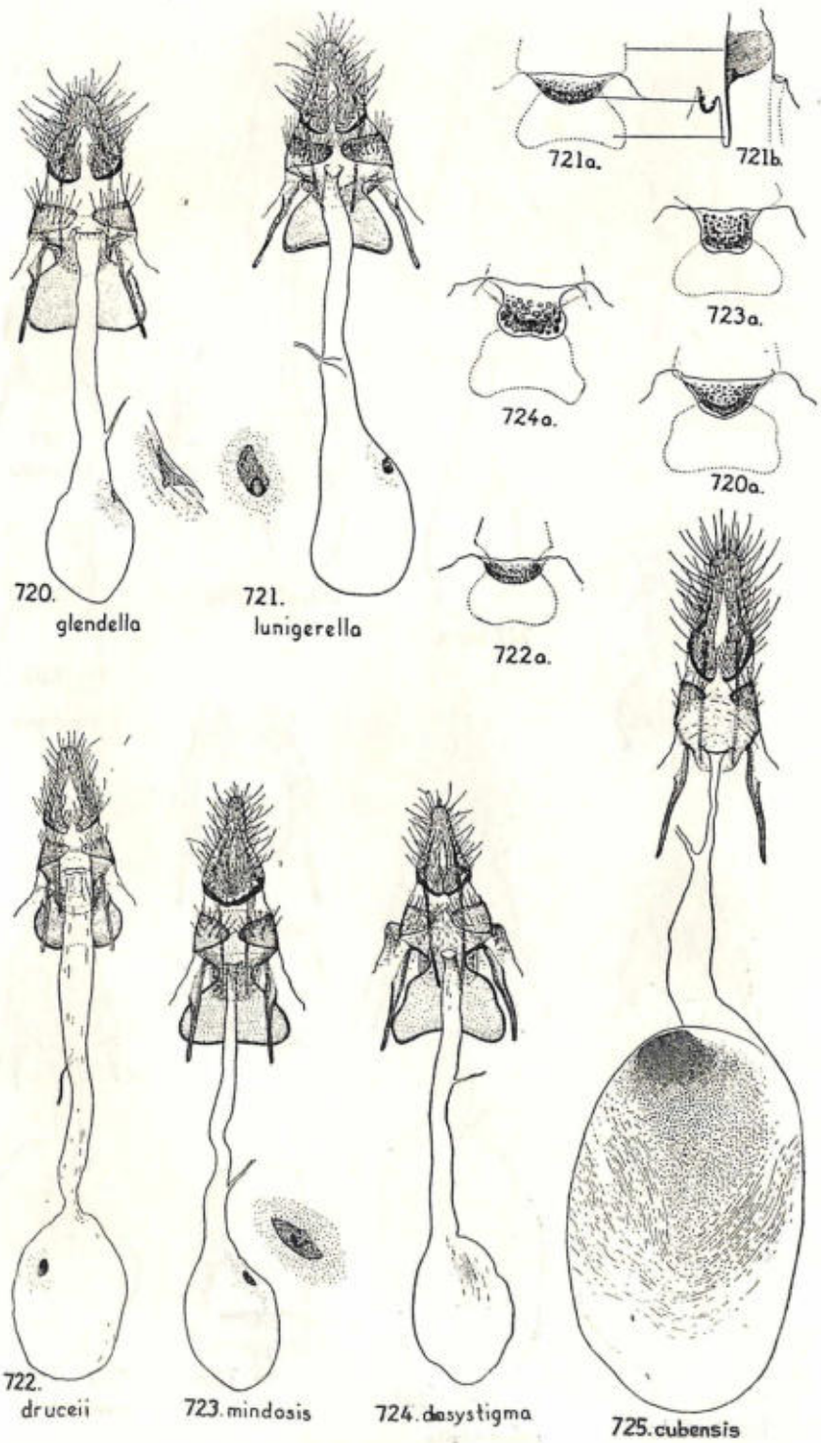
FIGURES 710–714.—FEMALE GENITALIA.

710. *Fundella agapella* Schaus, type.
711. *Fundella argentina* Dyar; 711a, armature of genital opening (in South American, Argentine, and Brazilian specimens).
712. *Fundella ignobilis* Heinrich, new species.
713. *Fundella pellucens* Zeller; 713a, dorsal view of eighth segment collar.
714. *Fundella ahemora* Dyar.

FIGURES 715–719.—FEMALE GENITALIA.

715. *Difundella corynophora* Dyar; 715a, dorsal view of collar of eighth abdominal segment; 715b, ventrolateral pockets in intersegmental area between seventh and eighth abdominal segments, shown from dorsal view.
716. *Difundella distractor* Heinrich, new species.
717. *Difundella tolerata* Heinrich, new species; 717a, invaginated, sclerotized, dorsal shield of seventh segment of abdomen.
718. ?*Coptarthria dasypyga* (Zeller), example from Costa Rica; 718a, enlargement of signum.
719. *Dasypyga alternosquamella* Ragonot.





FIGURES 720–725.—FEMALE GENITALIA.

720. *Promylea lunigerella glendella* (Dyar), showing enlargement of signum beside bursa; 721a, dorsal view of sclerotized apron and pocket attached to collar.

721. *Promylea lunigerella lunigerella* Ragonot, specimen from Duncans, Vancouver Isl., showing enlargement of signum beside bursa; 721a, dorsal view of sclerotized apron and pocket attached to collar; 721b, lateral view of same, also showing genital opening of ductus bursae.

722. *Promylea druceii* (Ragonot), type; 722a, dorsal view of sclerotized apron and pocket attached to collar.

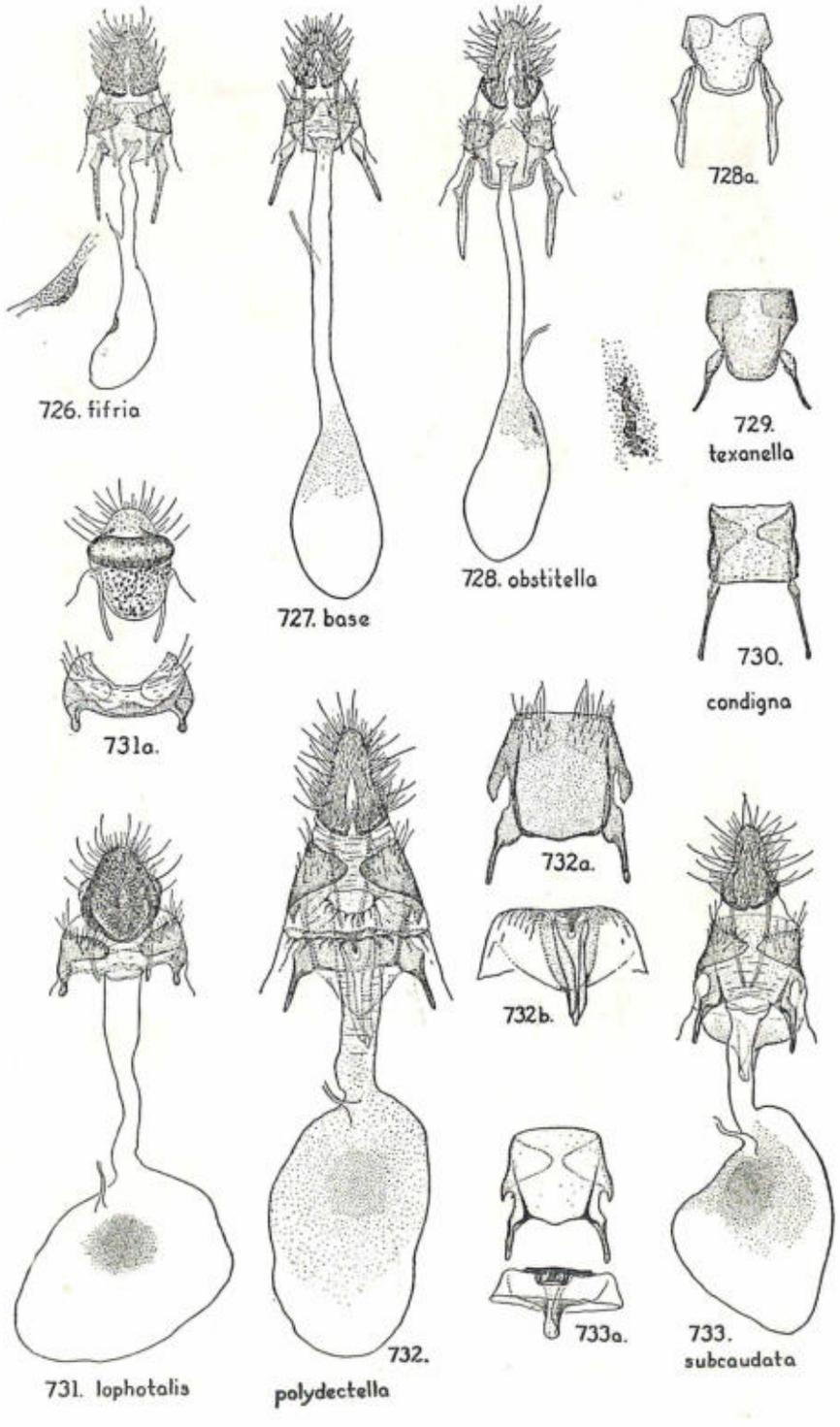
723. *Promylea mindosis* Dyar; 723a, dorsal view of sclerotized apron and pocket attached to collar.

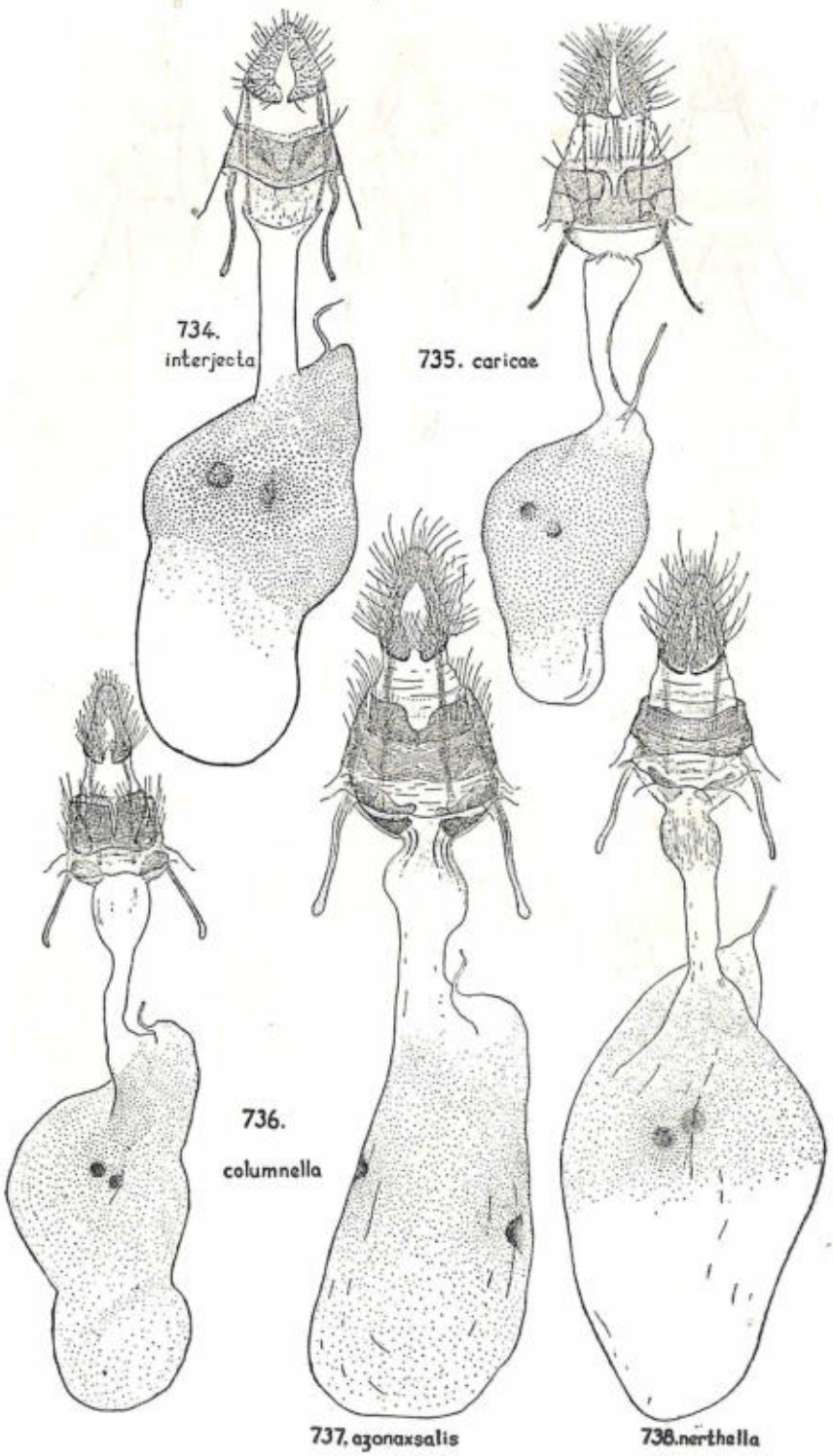
724. *Promylea dasystigma* Dyar; 724a, dorsal view of sclerotized apron and pocket attached to collar.

725. *Scorylus cubensis* Heinrich, new species.

FIGURES 726–733.—FEMALE GENITALIA.

726. *Anadelosemia fifria* Dyar, showing enlargement of signum to side of bursa.
727. *Anadelosemia base* Dyar.
728. *Anadelosemia obstitella* (Schaus), type, showing enlargement of signum beside bursa; 728a, dorsal view of eighth-segment collar.
729. *Anadelosemia texanella* (Hulst), dorsal view of eighth-segment collar.
730. *Anadelosemia condigna* Heinrich, new species, dorsal view of eighth-segment collar.
731. *Rampylla lophotalis* Heinrich, new species; 731a, dorsal views of ovipositor and eighth-segment collar.
732. *Rampylla polydectella* (Schaus), type; 732a, dorsal view of eighth-segment collar; 732b, invaginated, sclerotized pocket from seventh abdominal segment.
733. *Rampylla subcaudata* (Dyar), specimen from Quiriguá, Guatemala; 733a, dorsal views of eighth-segment collar and sclerotized pocket of seventh segment.



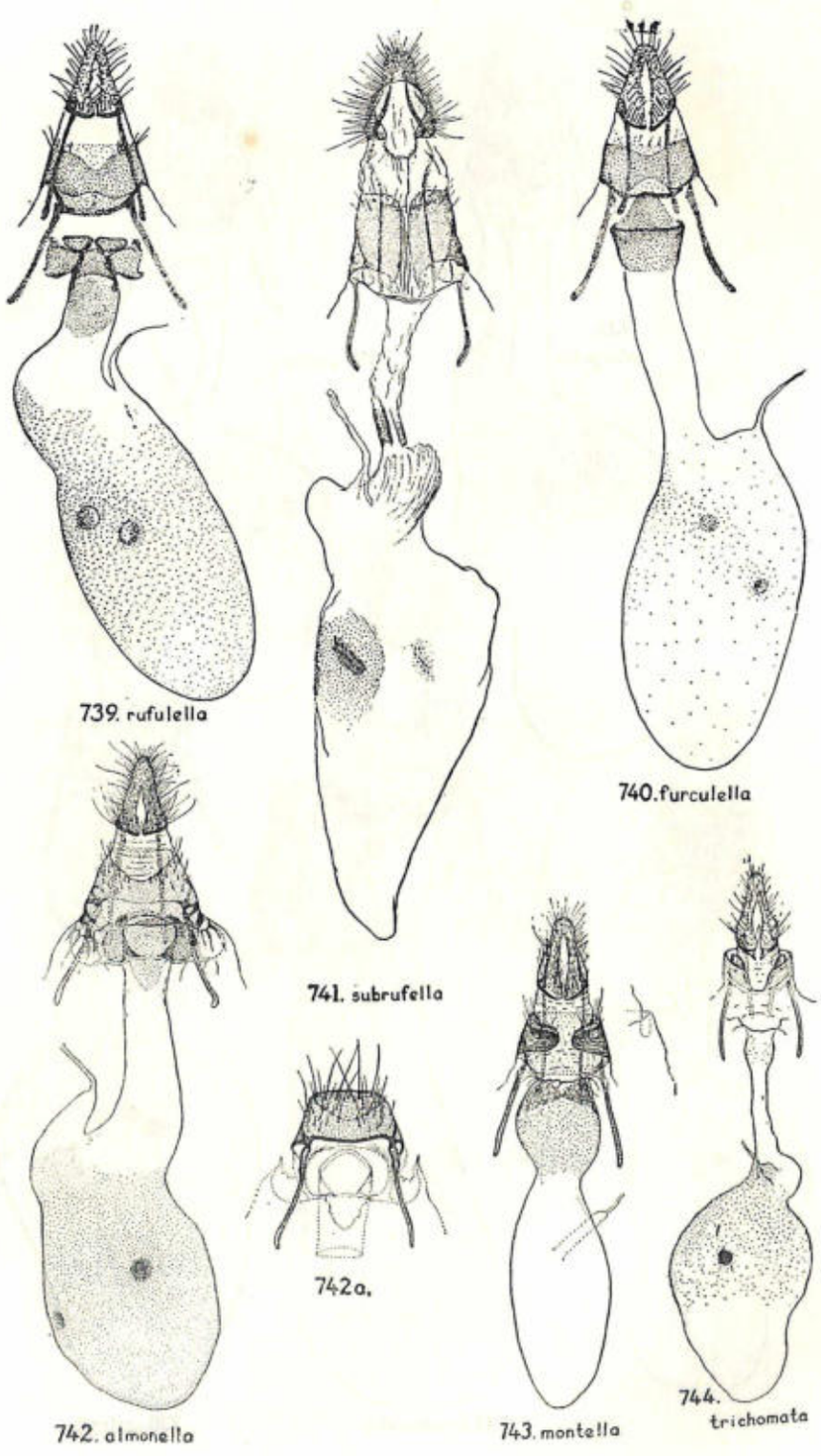


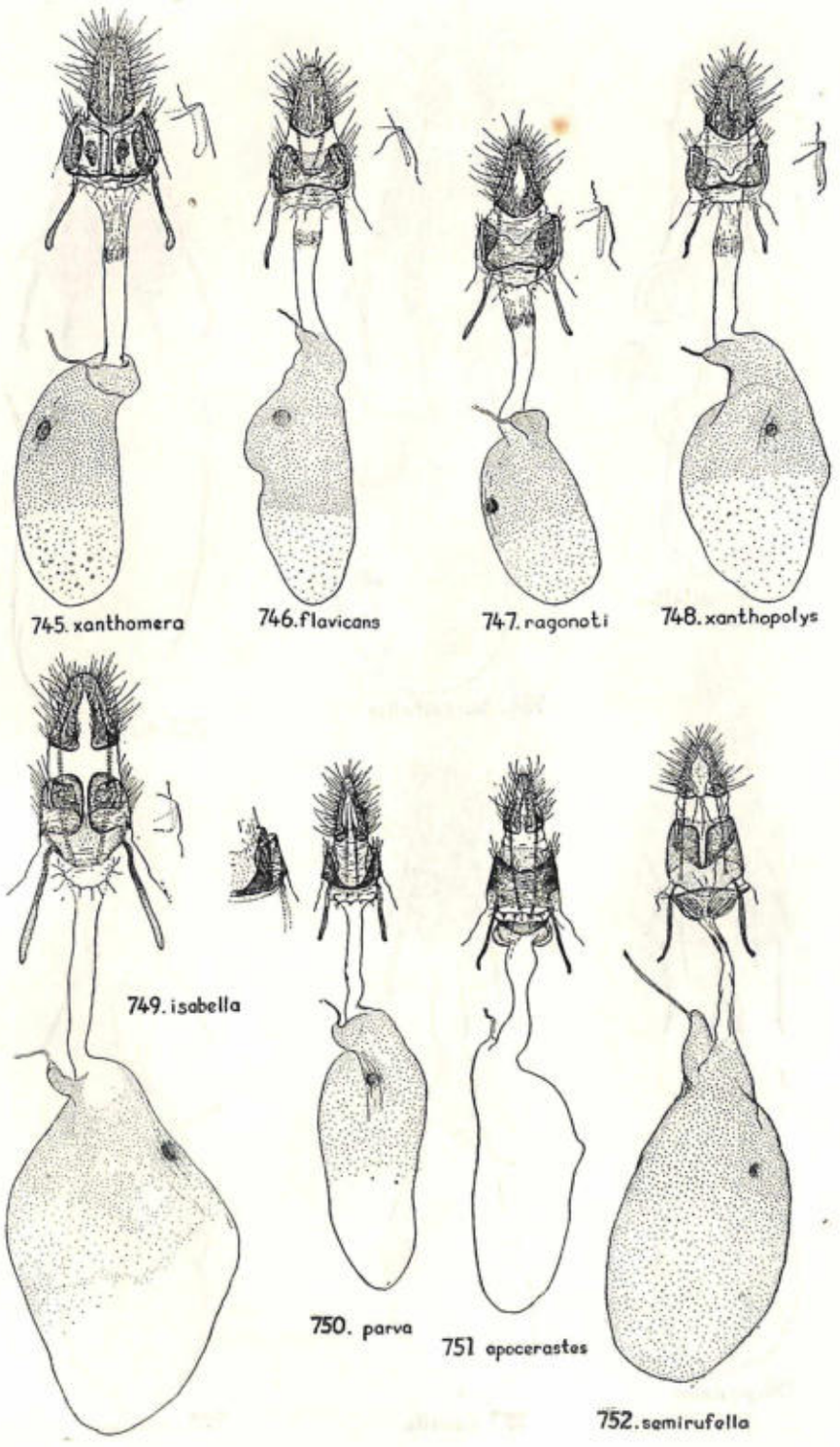
FIGURES 734–738.—FEMALE GENITALIA.

734. *Davara interjecta* Heinrich, new species.
735. *Davara caricae* (Dyar).
736. *Davara columnella* (Zeller), type.
737. *Davara azonaxsalis* (Walker), type.
738. *Davara nerthella* (Schaus), type.

FIGURES 739–744.—FEMALE GENITALIA.

739. *Davara rufulella* (Ragonot).
740. *Sarasota furculella* (Dyar), specimen from Cuba.
741. *Atheloca subrufella* (Hulst), type.
742. *Praedonula almonella* (Dyar); 742a, dorsal view of eighth-segment collar, showing genital opening and its attachments.
743. *Piesmopoda montella* Schaus, type.
744. *Piesmopoda trichomata* (Zeller), cotype.



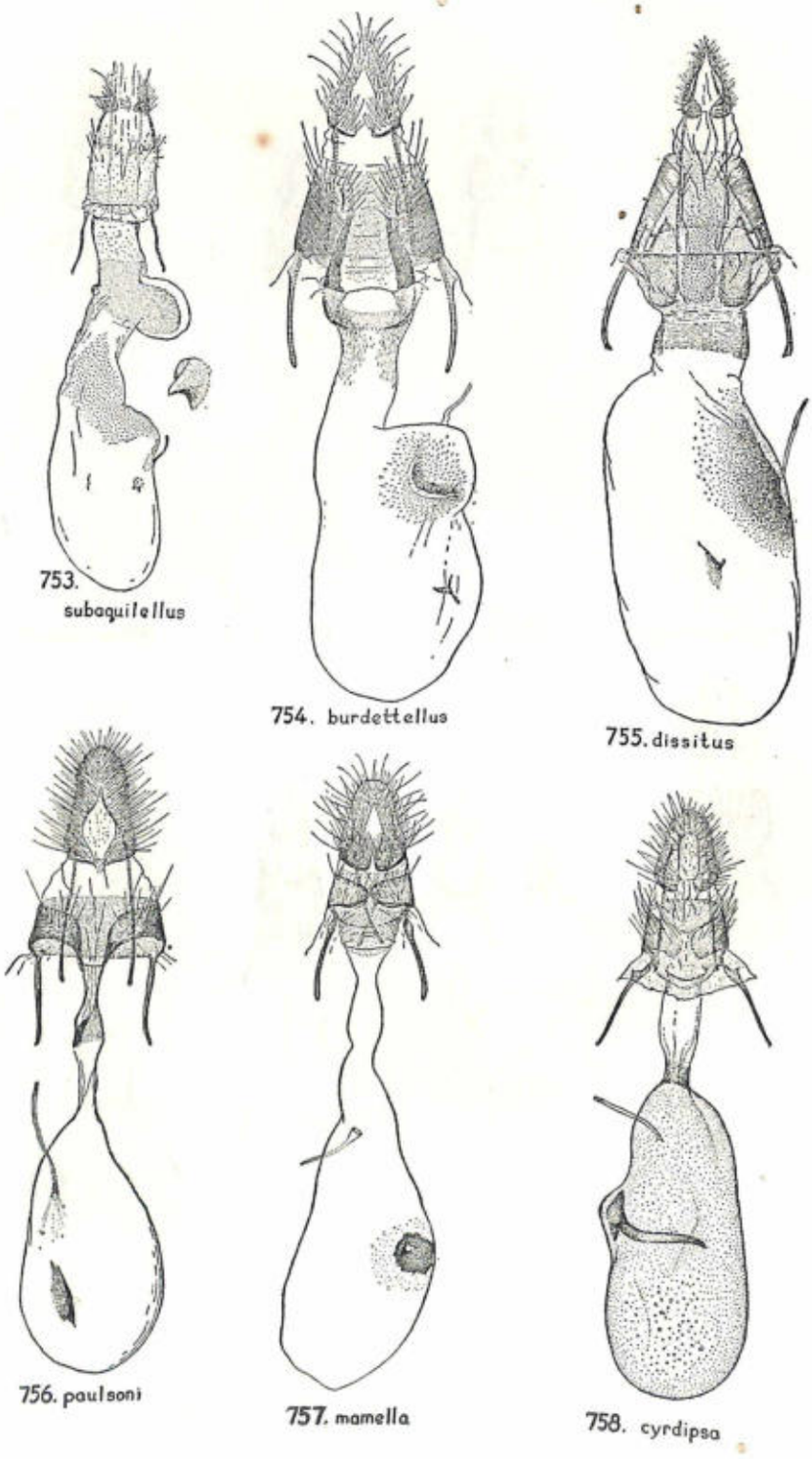


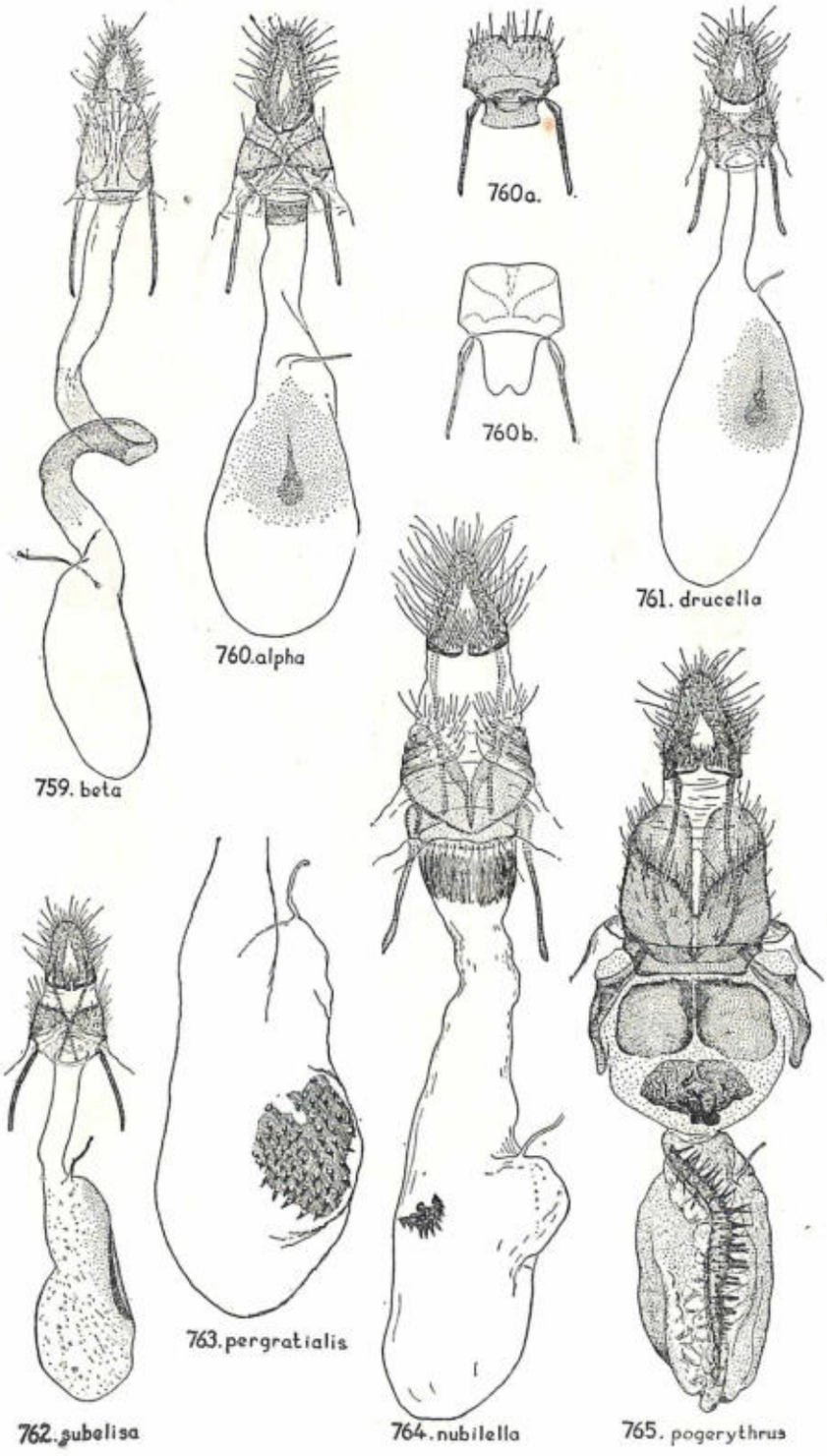
FIGURES 745–752.—FEMALE GENITALIA.

745. *Piesmopoda xanthomera* Dyar, type, detail to the side of collar shows its invagination; similar details shown in figures 746 to 750.
746. *Piesmopoda flavicans* (Zeller).
747. *Piesmopoda ragonoti* (Dyar).
748. *Piesmopoda xanthopolys* Dyar, type.
749. *Piesmopoda isabella* (Dyar).
750. *Piesmopoda parva* Heinrich.
751. *Piesmopoda apocerastes* Dyar.
752. *Piesmopoda semirufella* (Zeller).

FIGURES 753–758.—FEMALE GENITALIA.

753. *Peadus subaquilellus* (Ragonot), type, with enlargement of signum shown to the side of bursa.
754. *Peadus burdettellus* (Schaus).
755. *Peadus dissitus* Heinrich, new species.
756. *Gabinius paulsoni* (Ragonot), specimen from "Chile, Silva."
757. *Ceracanthia mamella* (Dyar), type.
758. *Drescoma cyrdipsa* Dyar.



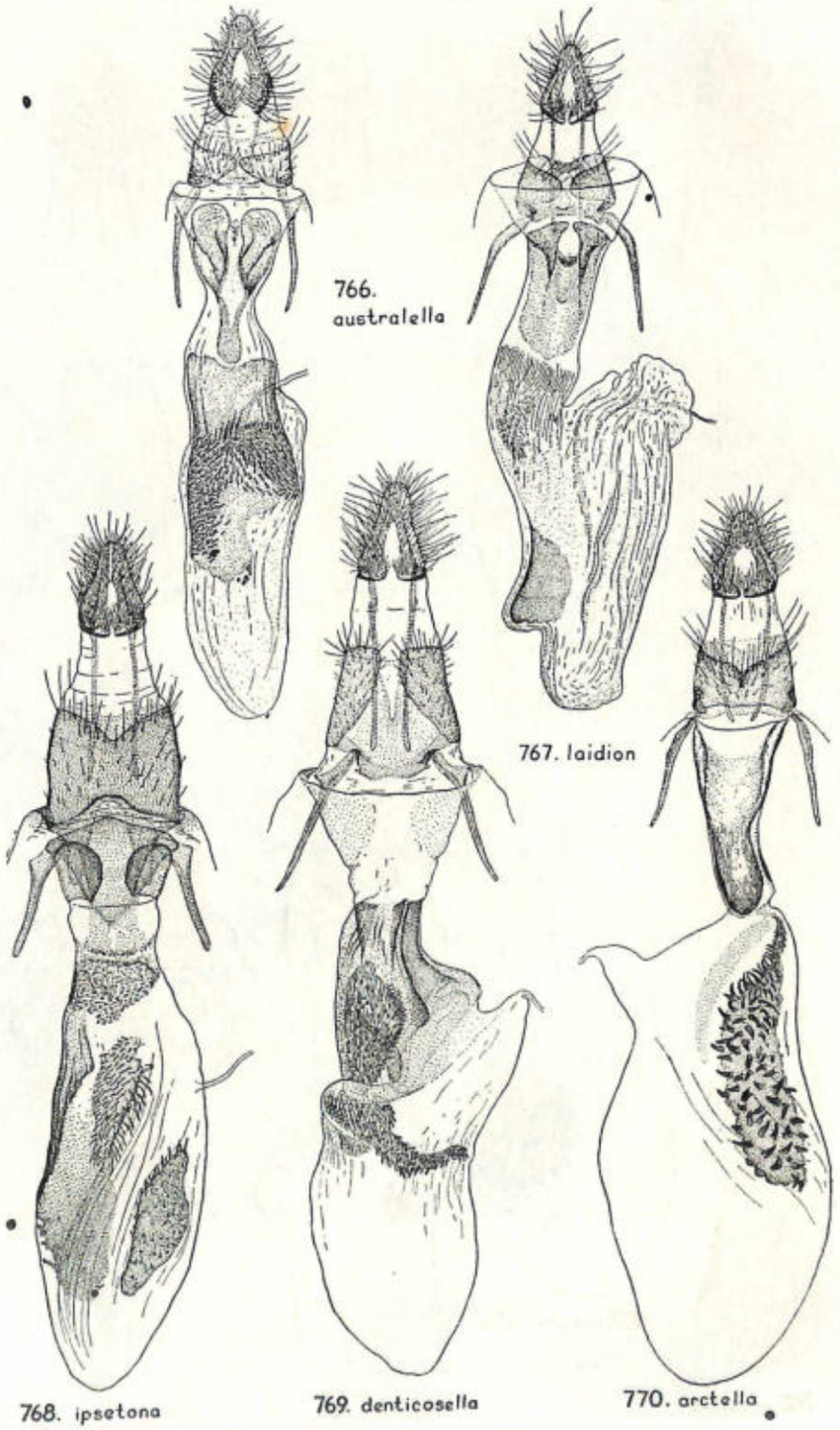


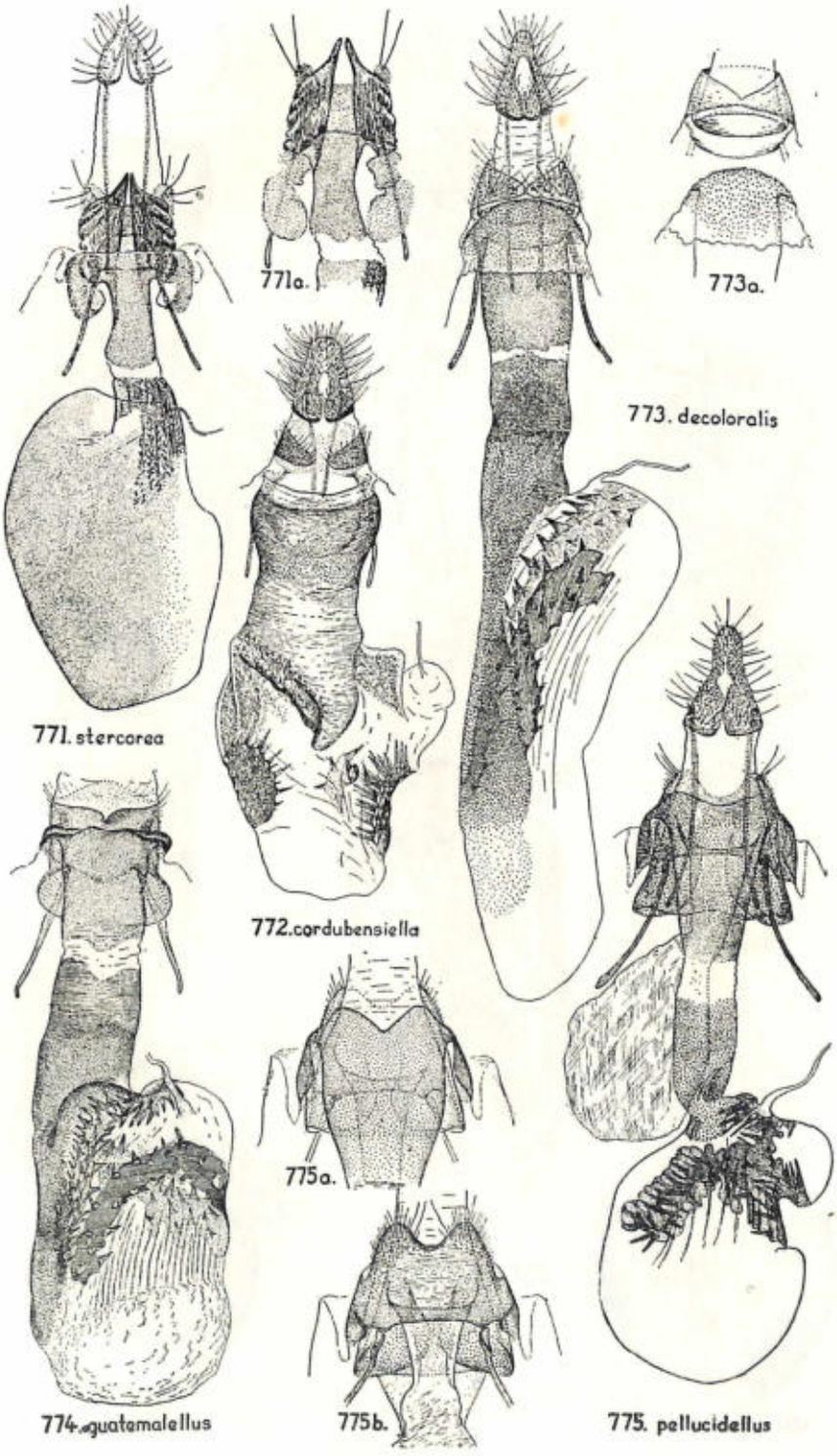
FIGURES 759–765.—FEMALE GENITALIA.

759. *Megarthria beta* Heinrich, type.
760. *Megarthria alpha* Heinrich, type; 760a, b, collar in dorsal view showing variations in the apron.
761. *Drescoma drucella* Dyar, a synonym of *Drescomopsis soraella* (Druce).
762. *Drescomopsis subelisa* Dyar, a synonym of *Drescomopsis soraella* (Druce), with signum shown in full lateral view.
763. *Monoptilota pergratialis* (Hulst), bursa copulatrix of female genitalia.
764. *Monoptilota nubilella* Hulst, paratype, a synonym of *M. pergratialis* (Hulst).
765. *Zamagiria pogerythrus* Dyar.

FIGURES 766–770.—FEMALE GENITALIA.

766. *Zamagiria australella* (Hulst).
767. *Zamagiria laidion* (Zeller).
768. *Zamagiria ipsetona* Dyar.
769. *Magiriopsis denticosella* (Dyar).
770. *Anegcephalesis arctella* (Ragonot).





FIGURES 771–775.—FEMALE GENITALIA.

771. *Ancylostomia stercorea* (Zeller); 771a, ventral view of ductus bursae and eighth-segment collar with membrane of seventh segment removed.

772. *Adelperga cordubensiella* (Ragonot), type.

773. *Caristanius decoloralis* (Walker); 773a, ventral view of eighth-segment collar and apical portion of ductus bursae.

774. *Caristanius guatemalellus* (Ragonot), type.

775. *Caristanius pellucidellus* (Ragonot); 775a, ventral view of apical part of ductus bursae and eighth-segment collar; 775b, dorsal view of eighth-segment collar and its attachments to ductus bursae.

FIGURES 766–780.—FEMALE GENITALIA.

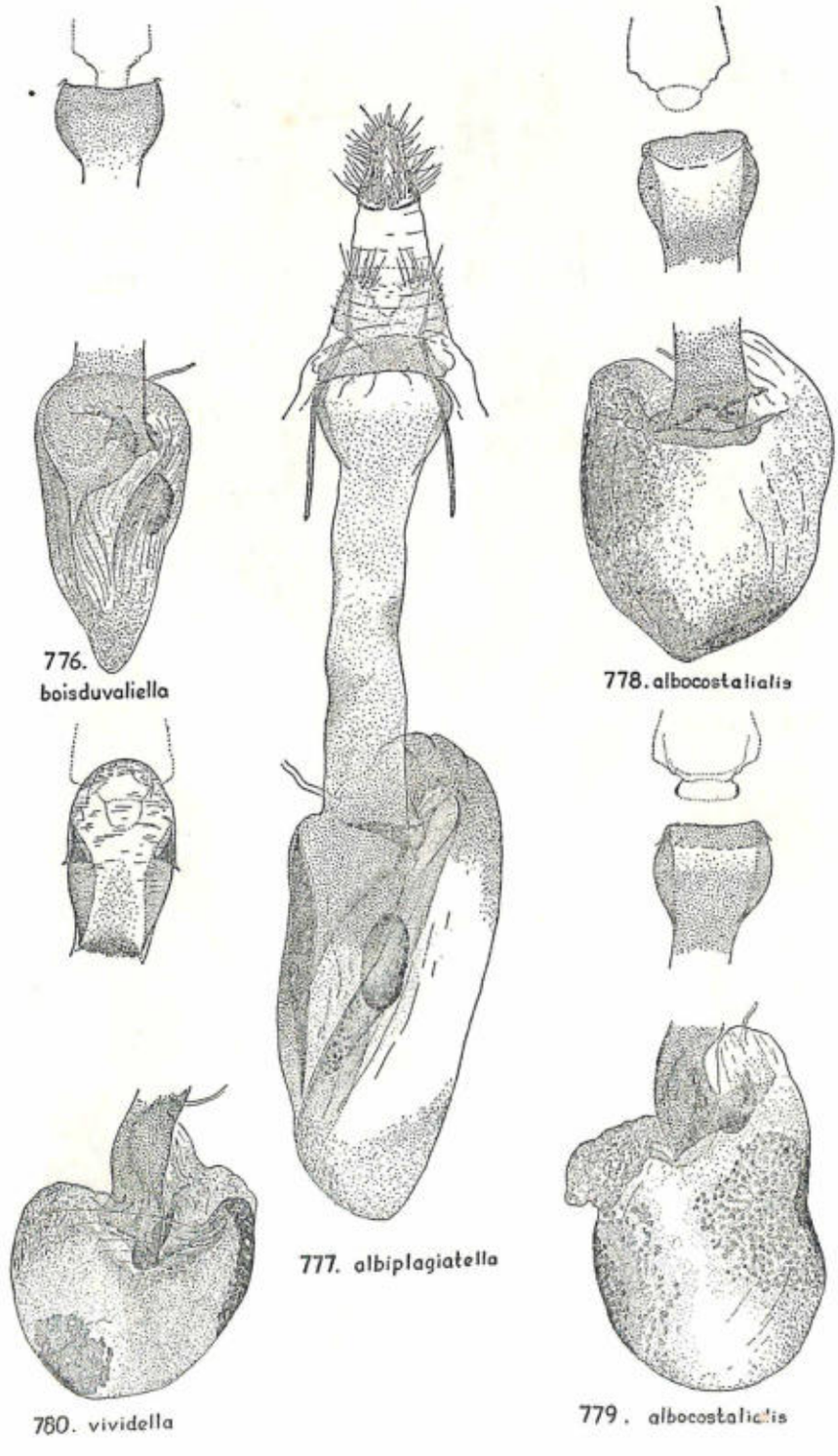
776. *Pima boisduvaliella* (Guénée), bursa copulatrix, apical part of ductus bursae, and dorsal outline of eighth-segment collar of female genitalia.

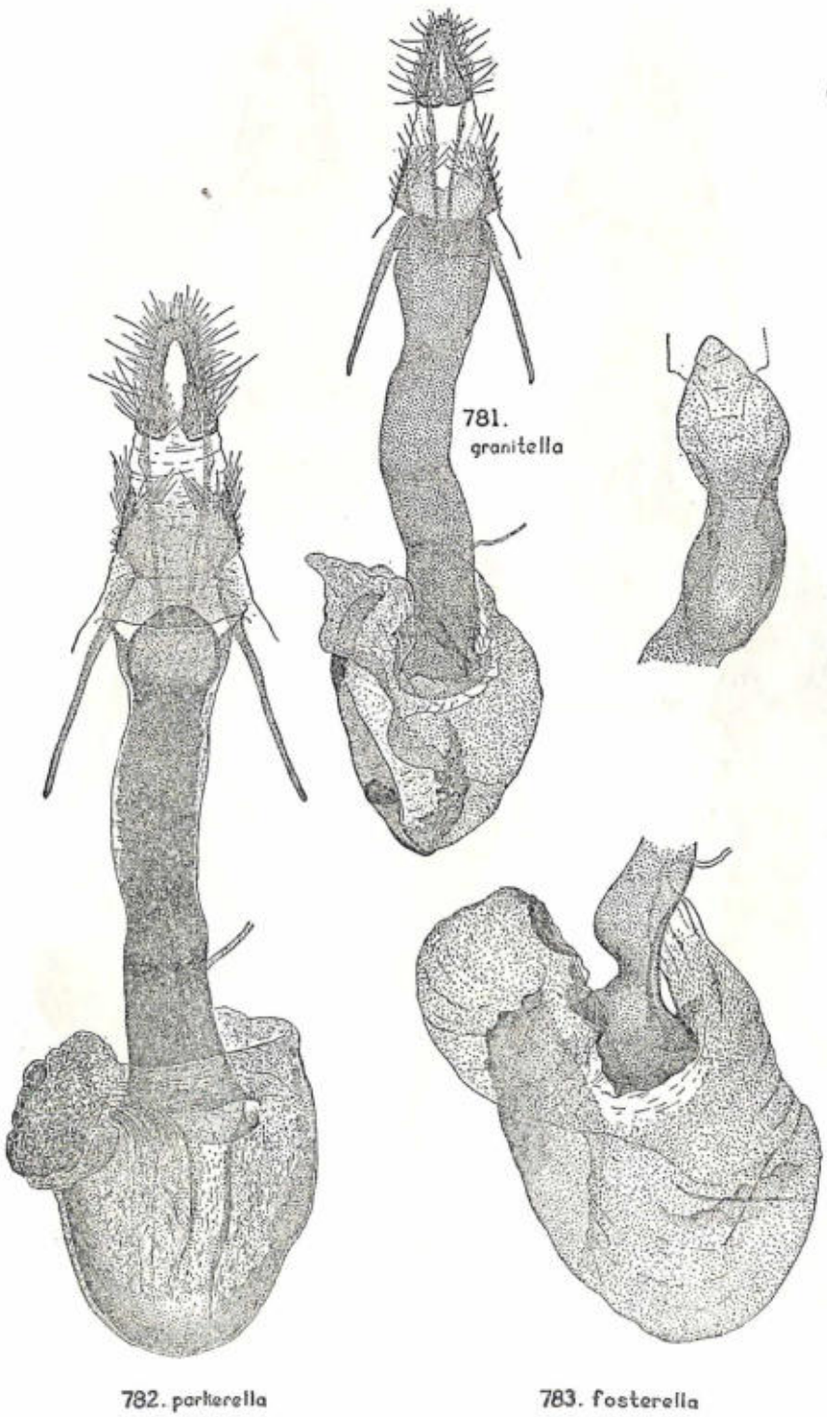
777. *Pima albiplagiatella* (Packard).

778. *Pima albocostalialis* (Hulst), bursa copulatrix, apical part of ductus bursae, and dorsal outline of eighth-segment collar of female genitalia.

779. *Pima albocostalialis* (Hulst), a specimen showing extent of variation in patches of bursa and shape of eighth-segment collar.

780. *Pima vividella* (McDunnough), specimen from Aweme, Manitoba, bursa copulatrix, apical part of ductus bursae, and dorsal outline of eighth-segment collar of female genitalia.



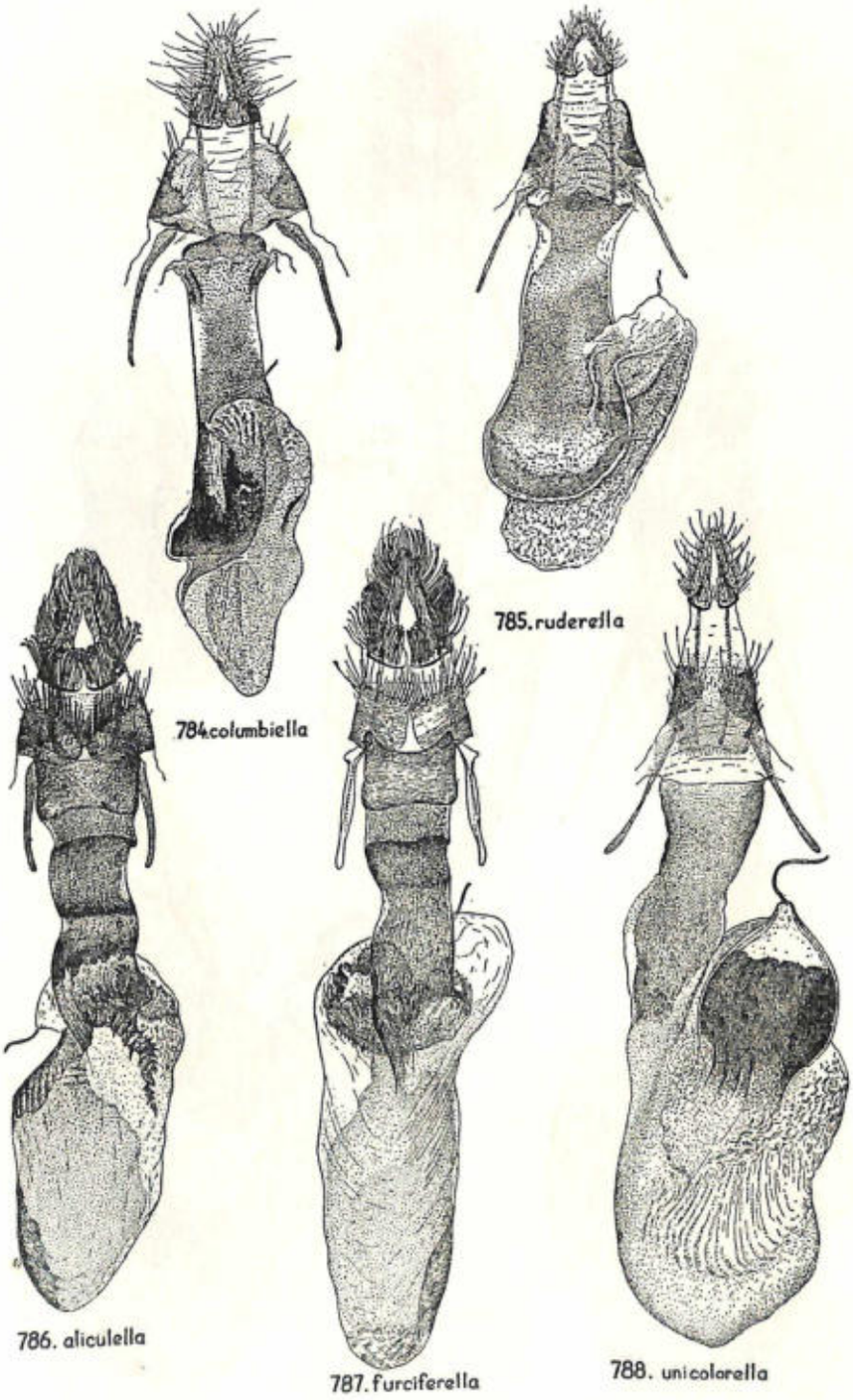


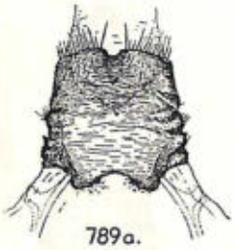
FIGURES 781–783.—FEMALE GENITALIA

781. *Pima granitella* (Ragonot).
782. *Pima parkerella* (Schaus).
783. *Pima fostérella* Hulst, specimen from Arizona, bursa copulatrix, apical part of ductus bursae, and dorsal outline of eighth-segment collar of female genitalia.

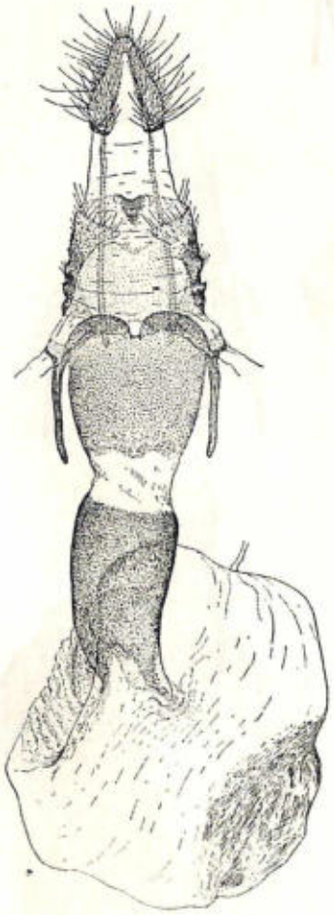
FIGURES 784–788.—FEMALE GENITALIA.

784. *Interjectio columbiella* (McDunnough), specimen from Pullman, Wash.
785. *Interjectio ruderella* (Ragenot), type.
786. *Olybria aliculella* (Hulst).
787. *Olybria furciferella* (Dyar).
788. *Oreana unicolorella* (Hulst).





789a.



789. lallatalis

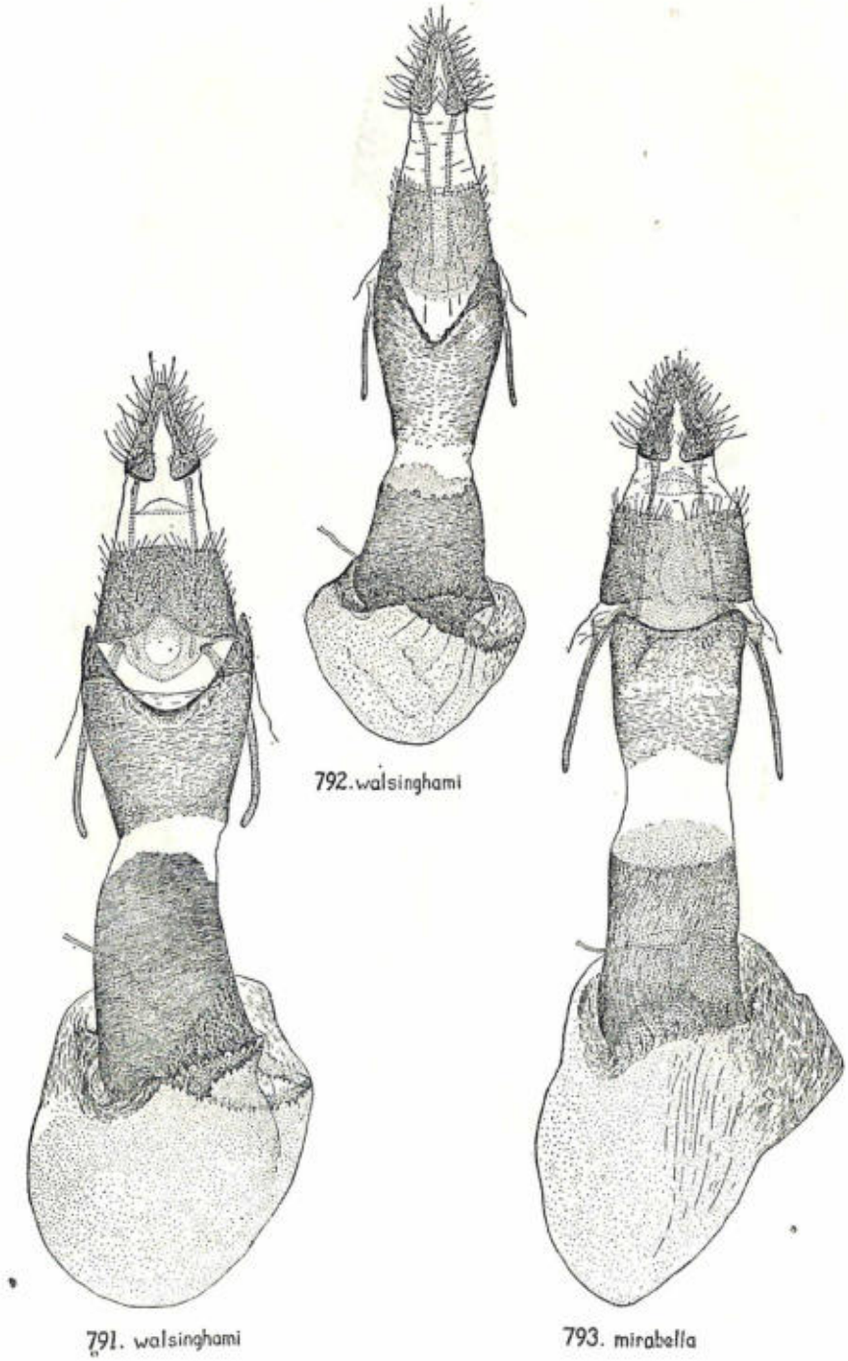
790. laetella

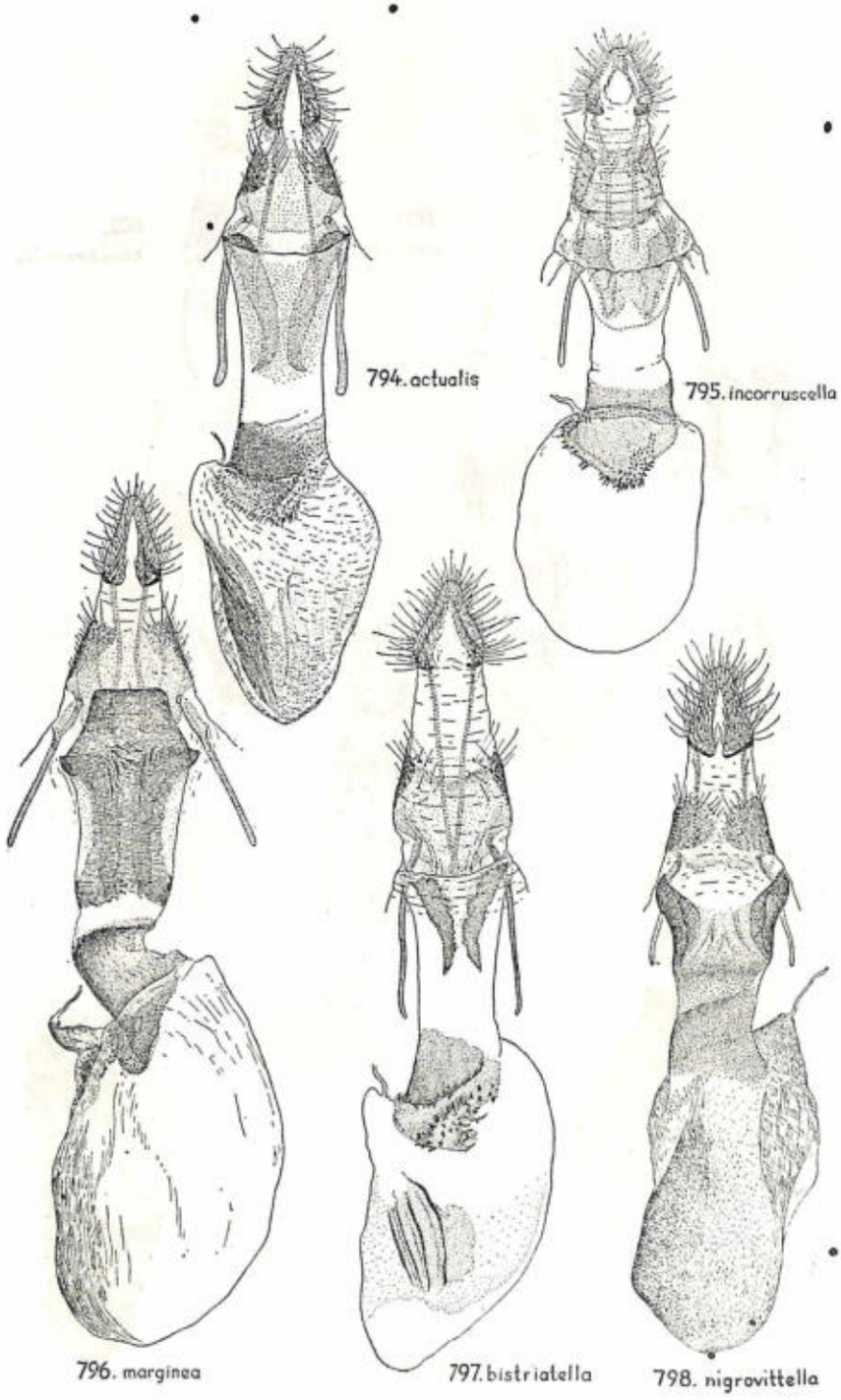
FIGURES 789–790.—FEMALE GENITALIA.

789. *Ambesa lallatalis* (Hulst); 789a, dorsal view of eighth-segment collar.
790. *Ambesa laetella* Grote.

FIGURES 791–793.—FEMALE GENITALIA.

791. *Ambesa walsinghami* (Ragonot).
792. *Ambesa walsinghami* (Ragonot), figured from type of its synonym, *A. monodon* Dyar.
793. *Ambesa walsinghami mirabella* Dyar.



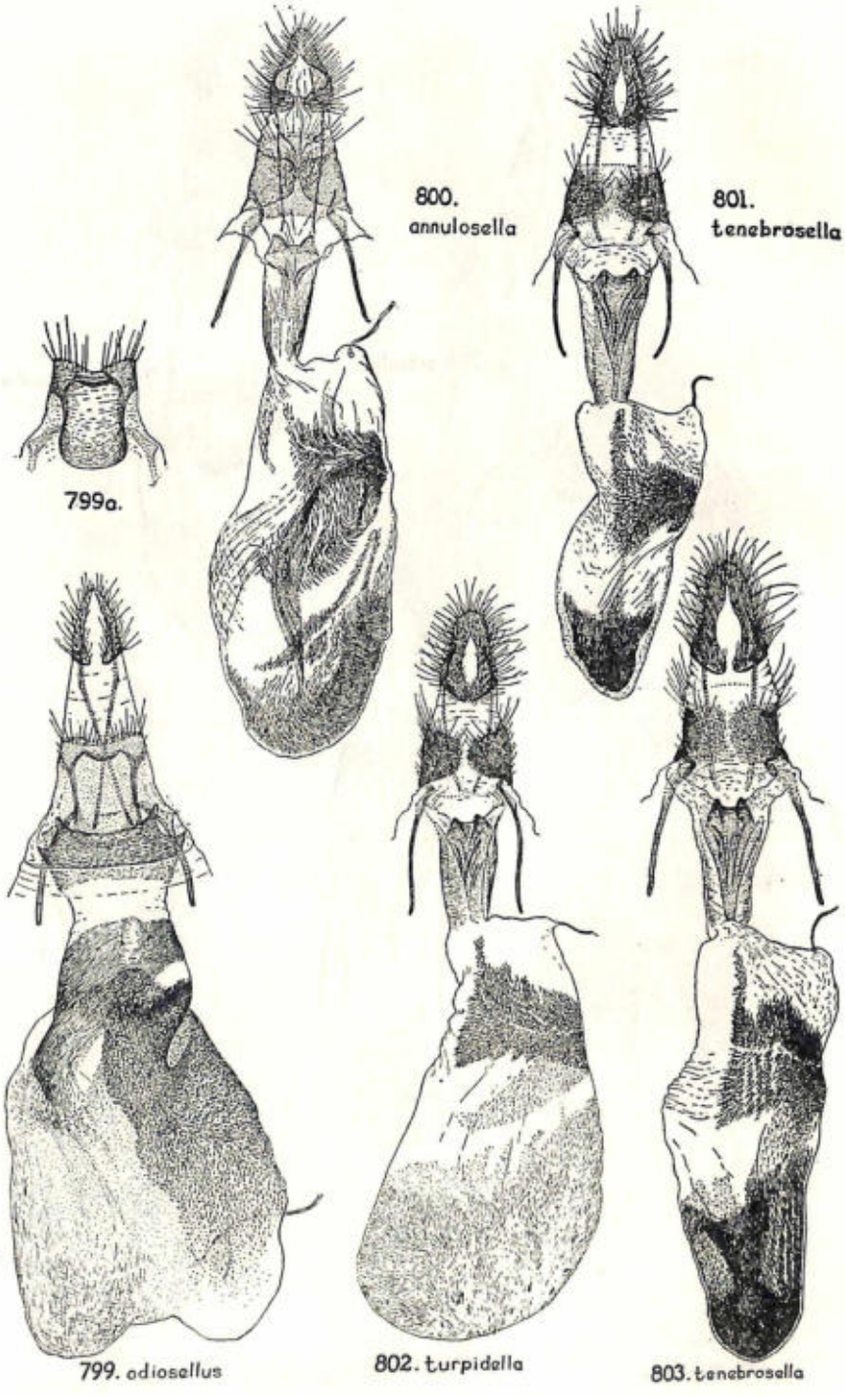


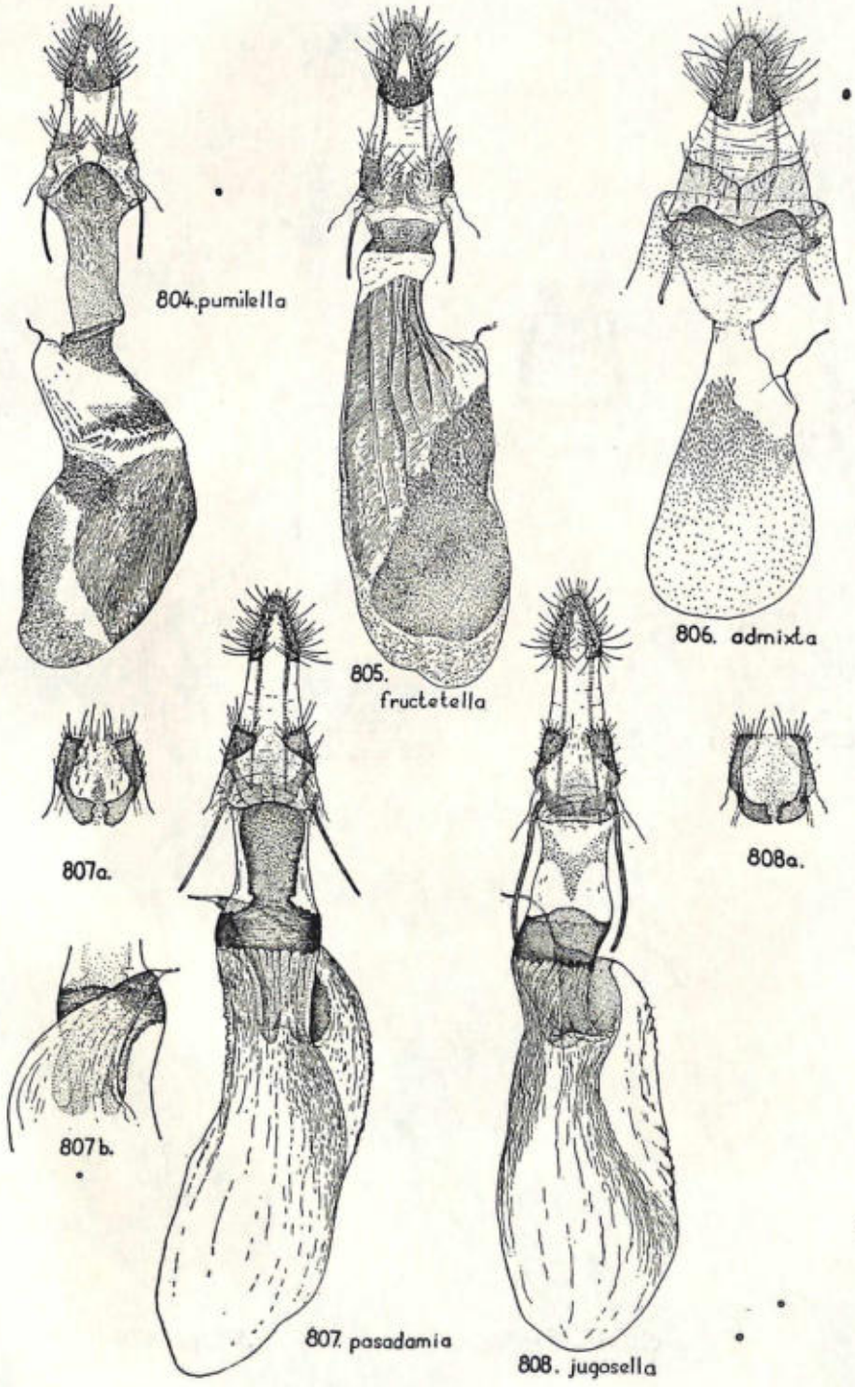
FIGURES 794–798.—FEMALE GENITALIA.

794. *Catastia actualis* (Hulst).
795. *Catastia incorruscella* (Hulst), specimen from Arizona.
796. *Catastia marginea* (Schiffermüller).
797. *Catastia bistriatella* (Hulst), specimen from type locality.
798. *Immyrla nigrovittella* Dyar.

FIGURES 799–803.—FEMALE GENITALIA.

799. *Salebriacus odiosellus* (Hulst); 799a, dorsal view of eighth-segment collar.
800. *Salebriaria annulosella* (Ragonot), specimen from Burnet County, Tex.
801. *Salebriaria tenebrosella* (Hulst), type.
802. *Salebriaria turpidella* (Ragonot).
803. *Salebriaria tenebrosella* (Hulst), figured from large example.



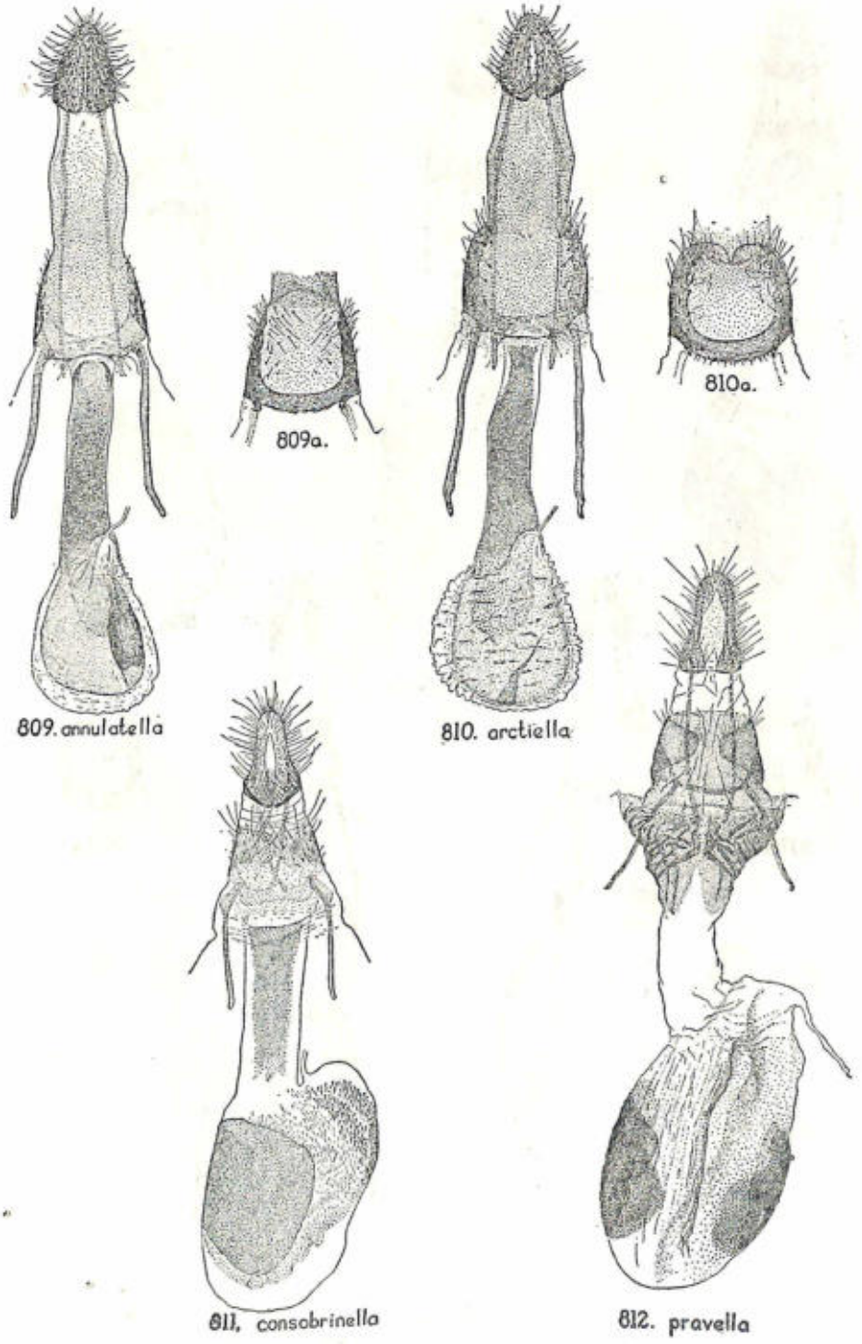


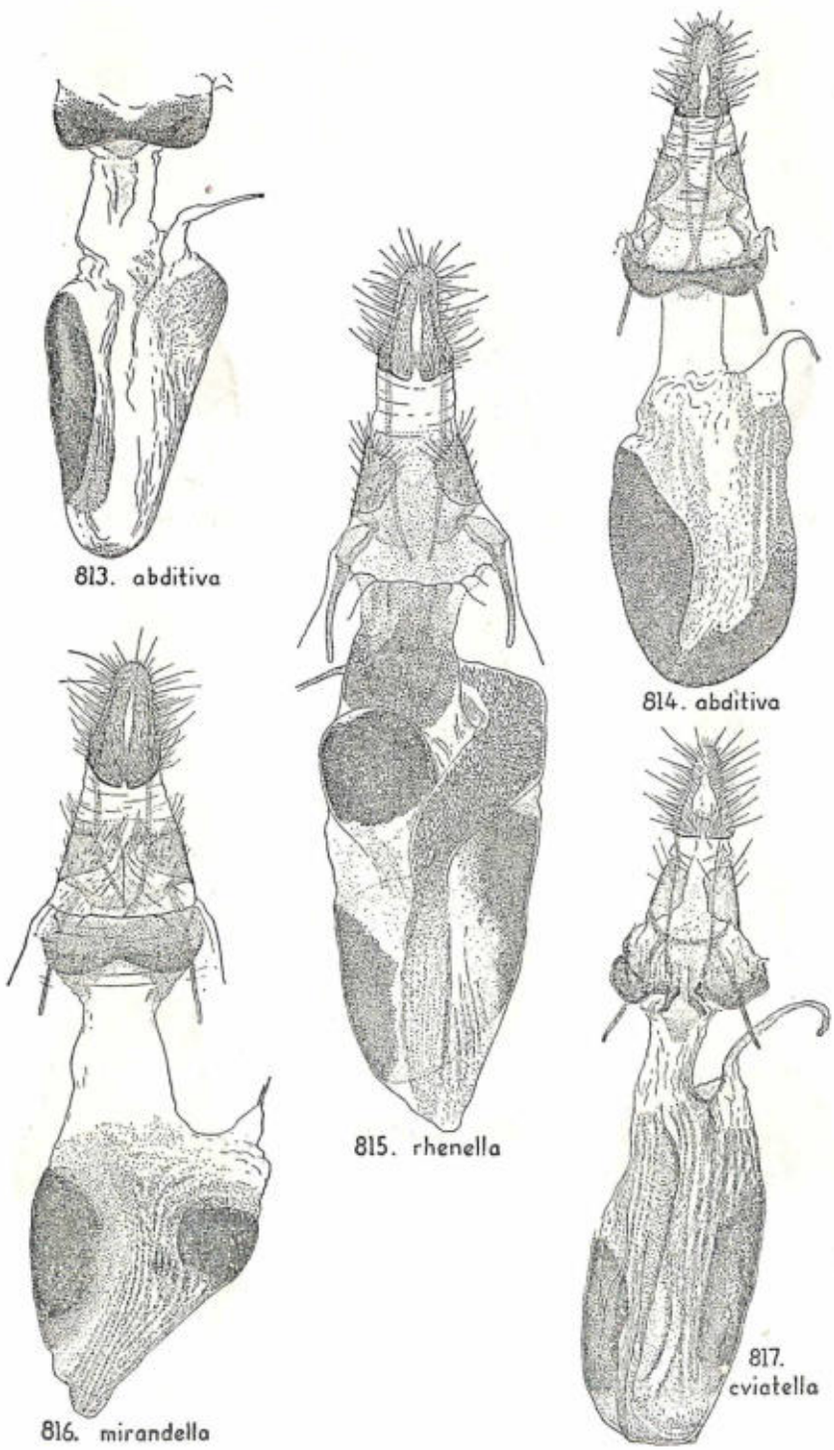
FIGURES 804–808.—FEMALE GENITALIA.

804. *Salebriaria pumilella* (Ragonot).
805. *Salebriaria fructetella* (Hulst), type.
806. *Quasisalebria admixta* Heinrich, paratype from type locality.
807. *Ortholepis pasadamia* (Dyar); 807a, dorsal view of eighth-segment collar; 807b, dorsal view of junction of bursa and ductus bursae.
808. *Ortholepis jugosella* Ragonot; 808a, dorsal view of eighth-segment collar.

FIGURES 809–812.—FEMALE GENITALIA.

809. *Polopeustis annulatella* (Zetterstedt); 809a, dorsal view of eighth-segment collar.
810. *Polopeustis arctiella* (Gibson), specimen from Labrador; 810a, dorsal view of eighth-segment collar.
811. *Glyptocera consobrinella* (Zeller).
812. *Meroptera pravella* (Grote).



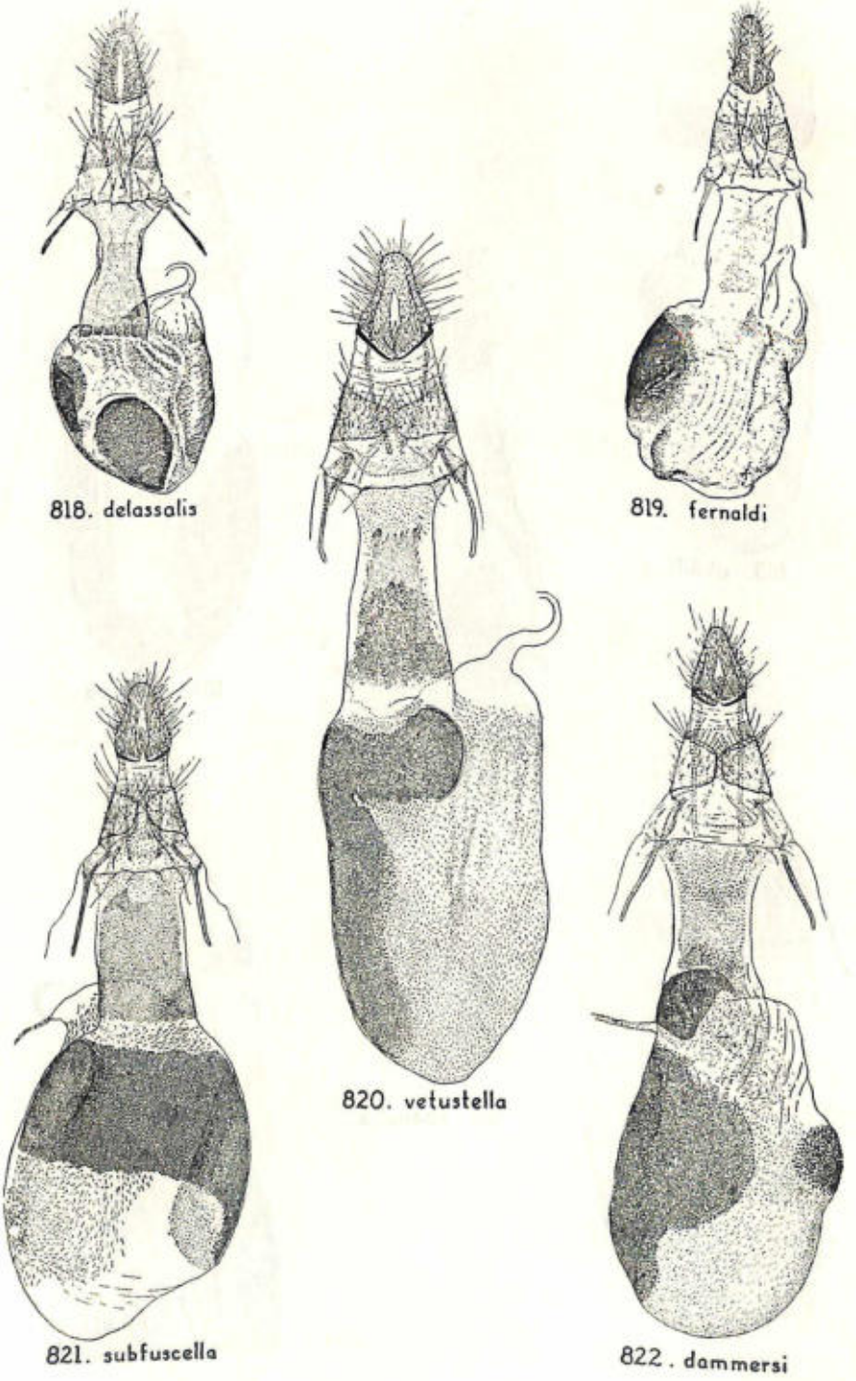


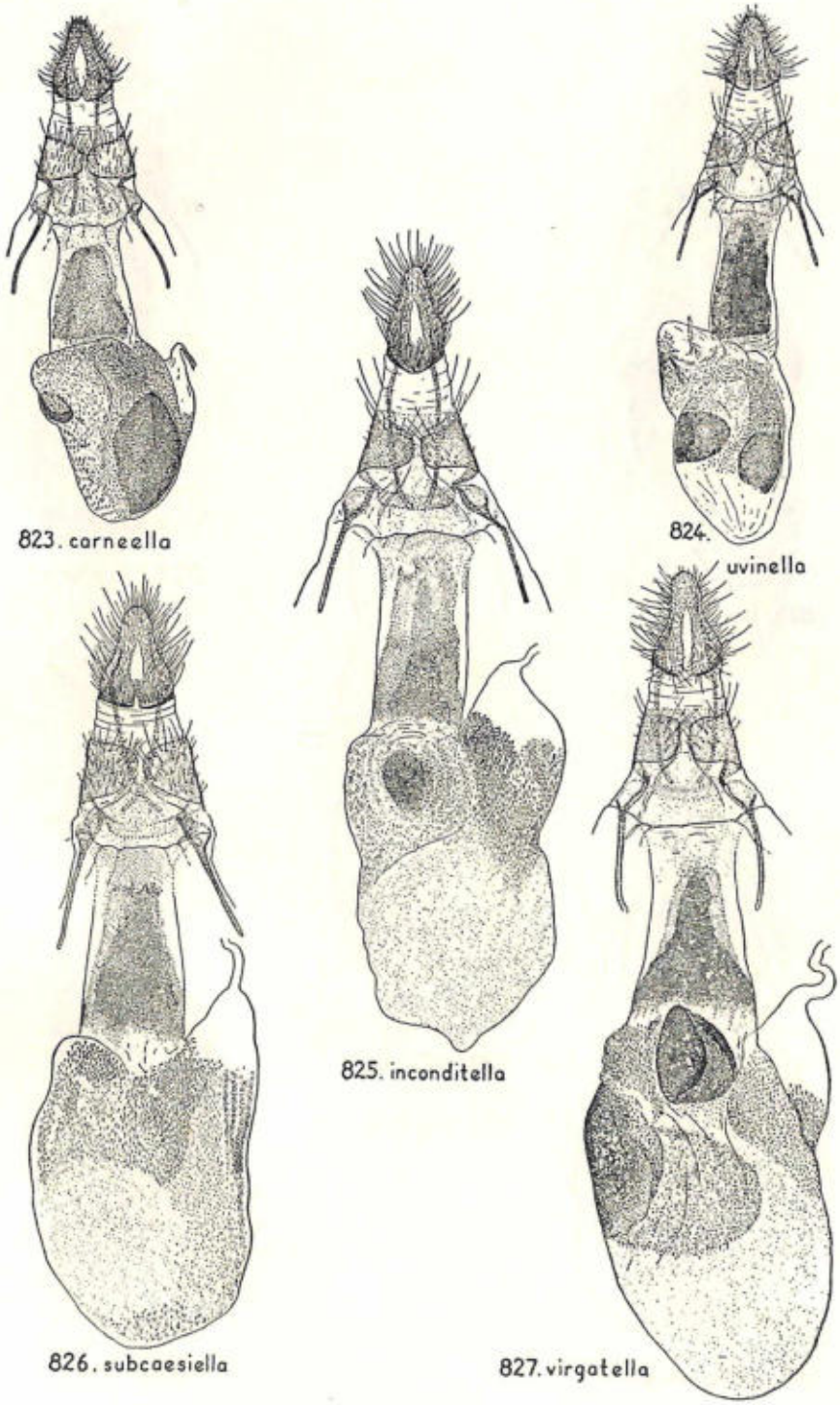
FIGURES 813–817.—FEMALE GENITALIA.

813. *Meroptera abditiva* Heinrich, new species, paratype from type locality, with eighth-segment collar and ovipositor omitted.
814. *Meroptera abditiva* Heinrich, new species, paratype from type locality.
815. *Nephopteryx rhenella* (Zincken).
816. *Meroptera mirandella* Ragonot.
817. *Meroptera cviatella* Dyar.

FIGURES 818–822.—FEMALE GENITALIA.

818. *Nephopteryx delassalis* Hulst, type.
819. *Nephopteryx fernaldi* (Ragonot).
820. *Nephopteryx vetustella* (Dyar).
821. *Nephopteryx subfuscella* (Ragonot), figured from type of its synonym *Salebria semiobscurella* Hulst.
822. *Nephopteryx dammersi* Heinrich, new species.





FIGURES 823–827.—FEMALE GENITALIA.

823. *Nephopteryx carneella* Hulst, reared specimen from Maine.
824. *Nephopteryx uvinella* (Ragonot).
825. *Nephopteryx inconditella* (Ragonot).
826. *Nephopteryx subcaesiella* (Clemens).
827. *Nephopteryx virgatella* (Clemens).

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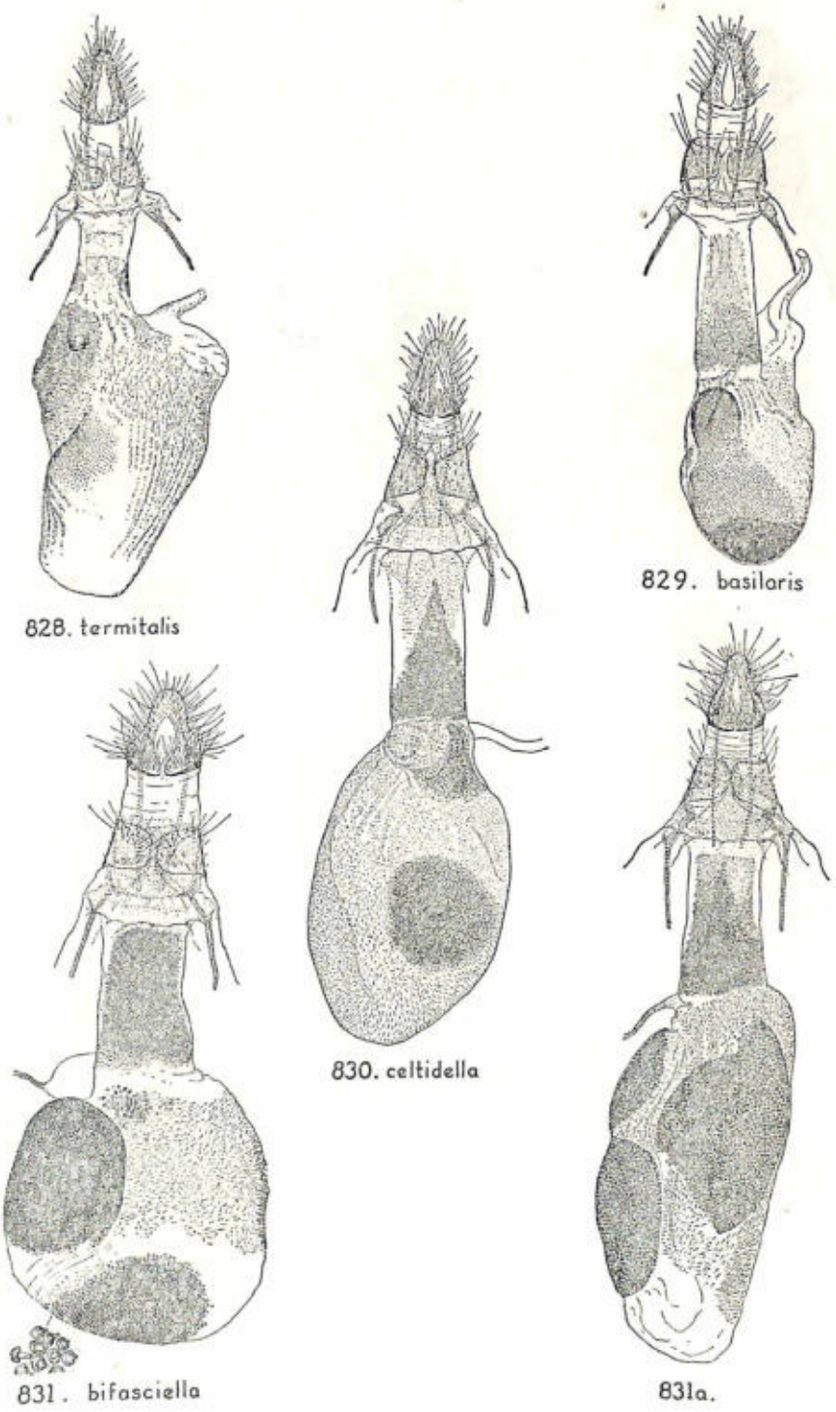
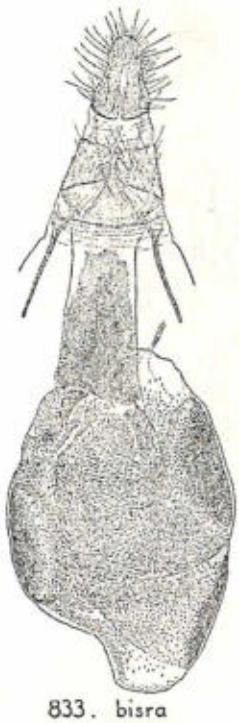
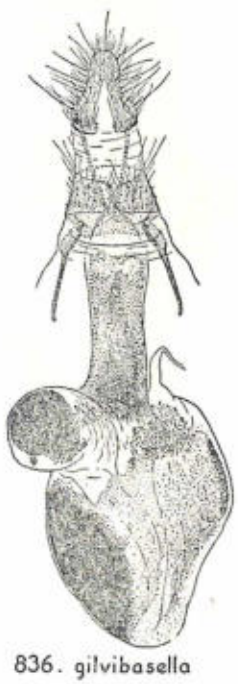
FIGURES 828–831.—FEMALE GENITALIA.

828. *Nephopteryx termitalis* (Hulst), figured from type of its synonym *Salabria levigatella* Hulst.
829. *Nephopteryx basilaris* Zeller.
830. *Nephopteryx celtidella* (Hulst).
831. *Nephopteryx bifasciella* Hulst. 831a, abnormal specimen from Yuma, Ariz.





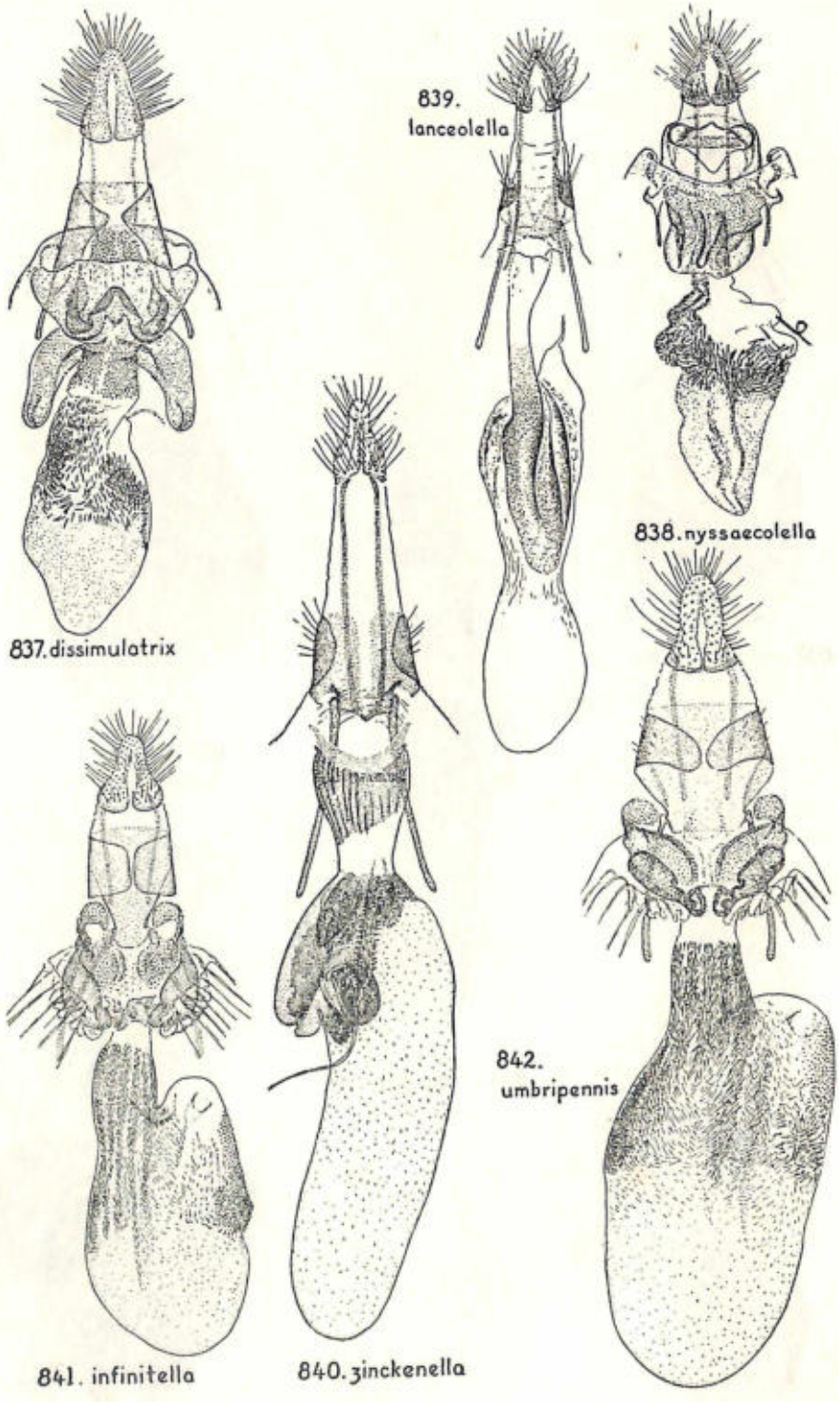


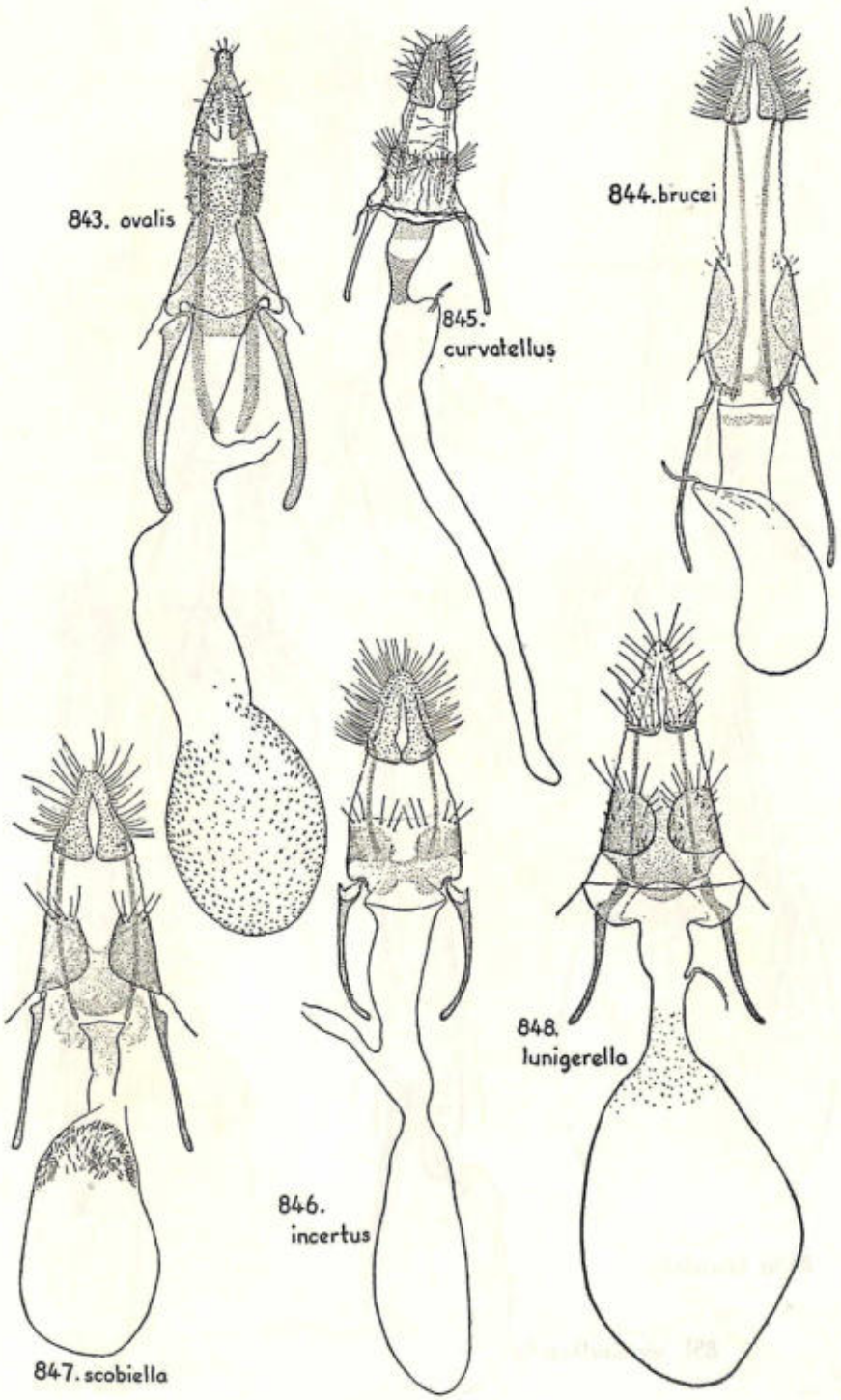
FIGURES 832–836.—FEMALE GENITALIA.

832. *Nephopteryx rubrisparsella* (Ragonot).
833. *Nephopteryx bisra* Dyar, type.
834. *Tlascala reductella* (Walker).
835. *Nephopteryx crassifasciella* Ragonot.
836. *Nephopteryx gilvibasella* Hulst.

FIGURES 837–842.—FEMALE GENITALIA.

837. *Actrix dissimulatrix* Heinrich.
838. *Actrix nyssaecolella* (Dyar).
839. *Homoeographa lanceolella* Ragonot, paratype (in BM, "Peru, Coll. Walker, 84–72").
840. *Etiella zinckenella* (Treitschke).
841. *Tulsa infinitella* (Dyar), type.
842. *Tulsa umbripennis* (Hulst), specimen from Chimney Gulch, Colo.



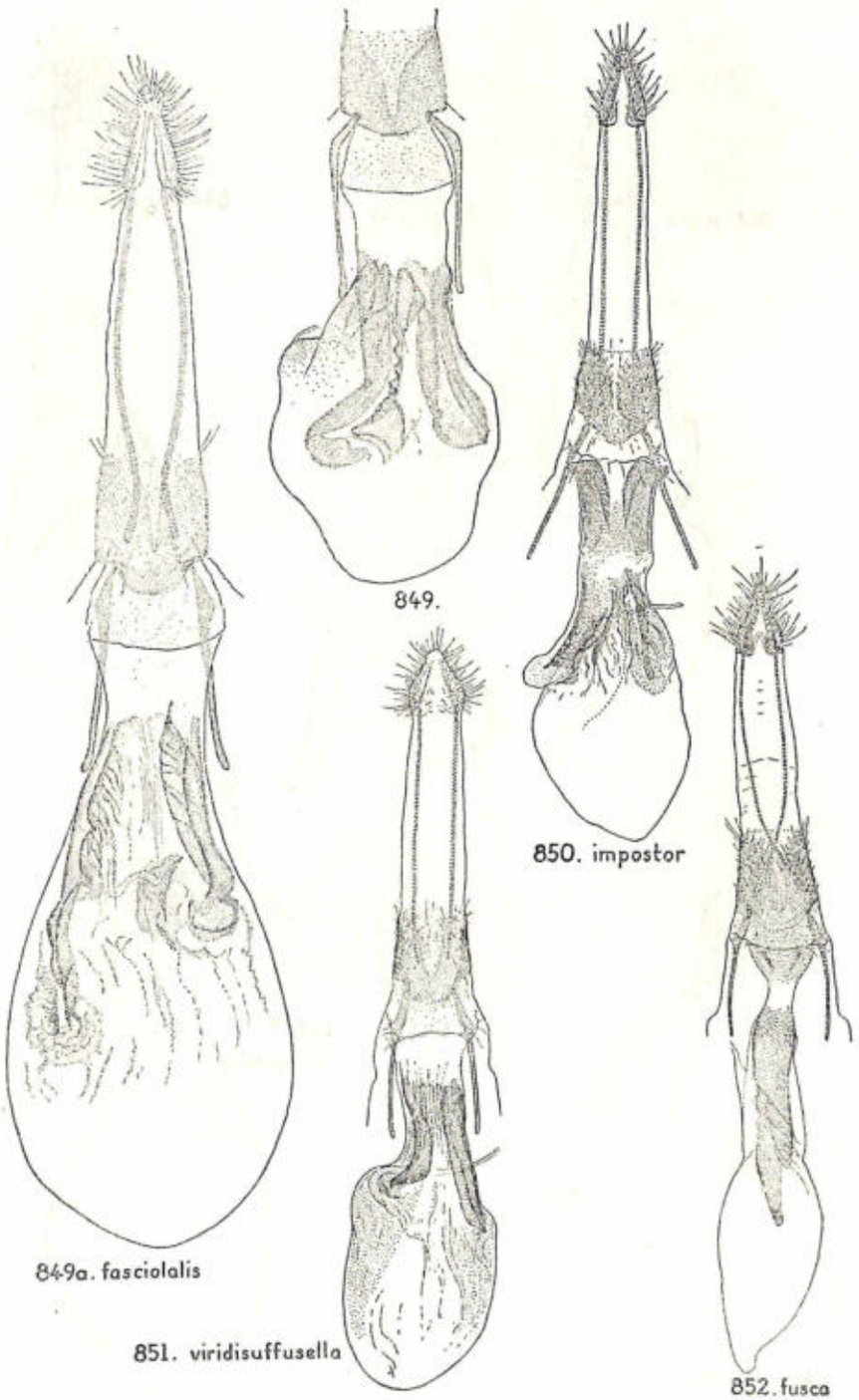


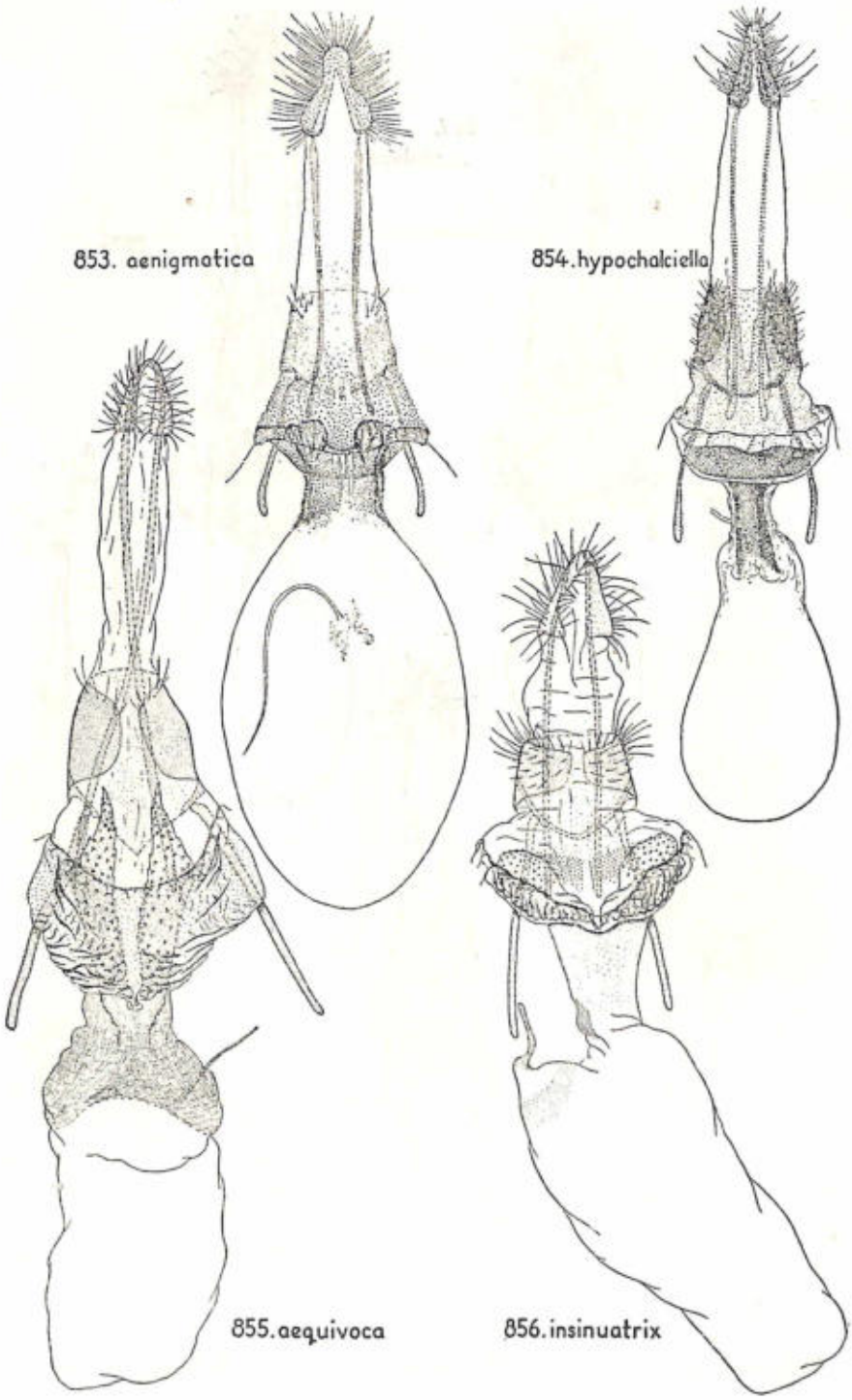
FIGURES 843–848.—FEMALE GENITALIA.

843. *Telethusia ovalis* (Packard).
844. *Phobus brucei* (Hulst).
845. *Phobus curvatellus* (Ragonot).
846. *Phobus incertus* Heinrich, new species.
847. *Stylopalpia scobiella* (Grote).
848. *Stylopalpia lunigerella* Hampson.

FIGURES 849–852.—FEMALE GENITALIA.

849. *Pyla fasciolalis* (Hulst), with ovipositor omitted; 849a, female genitalia of a variety from Gunnison County, Colo.
850. *Pyla impostor* Heinrich, new species.
851. *Pyla viridisuffusella* Barnes and McDunnough.
852. *Pyla fusca* (Haworth).



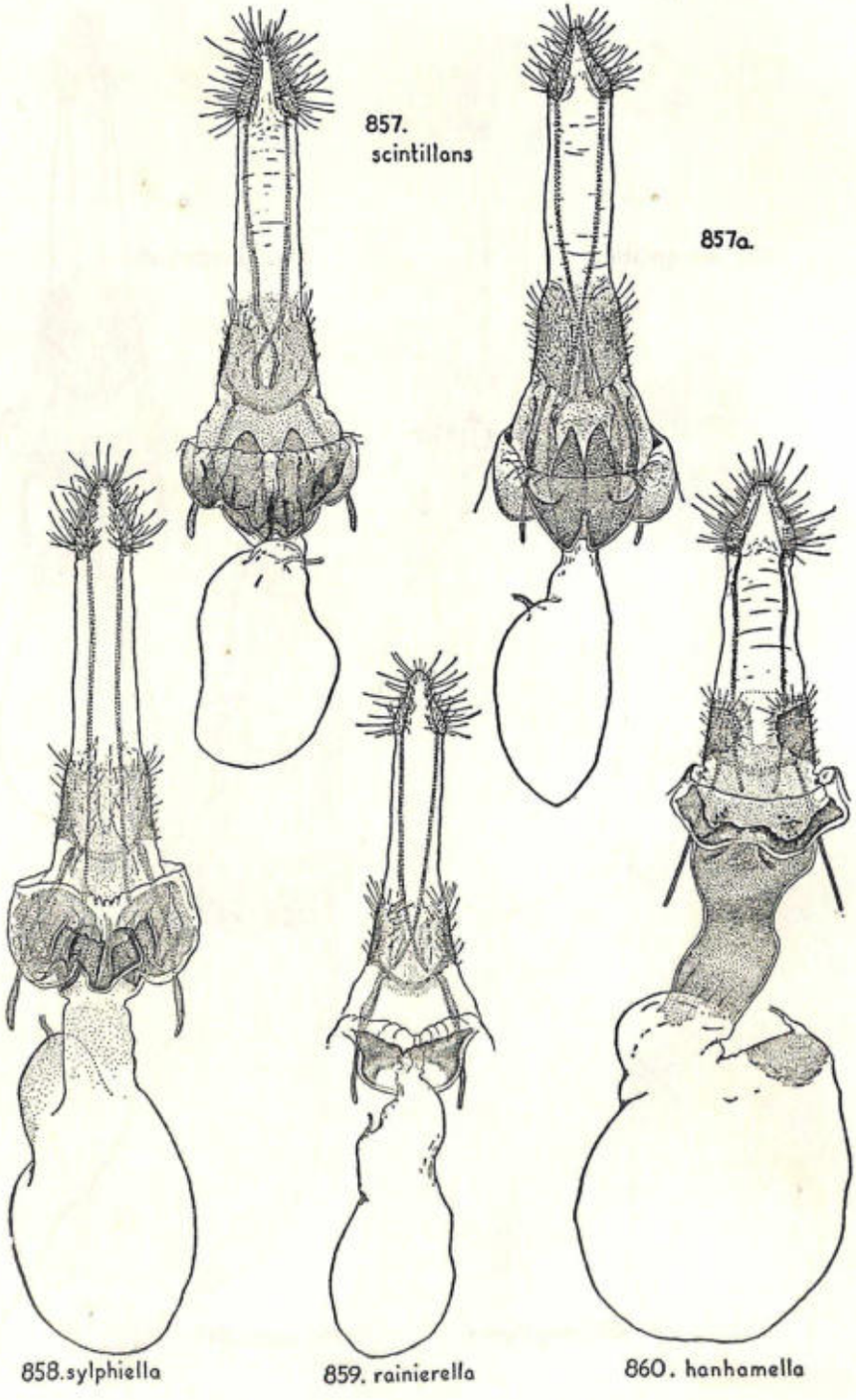


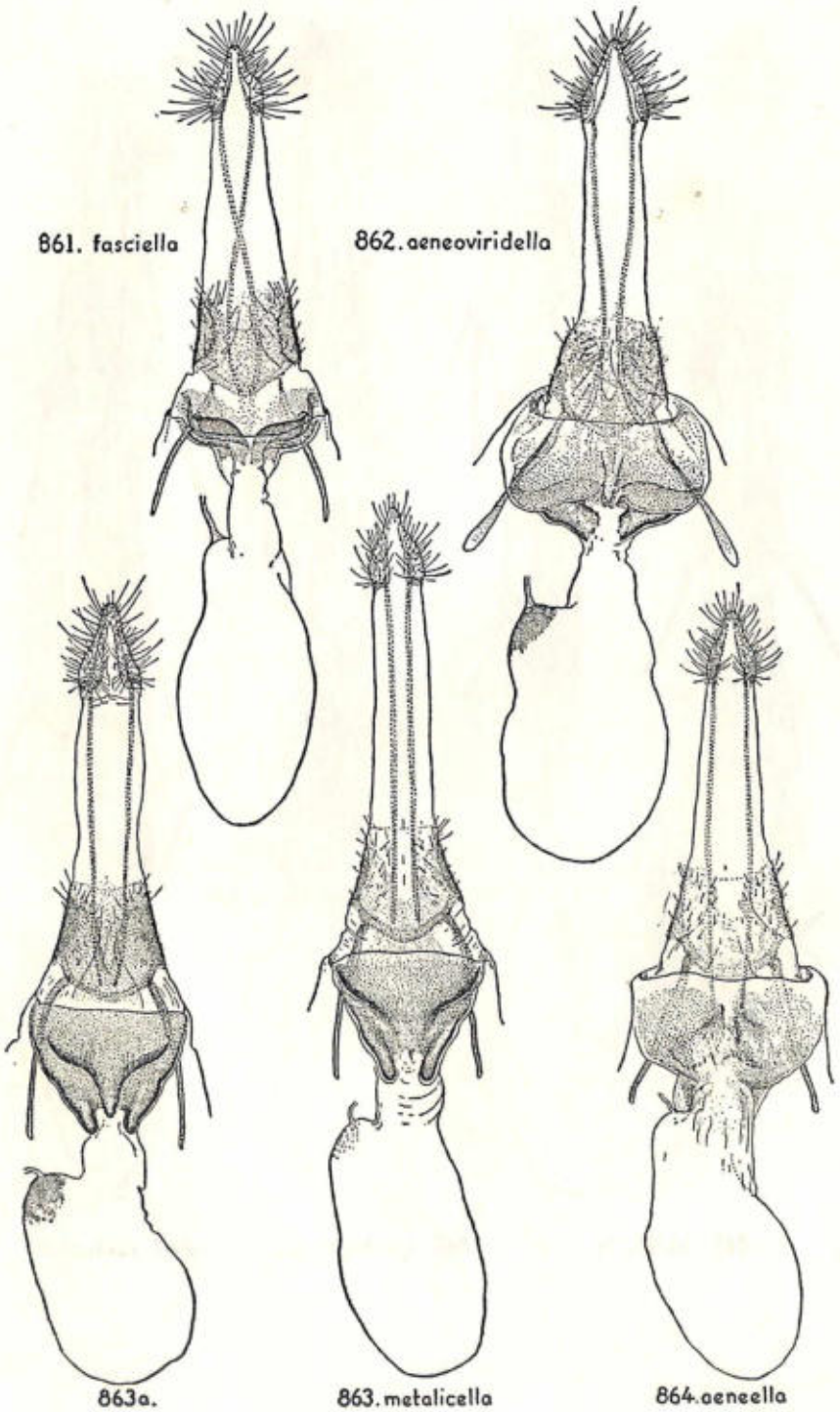
FIGURES 853–856.—FEMALE GENITALIA.

853. *Pyla aenigmatica* Heinrich, new species.
854. *Pyla hypochalciella* (Ragonot).
855. *Pyla aequivoca* Heinrich, new species.
856. *Pyla insinuatrix* Heinrich, new species.

FIGURES 857–860.—FEMALE GENITALIA.

857. *Pyla scintillans* (Grote), figured from type of its synonym *P. feella* Dyar; 857a, female genitalia of a specimen from Tuolumne Meadows, Calif.
858. *Pyla sylphiella* Dyar.
859. *Pyla rainierella* Dyar.
860. *Pyla hanhamella* Dyar.





FIGURES 861–864.—FEMALE GENITALIA.

861. *Pyla fasciella* Barnes and McDunnough.
862. *Pyla aeneoviridella* Ragonot.
863. *Pyla metalicella* Hulst; 863a, specimen from Silverton, Colo.
864. *Pyla aeneella* Hulst, type.

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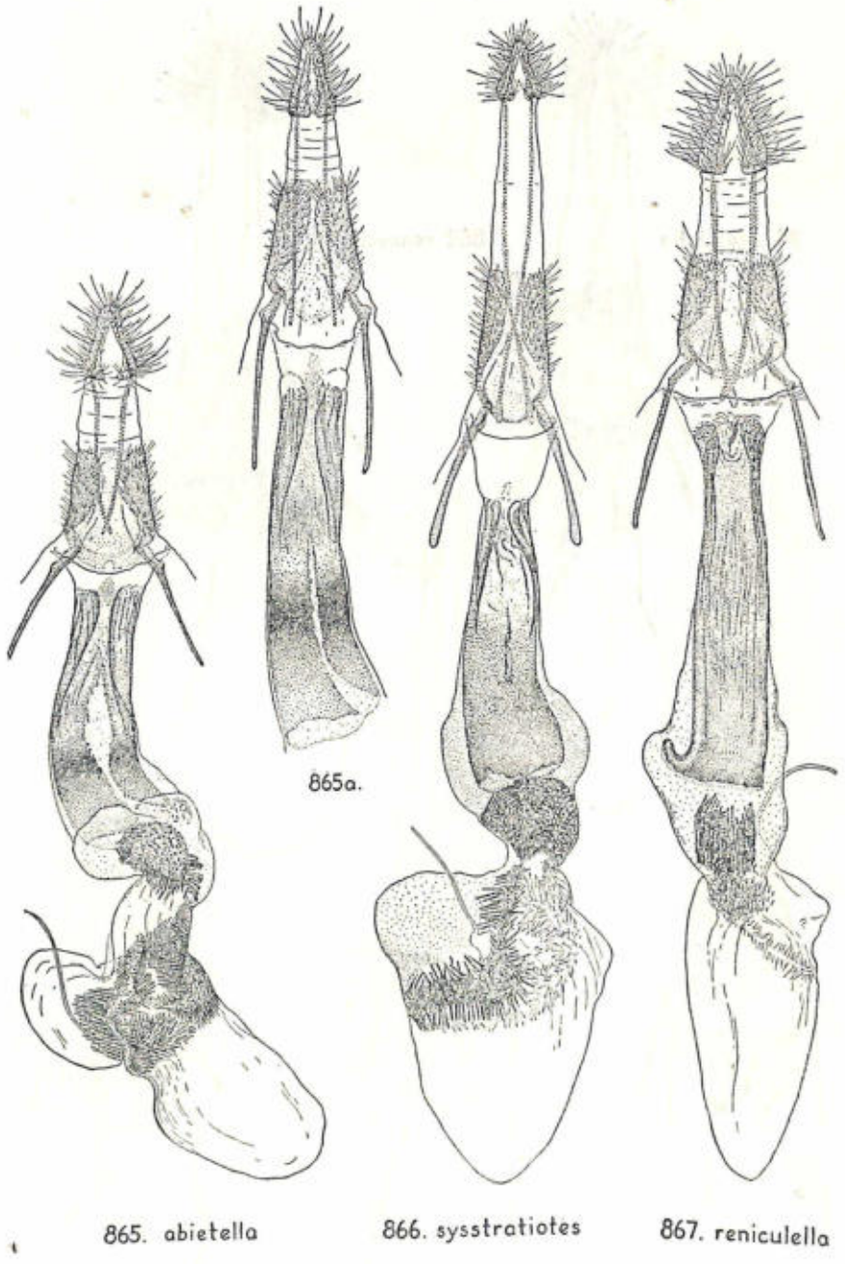
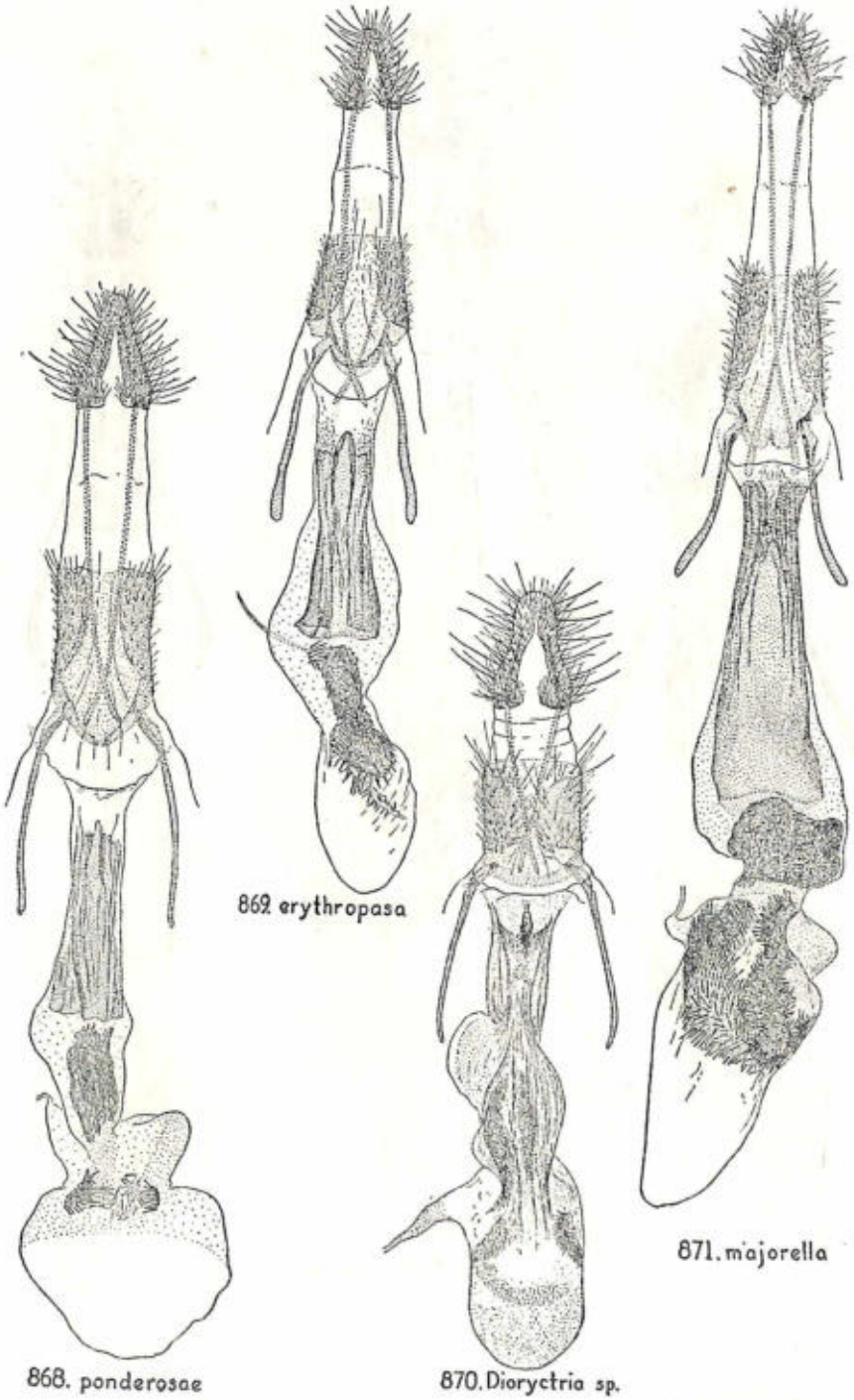
FIGURES 865–867.—FEMALE GENITALIA.

865. *Dioryctria abietella* (Denis and Schiffermüller); 865a, part of female genitalia of a specimen showing variation in the suture of the sclerotization of ductus bursae.
866. *Dioryctria sysstratiotes* Dyar.
867. *Dioryctria reniculella* Grote.



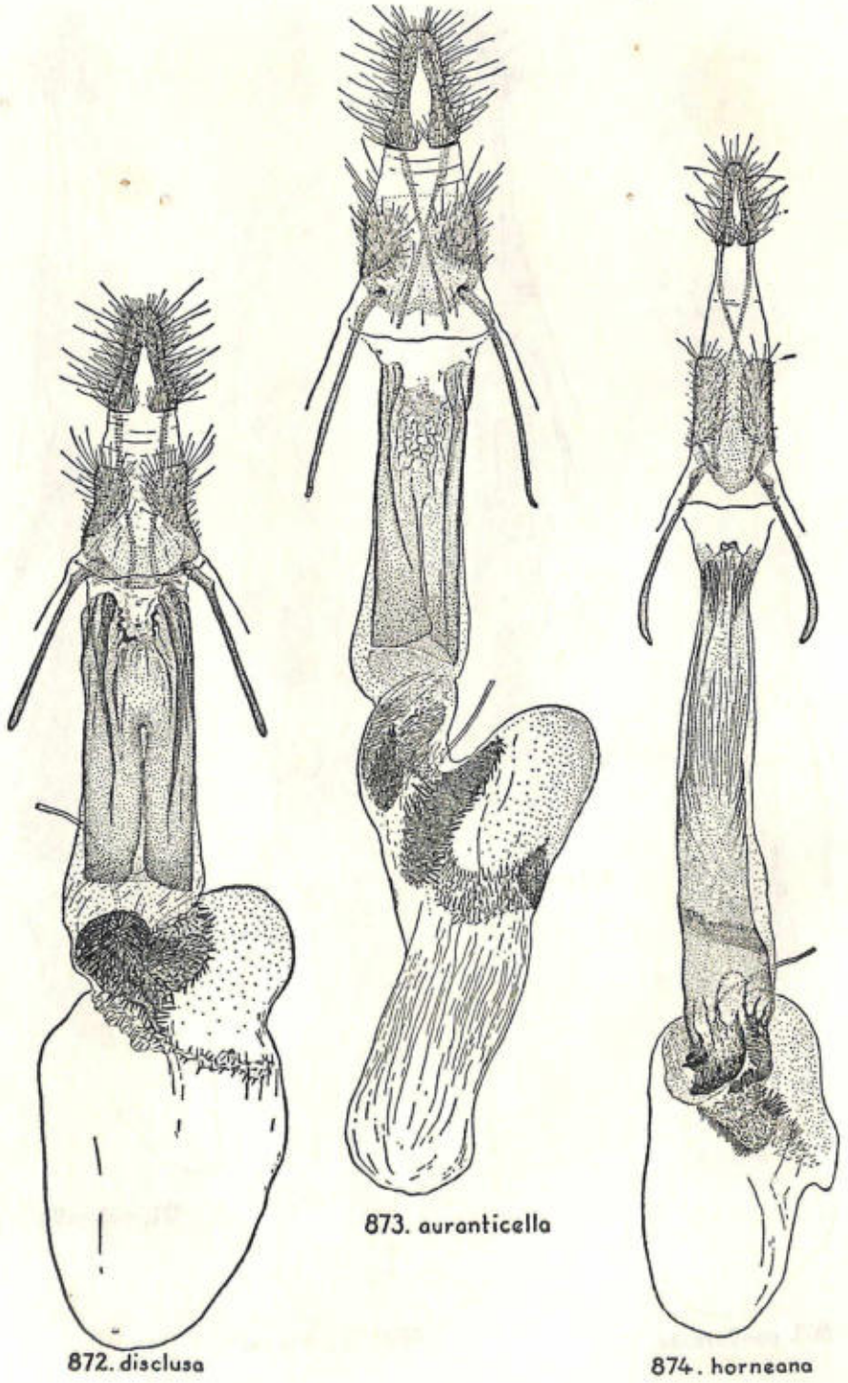


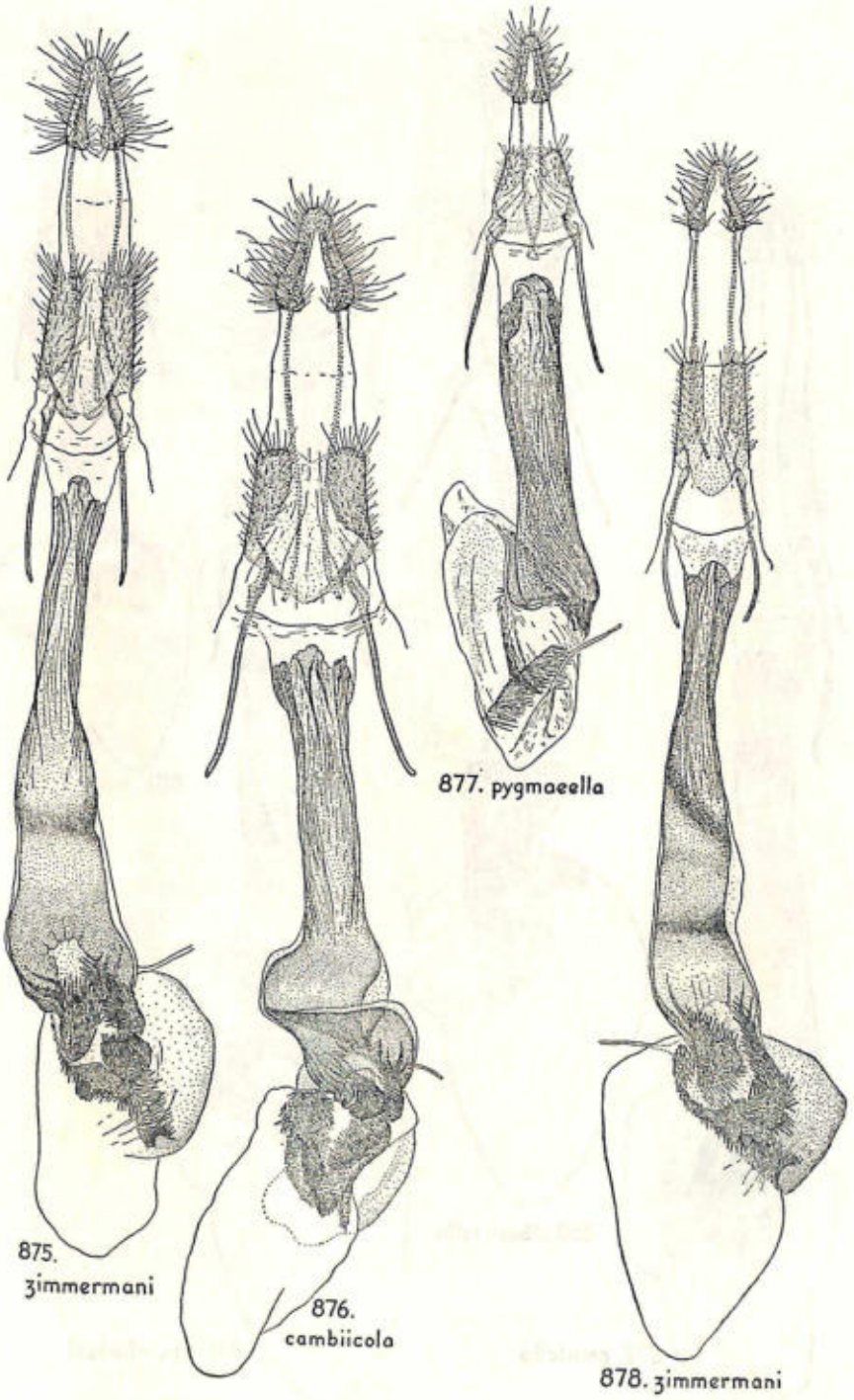
FIGURES 868–871.—FEMALE GENITALIA.

868. *Dioryctria ponderosae* Dyar, paratype from California.
869. *Dioryctria erythropasa* (Dyar), paratype.
870. *Dioryctria* sp., a probable hybrid of *auranticella* and *erythropasa*.
871. *Dioryctria majorella* Dyar, type.

FIGURES 872–874.—FEMALE GENITALIA.

872. *Dioryctria disclusa* Heinrich, paratype from New Jersey.
873. *Dioryctria auranticella* (Grote).
874. *Dioryctria horneana* (Dyar), type.



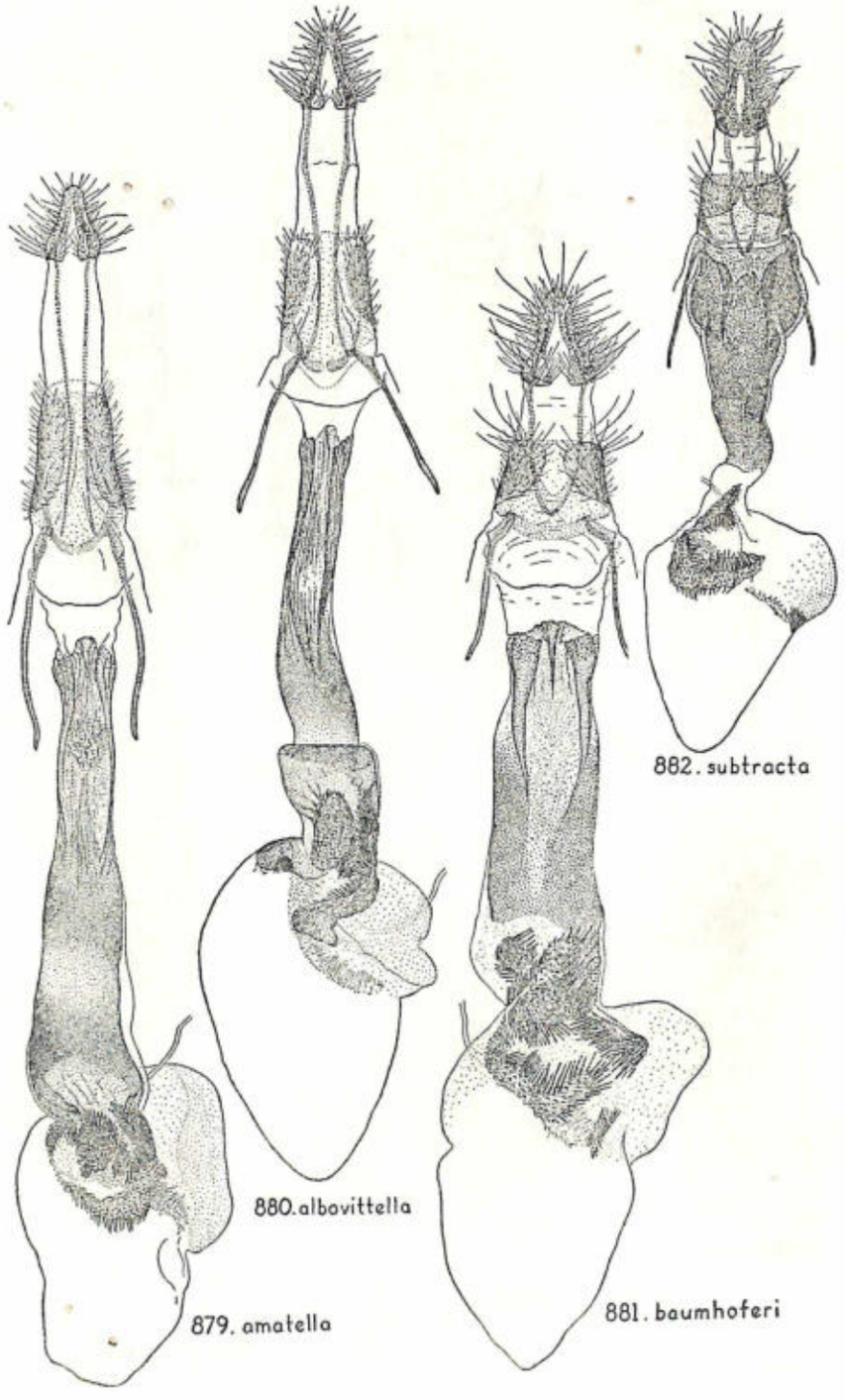


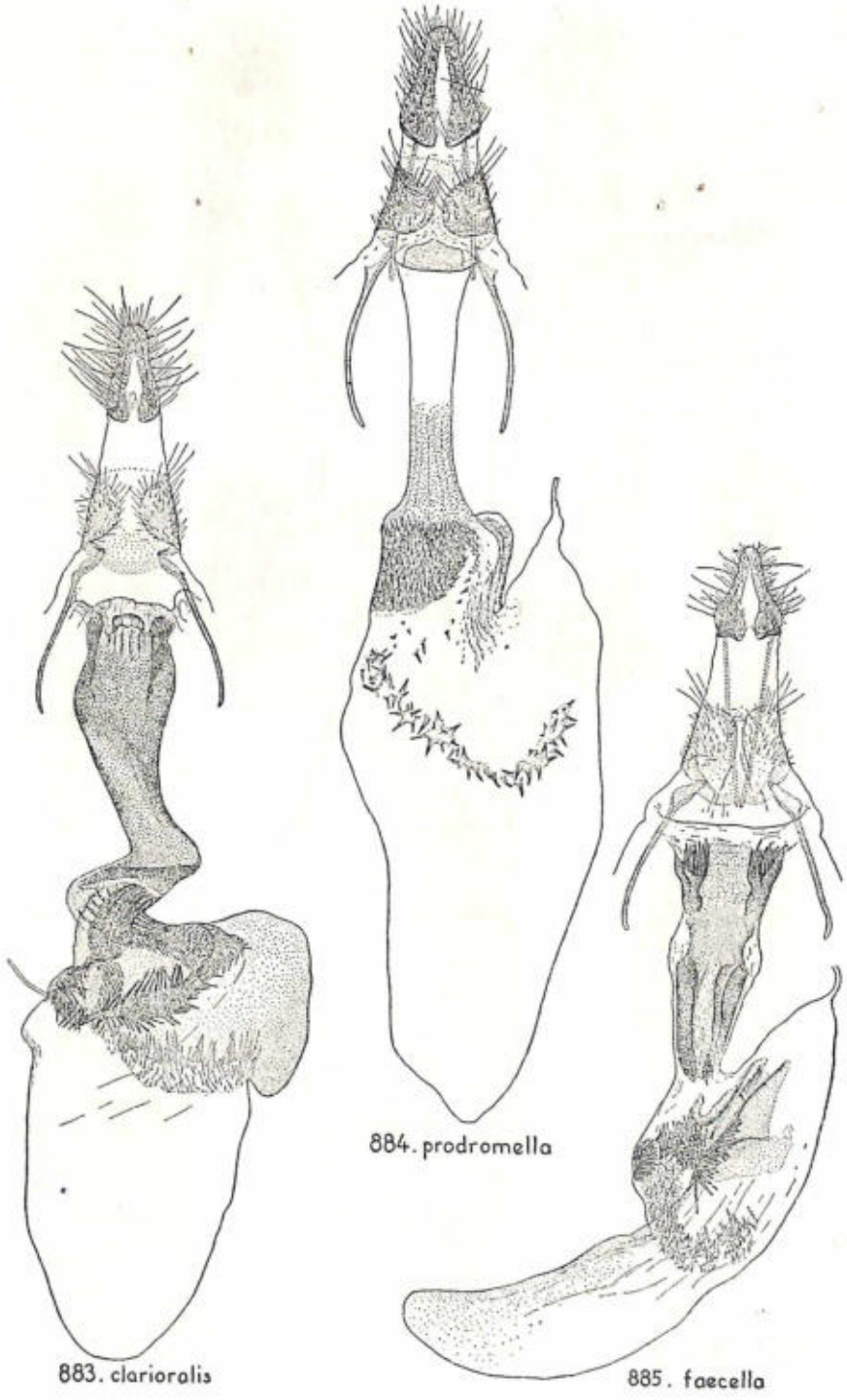
FIGURES 875–878.—FEMALE GENITALIA.

875. *Dioryctria zimmermani* (Grote), typical eastern example.
876. *Dioryctria cambiicola* (Dyar), paratype from type locality.
877. *Dioryctria pygmaeella* Ragonot.
878. *Dioryctria zimmermani* (Grote), figured from a large western (Ariz.) example of its synonym, *D. delectella* (Hulst).

FIGURES 879–882.—FEMALE GENITALIA.

879. *Dioryctria amatella* (Hulst), typical Florida specimen.
880. *Dioryctria albovittella* (Hülst)
881. *Dioryctria baumhoferi* Heinrich, new species.
882. *Dioryctria subtracta* Heinrich, new species.



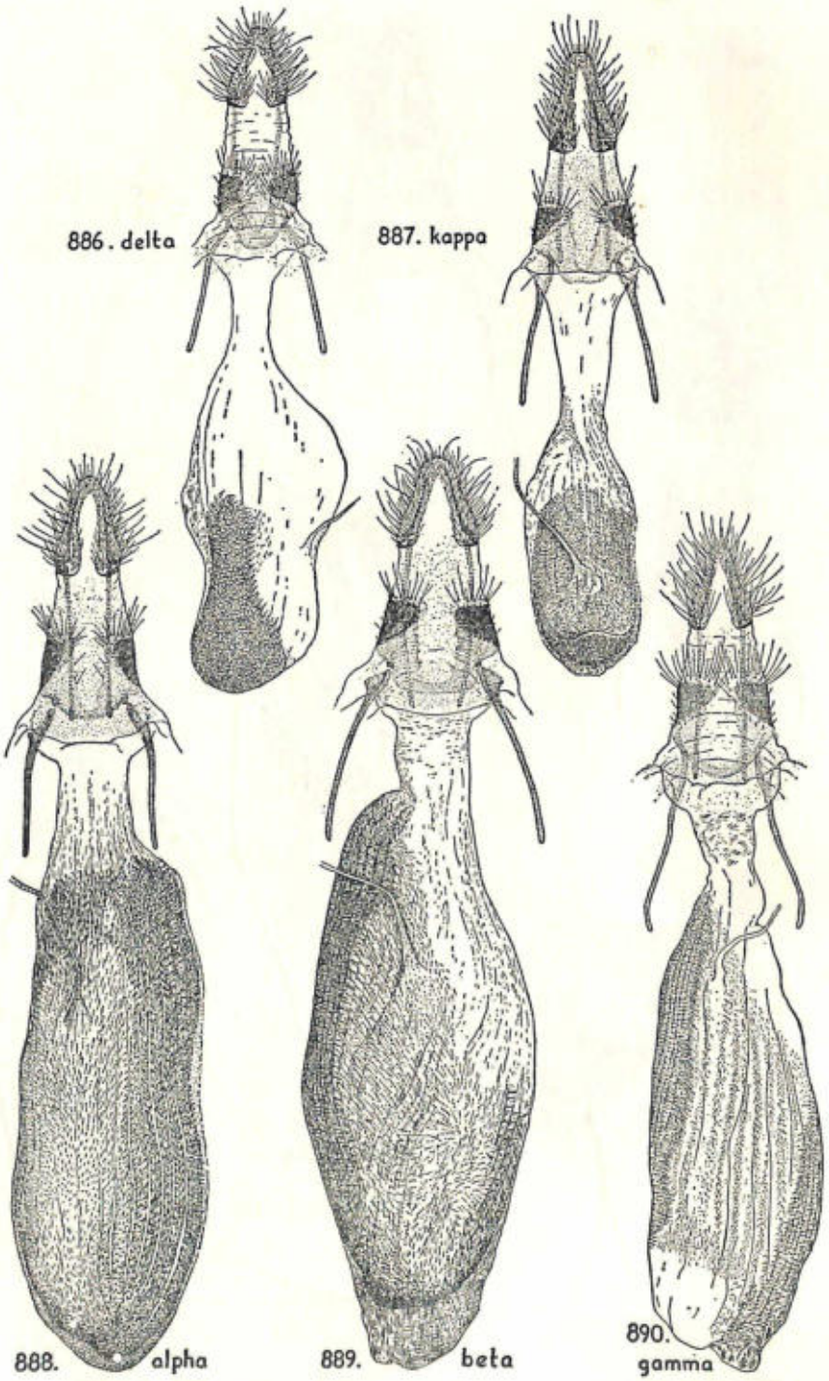


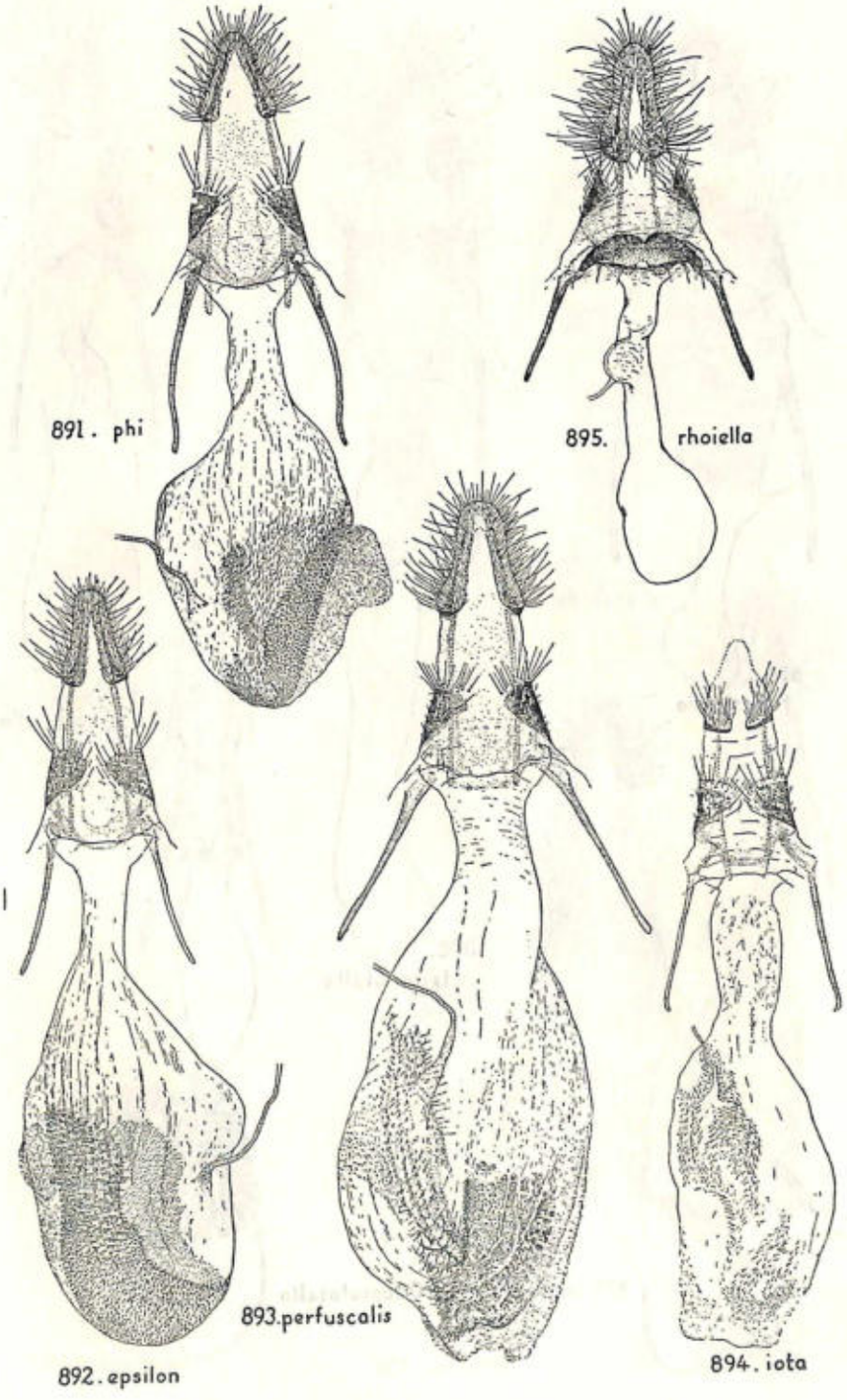
FIGURES 883–885.—FEMALE GENITALIA.

883. *Dioryctria clarioralis* (Walker), typical Florida specimen.
884. *Epischnia prodromella* (Hübner).
885. *Laodamia faecella* (Zeller).

FIGURES 886–890.—FEMALE GENITALIA.

886. *Sarata delta* Heinrich, new species.
887. *Sarata kappa* Heinrich, new species, type.
888. *Sarata alpha* Heinrich, new species, type.
889. *Sarata beta* Heinrich, new species, type.
890. *Sarata gamma* Heinrich, new species.



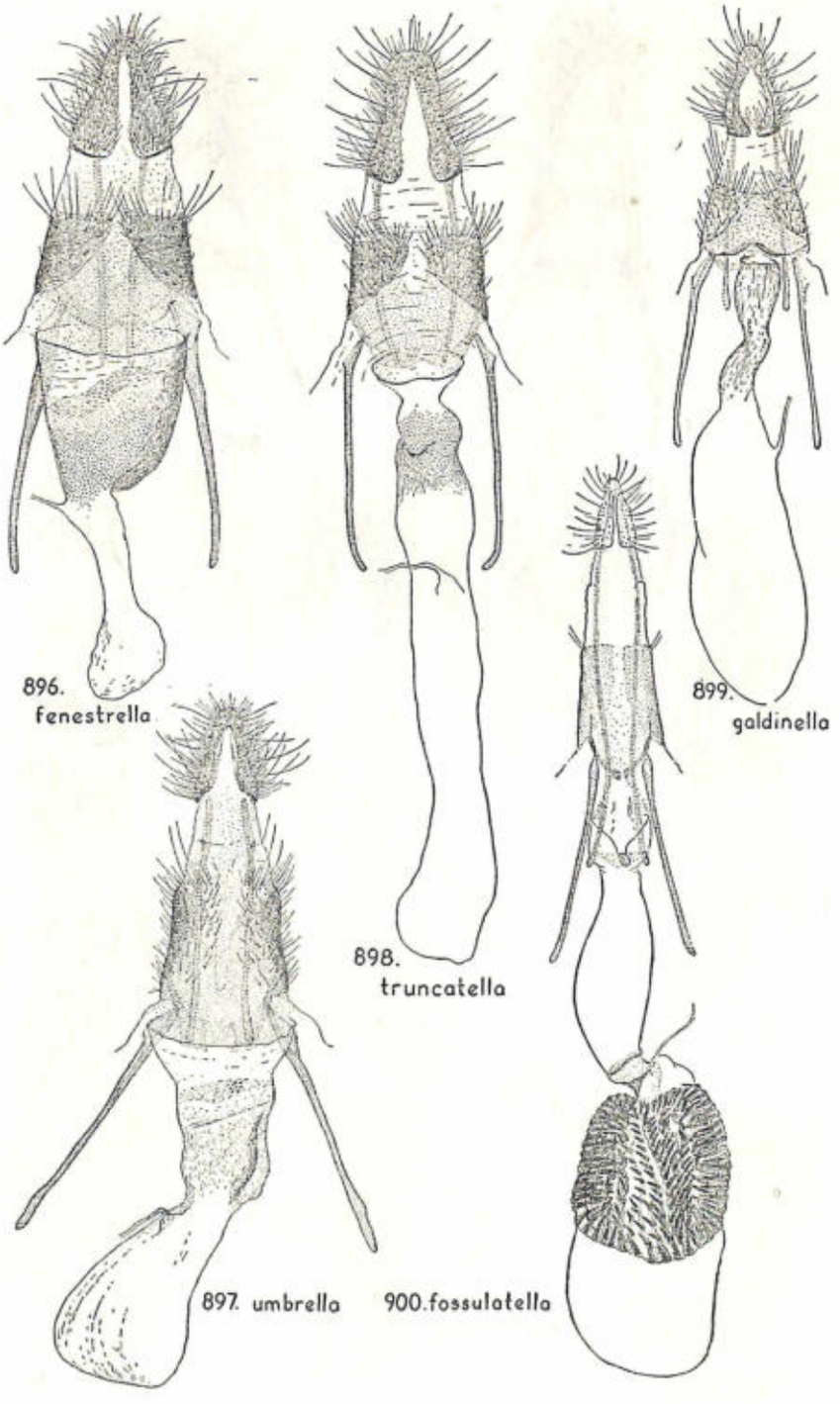


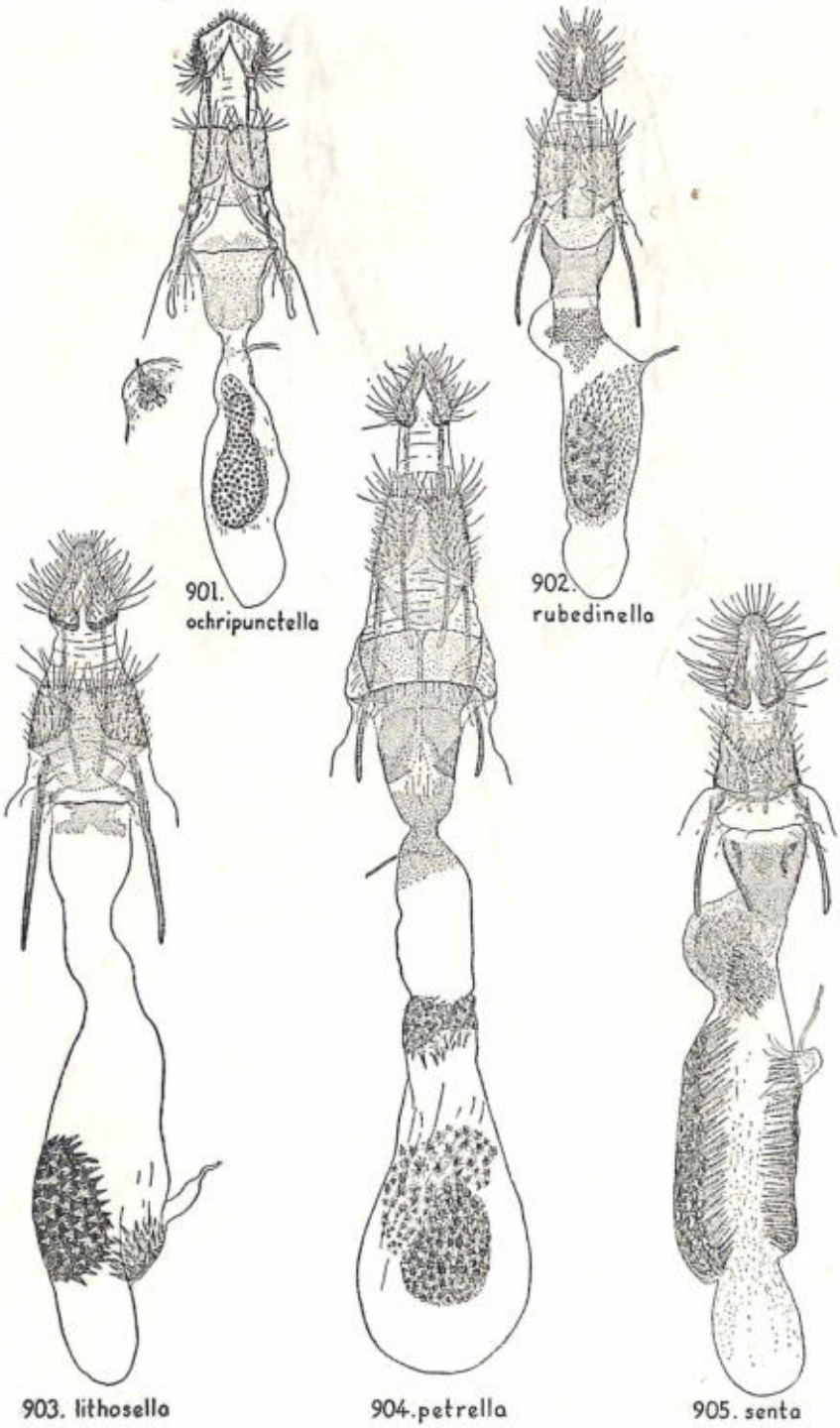
FIGURES 891–895.—FEMALE GENITALIA.

891. *Sarata phi* Heinrich, new species, type.
892. *Sarata epsilon* Heinrich, new species, type.
893. *Sarata perfuscalis* (Hulst), type.
894. *Sarata iota* Heinrich, new species.
895. *Philodema rhoiella* (Dyar), paratype from type locality.

FIGURES 896–900.—FEMALE GENITALIA.

896. *Lipographis fenestrella* (Packard).
897. *Lipographis umbrella* (Dyar).
898. *Lipographis truncatella* (Wright), specimen from San Diego, Calif.
899. *Tota galdinella* (Schaus), type.
900. *Oryctometopia fossulatella* Ragonot.



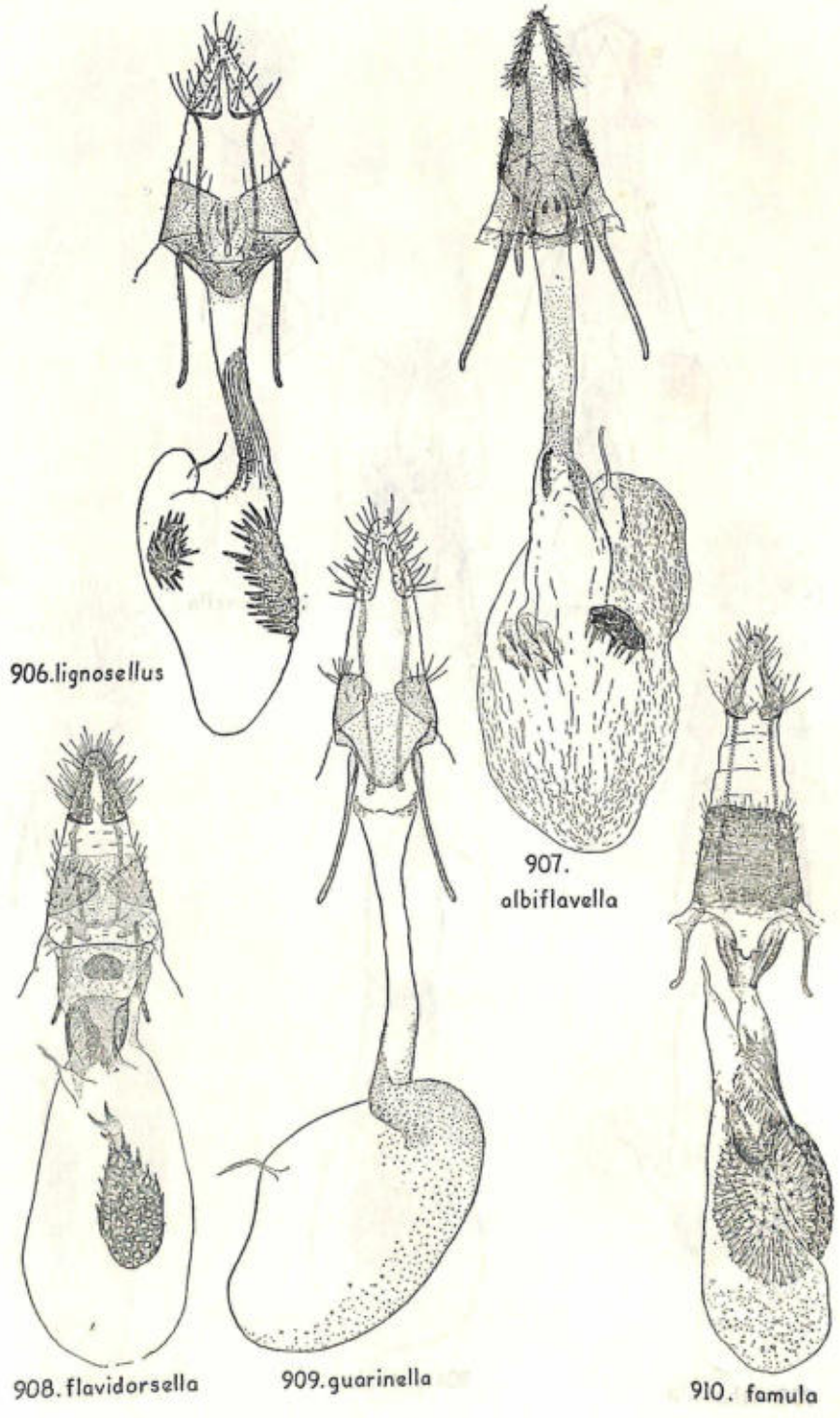


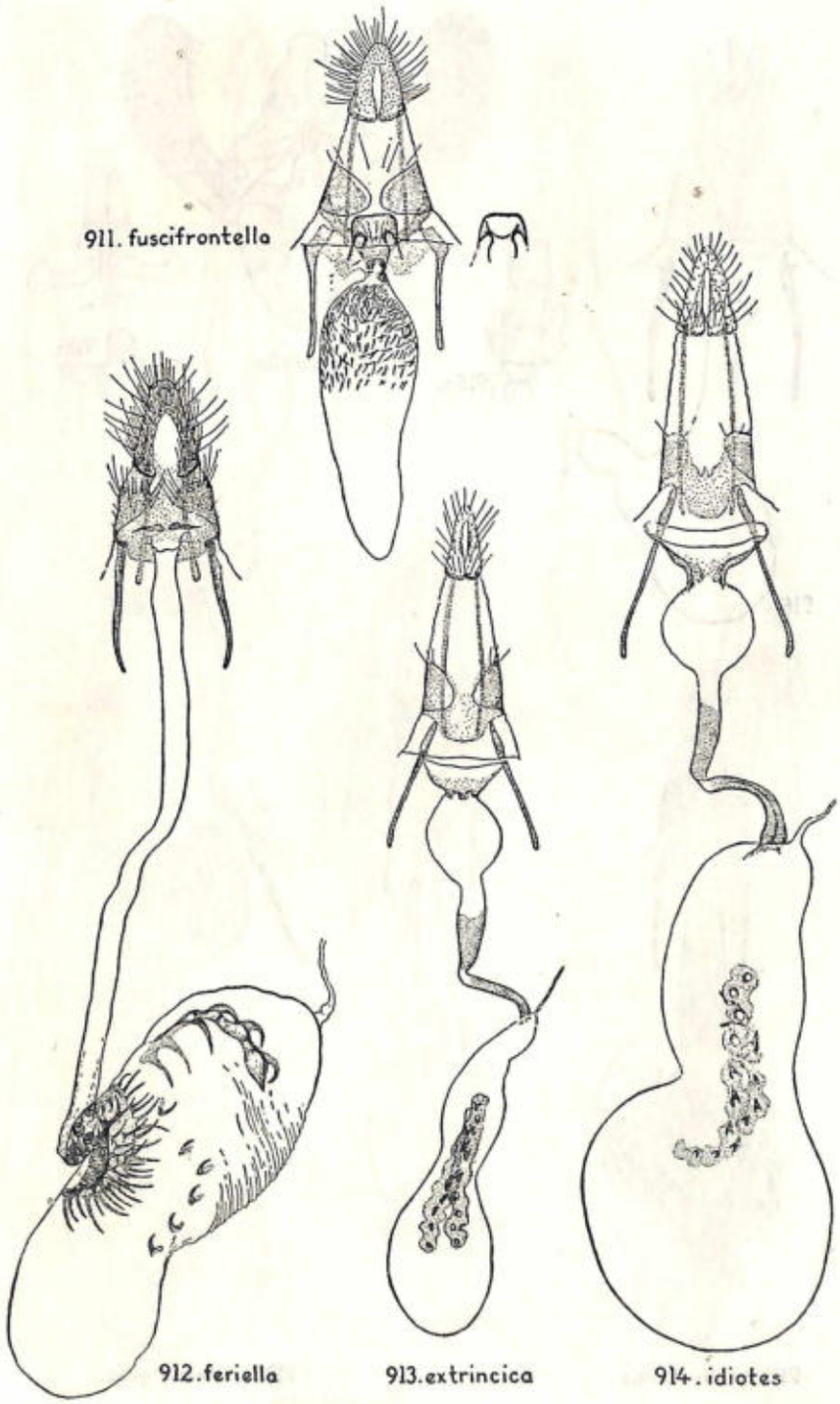
FIGURES 901–905.—FEMALE GENITALIA.

901. *Adelphia ochripunctella* (Dyar), showing to the side of bursa a single spine of the signum spine cluster, greatly enlarged.
902. *Ufa rubedinella* (Zeller).
903. *Ufa lithosella* (Ragonot).
904. *Adelphia petrella* (Zeller).
905. *Ufa senta* Heinrich, new species.

FIGURES 906–910.—FEMALE GENITALIA.

906. *Elasmopalpus lignosellus* (Zeller).
907. *Acroncosa albiflavella* Barnes and McDunnough.
908. *Passadena flavidorsella* (Ragonot).
909. *Ulophora guarinella* (Zeller), specimen from Cuba.
910. [*Myelois*] *famula* Zeller.





FIGURES 911–914.—FEMALE GENITALIA.

911. [*Nephopteryx*] *fuscifrontella* Zeller, specimen from Colombia, with dorsal view of ductus bursae shown in small supplemental figure.
912. *Tacoma feriella* Hulst.
913. *Chorrera extrincica* (Dyar).
914. *Chorrera idiotes* Dyar.

FIGURES 915–919.—MALE AND FEMALE GENITALIA.

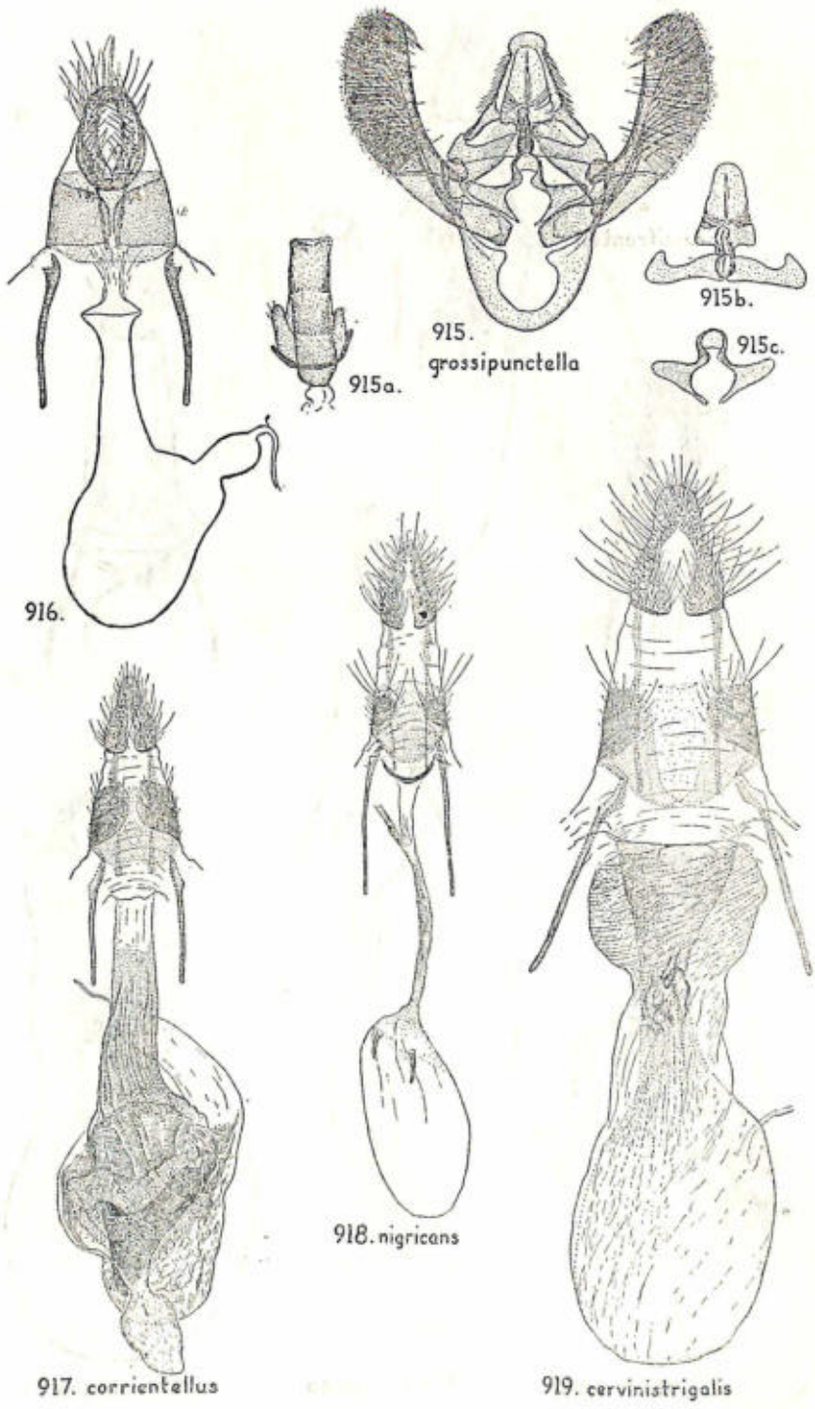
915. [*Myelois*] *grossipunctella* Ragonot, male genitalia, with aedeagus omitted; 915a, aedeagus and anellus; 915b, gnathos; 915c, transtilla.

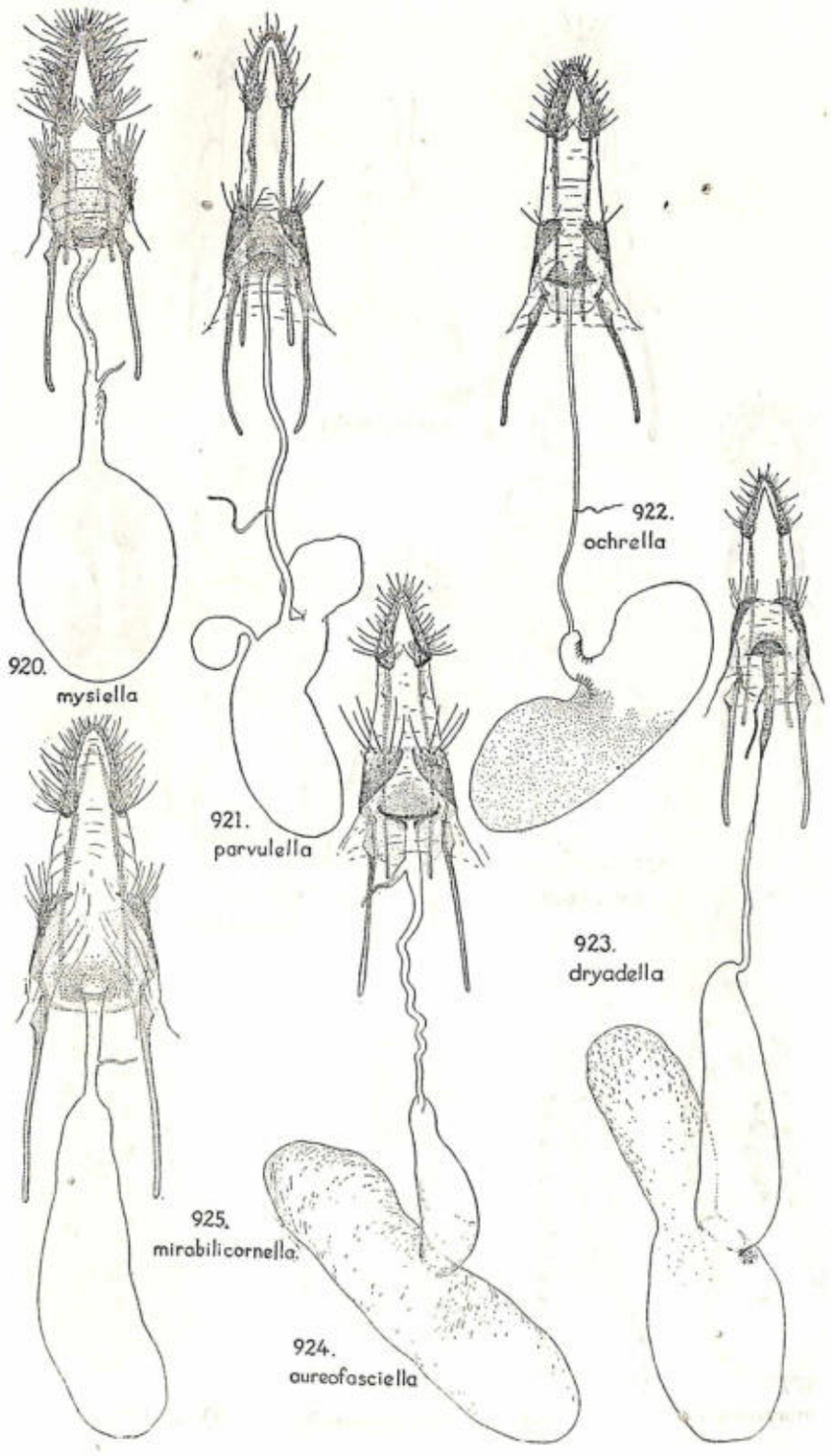
916. [*Myelois*] *grossipunctella* Ragonot, female genitalia.

917. [*Elasmopalpus*] *corrientellus* Ragonot, type, female genitalia.

918. [*Salebria*] *nigricans* Hulst, type, female genitalia.

919. [*Hypochalcia*] *cervinistrigalis* Walker, type, female genitalia.



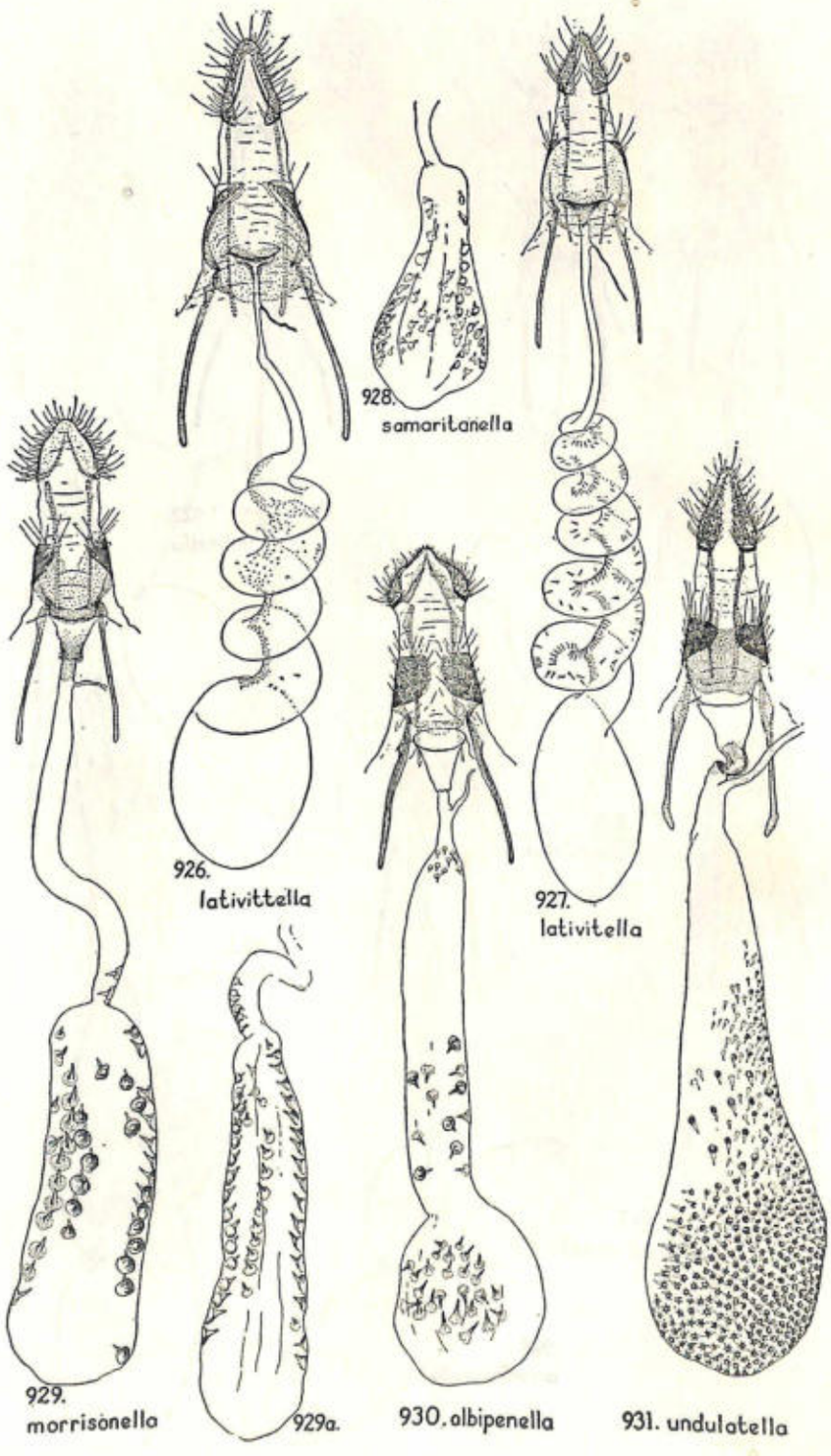


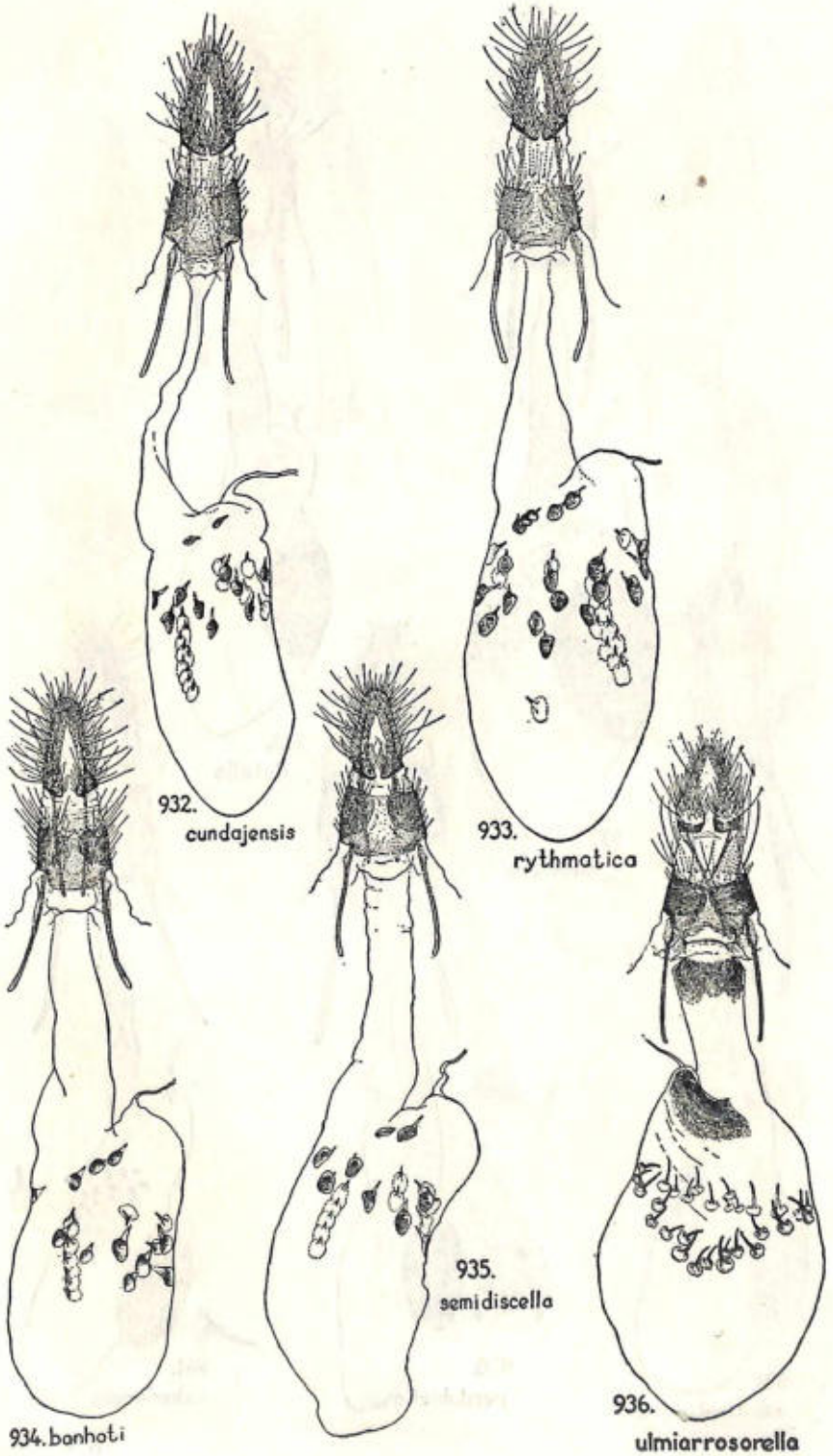
FIGURES 920–925.—FEMALE GENITALIA.

920. *Eumysia mysiella* (Dyar), paratype from type locality.
921. *Divitiaca parvulella* Barnes and McDunnough.
922. *Divitiaca ochrella* Barnes and McDunnough.
923. *Ocala dryadella* Hulst.
924. *Macrorrhinia aureofasciella* Ragonot.
925. *Protasia mirabilicornella* (Dyar).

FIGURES 926–931.—FEMALE GENITALIA.

926. *Valdivia lativittella* (Ragonot), from Brownsville, Tex.
927. *Valdivia lativittella* (Ragonot), from Pinal Mts., Ariz.
928. *Heterographis samaritanella* (Zeller), bursa.
929. *Heterographis morrisonella* Ragonot; 929a, bursa of another example showing extent of variation in its spining.
930. *Staudingeria albipenella* (Hulst).
931. *Hulstia undulatella* (Clemens).



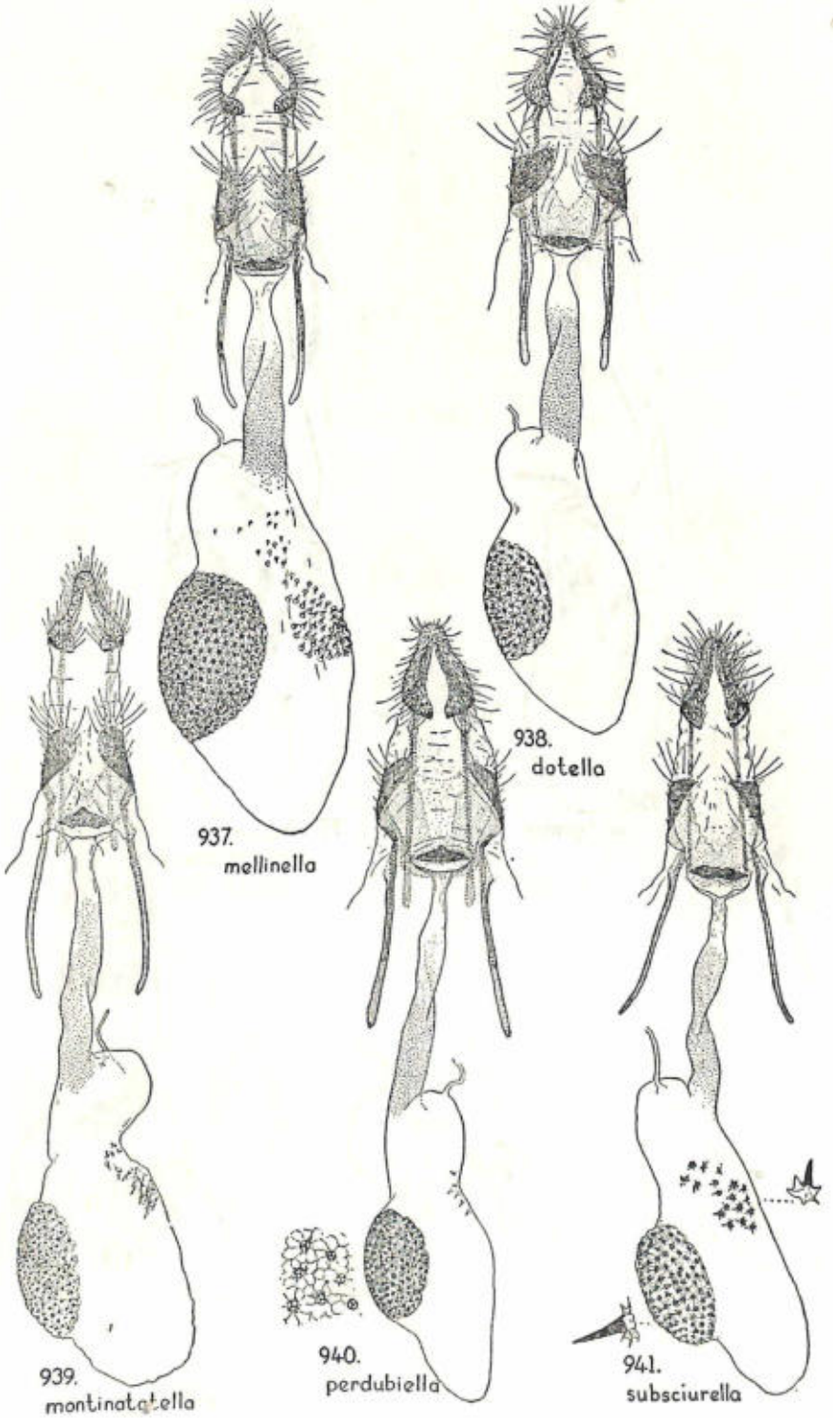


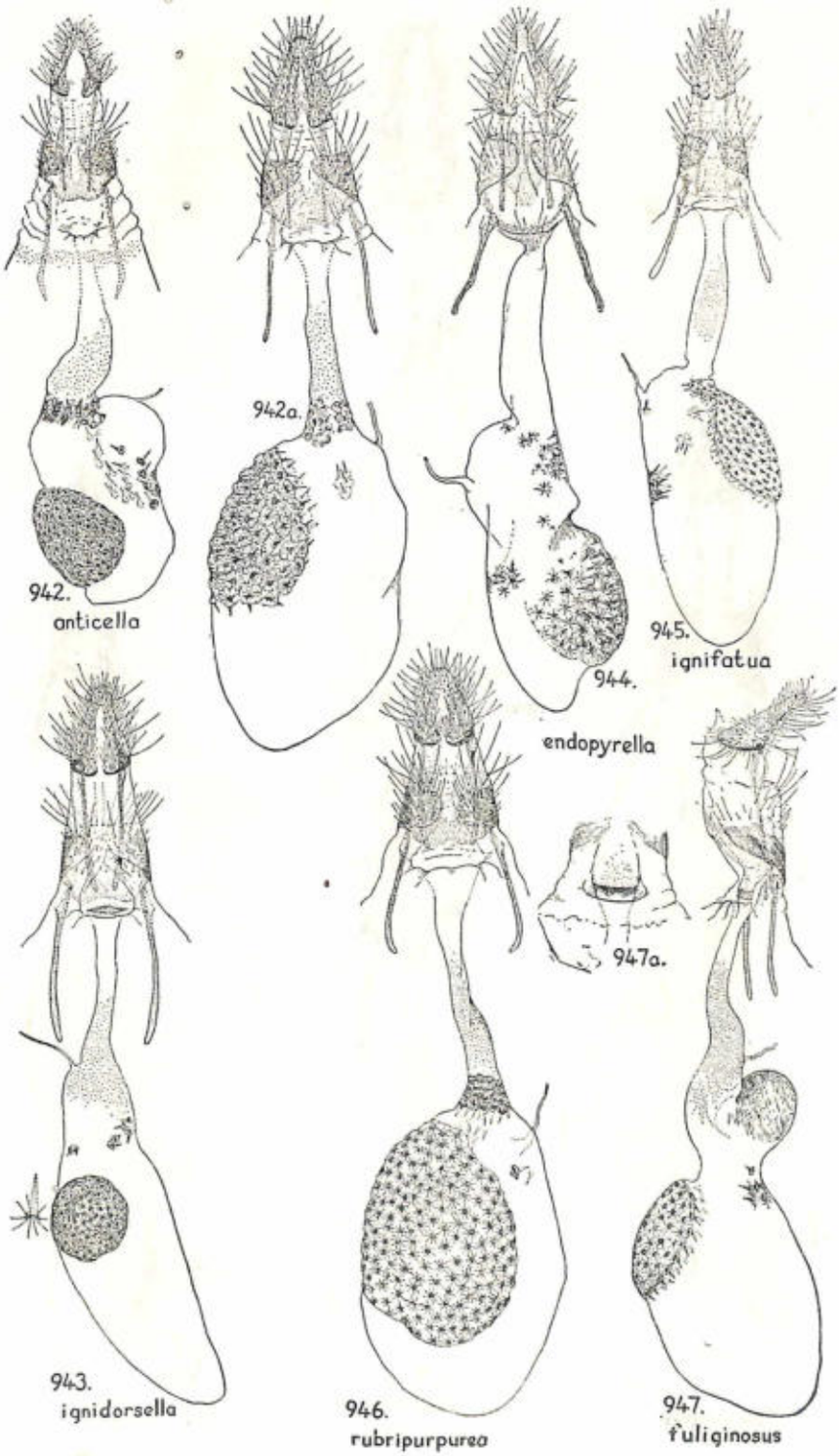
FIGURES 932–936.—FEMALE GENITALIA.

932. *Cabotia cundajensis* (Zeller).
933. *Cabotia rhythmatica* Dyar, paratype.
934. *Cabotia banhoti* (Hampson), specimen from Nassau, Bahamas.
935. *Cabotia semidiscella* Ragonot.
936. *Canarsia ulmiarrosorella* (Clemens).

FIGURES 937–941.—FEMALE GENITALIA.

937. *Honora mellinella* Grote.
938. *Honora dotella* Dyar, specimen from San Diego, Calif.
939. *Honora montinatatella* (Hulst), type.
940. *Honora perdubiella* (Dyar), paratype from type locality, showing to side of bursa bases of some spines of signum patch, greatly enlarged.
941. *Honora subsciurella* Ragonot, showing to each side of bursa examples of spines, greatly enlarged.





FIGURES 942–947.—FEMALE GENITALIA.

942. *Oncolabis anticella* Zeller, specimen from French Guiana; 942a, from Guatemala (these two figures showing extremes of variation).

943. *Eurythmidia ignidorsella* (Ragonot).

944. *Oedothmia endopyrella* Hampson, figured from a sketch by J. F. G. Clarke, of the type of its synonym *Synothmia bahamasella* Hampson.

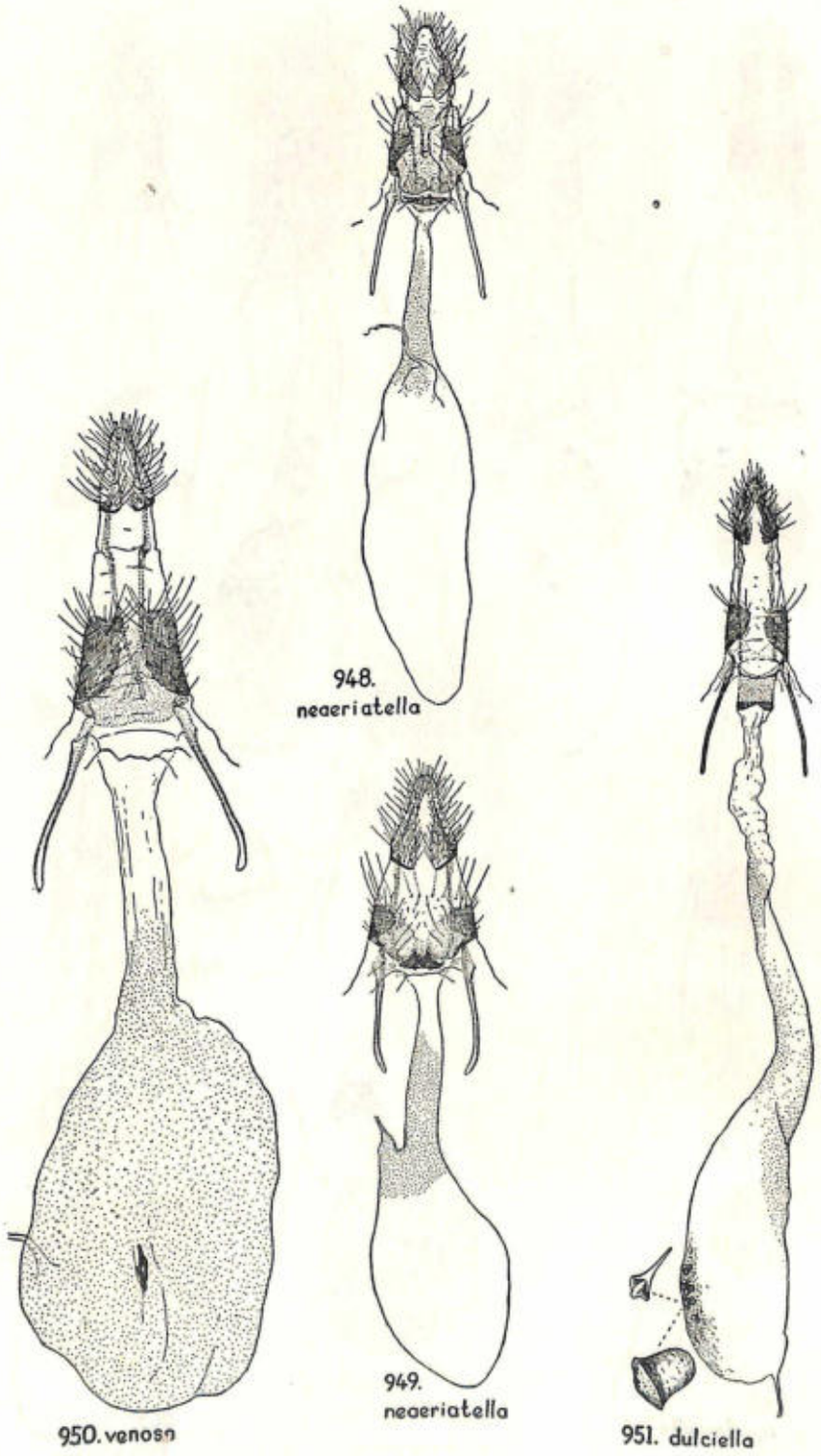
945. *Eurythmasis ignifatua* Dyar, paratype from type locality.

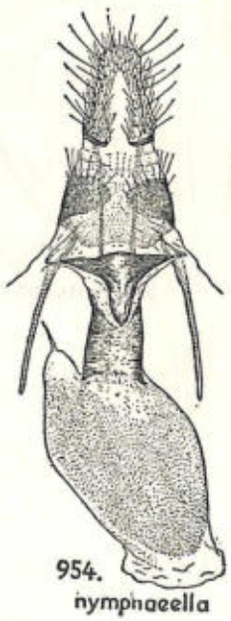
946. *Stylobasis rubripurpurea* Hampson, specimen from Juan Viñas, Costa Rica.

947. *Honorinus fuliginosus* Heinrich: new species, lateral view; 947a, ventral view of genital opening.

FIGURES 948–951.—FEMALE GENITALIA.

948, 949. *Wunderia neaeriatella* Grossbeck, two examples, showing extent of variation.
950. *Cacozophera venosa* Dyar, type.
951. [*Honora*] *dulciella* Hulst, an unplaced species, type, showing to the side of bursa two projections of a signum, greatly enlarged.



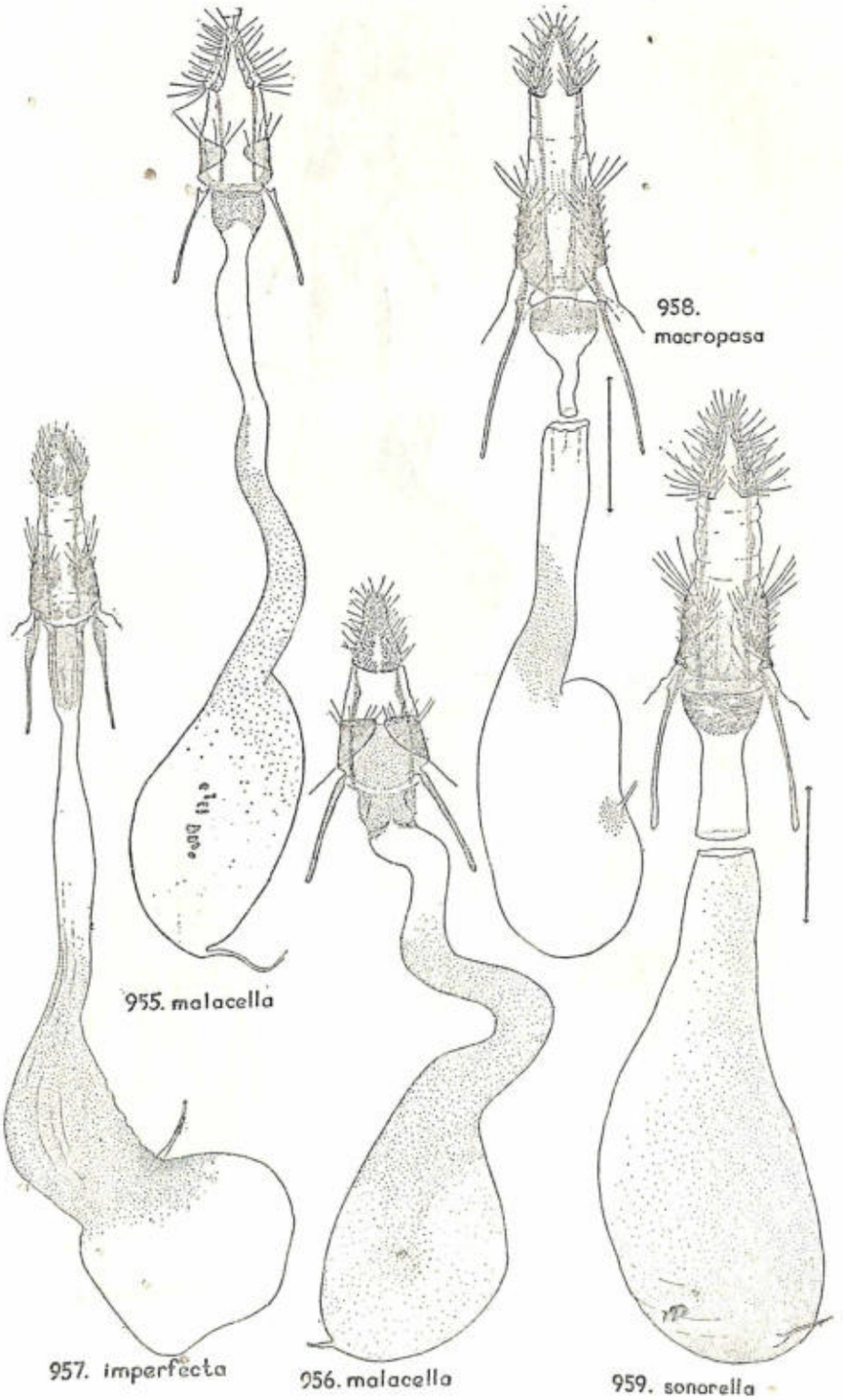


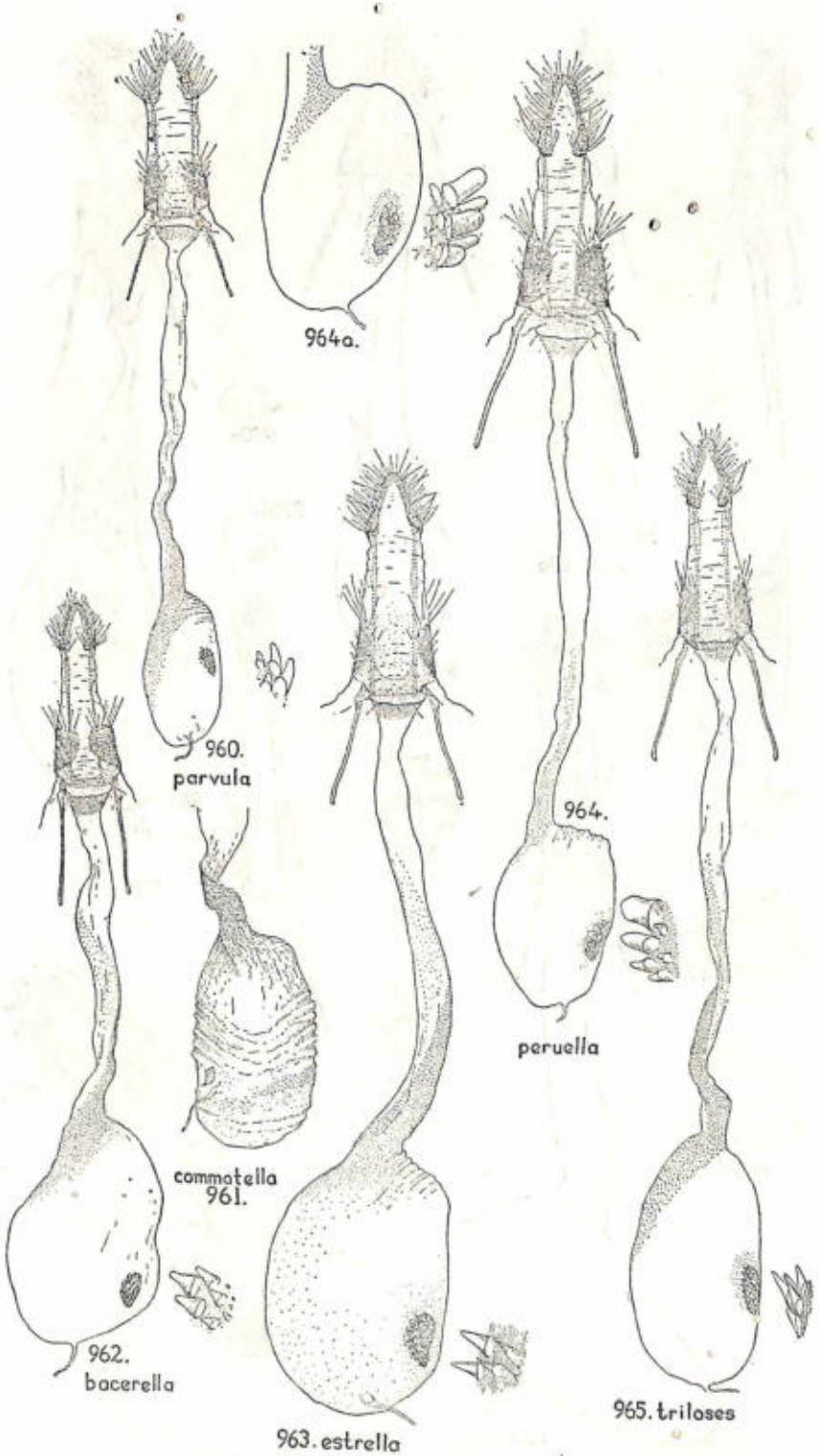
FIGURES 952–954.—FEMALE GENITALIA.

952. *Psorosina hammondi* (Riley).
953. *Patriciola semicana* Heinrich, new species.
954. *Palatka nymphaeella* (Hulst).

FIGURES 955–959.—FEMALE GENITALIA.

955, 956. *Cassiana malacella* (Dyar), two specimens from Puerto Rico, showing variations in signum.
957. *Aptunga imperfecta* (Dyar), type.
958. *Aptunga macropasa* (Dyar), type.
959. *Anderida sonorella* (Ragonot), type.





FIGURES 960–965.—FEMALE GENITALIA.

960. *Mescinia parvula* (Zeller), with samples of the spines of signum shown to the side of bursa, greatly enlarged.

961. *Mescinia commatella* (Zeller), type, bursa and part of ductus bursae.

962. *Mescinia bacerella* Dyar, specimen from Sierra Maestra, Cuba., showing beside bursa samples of spines of signum, greatly enlarged.

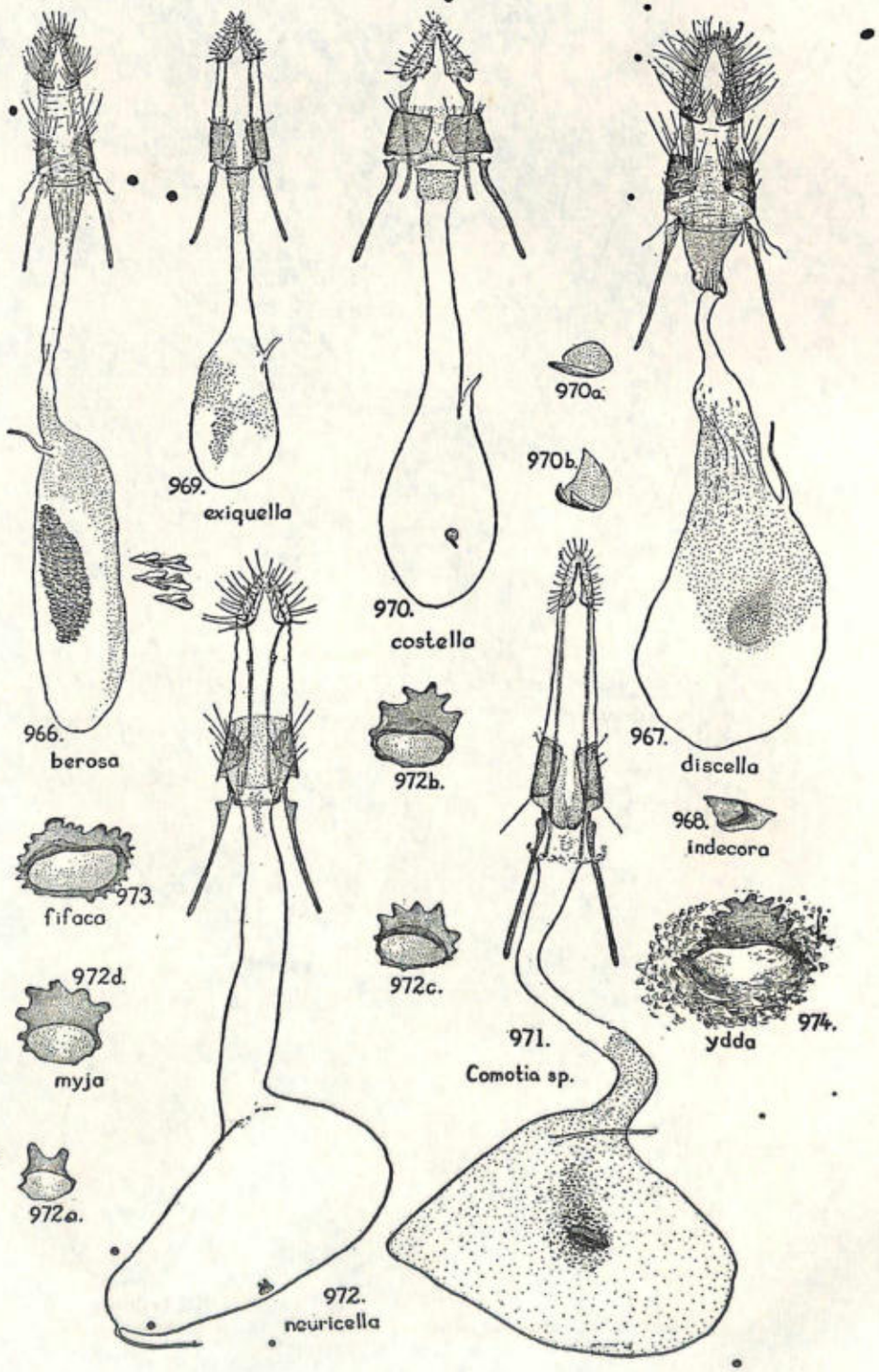
963. *Mescinia estrella* Barnes and McDunnough, with samples of signum spines, greatly enlarged, shown to the side of bursa.

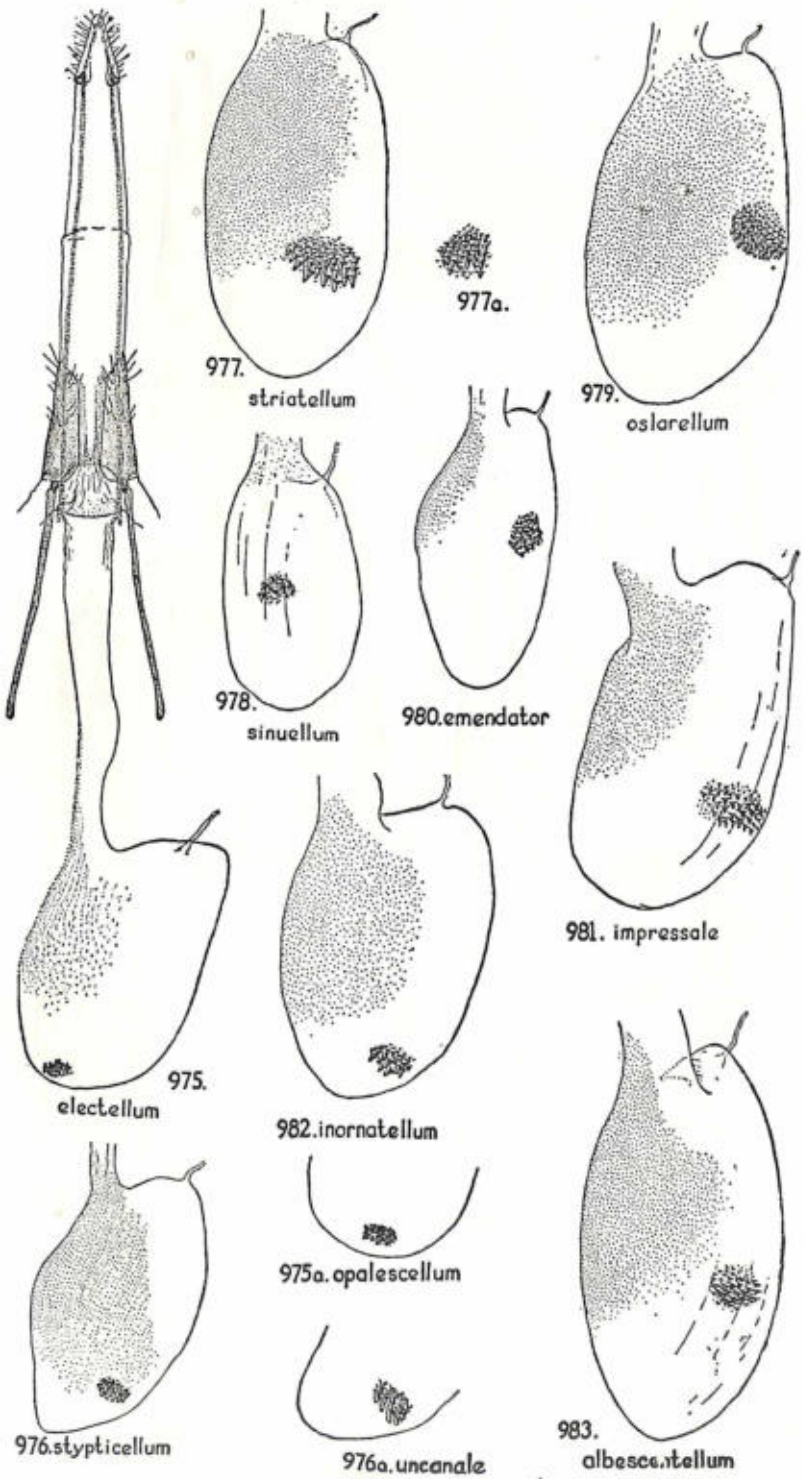
964. *Mescinia peruella* Schaus, with enlargement of some signum spines to the side of bursa; 964a, bursa of another specimen showing variation in spining of signum.

965. *Mescinia triloses* Dyar, with enlarged samples of signum spines shown to the side of bursa.

FIGURES 966–974.—FEMALE GENITALIA.

966. *Mescinia berosa* Dyar, type, with enlarged samples of signum spines shown to the side of bursa.
967. *Mescinia discella* Hampson.
968. *Mescinia indecora* Dyar, type, signum greatly enlarged.
969. *Nonia exiguella* (Ragonot), specimen from Panamá.
970. *Phestinia costella* Hampson; 970a, signum of Puerto Rican example, greatly enlarged; 970b, enlarged signum of type.
971. *Comotia* sp., specimen from Puerto Rico.
972. *Bema neuricella* (Zeller); 972a-c, various modifications of the signum, greatly enlarged; 972d, signa, greatly enlarged, of *B. myja* Dyar, a synonym of *neuricella*.
973. *Bema fifaca* (Dyar), type, signum, greatly enlarged.
974. *Bema ydda* (Dyar), type, signum, greatly enlarged.





FIGURES 975–983.—FEMALE GENITALIA.

975. *Homoeosoma electellum* (Hulst); 975a, cephalic end of bursa and signum of *H. opalescellum* (Hulst), a synonym of *electellum*.
976. *Homoeosoma stypticellum* Grote, bursa; 976a, signum of type of *H. uncanale* Hulst, a synonym of *stypticellum*.
977. *Homoeosoma striatellum* Dyar, bursa; 977a, signum from another specimen, showing amount of variation.
978. *Homoeosoma sinuellum* (Fabricius), bursa.
979. *Homoeosoma oslarellum* Dyar, paratype, bursa.
980. *Homoeosoma illuviellum emendator* Heinrich, new race, paratype from Richfield, Utah, bursa.
981. *Homoeosoma impressale* Hulst, bursa.
982. *Homoeosoma inornatellum* (Hulst), type, bursa.
983. *Homoeosoma albescentellum* Ragonot, type, bursa.

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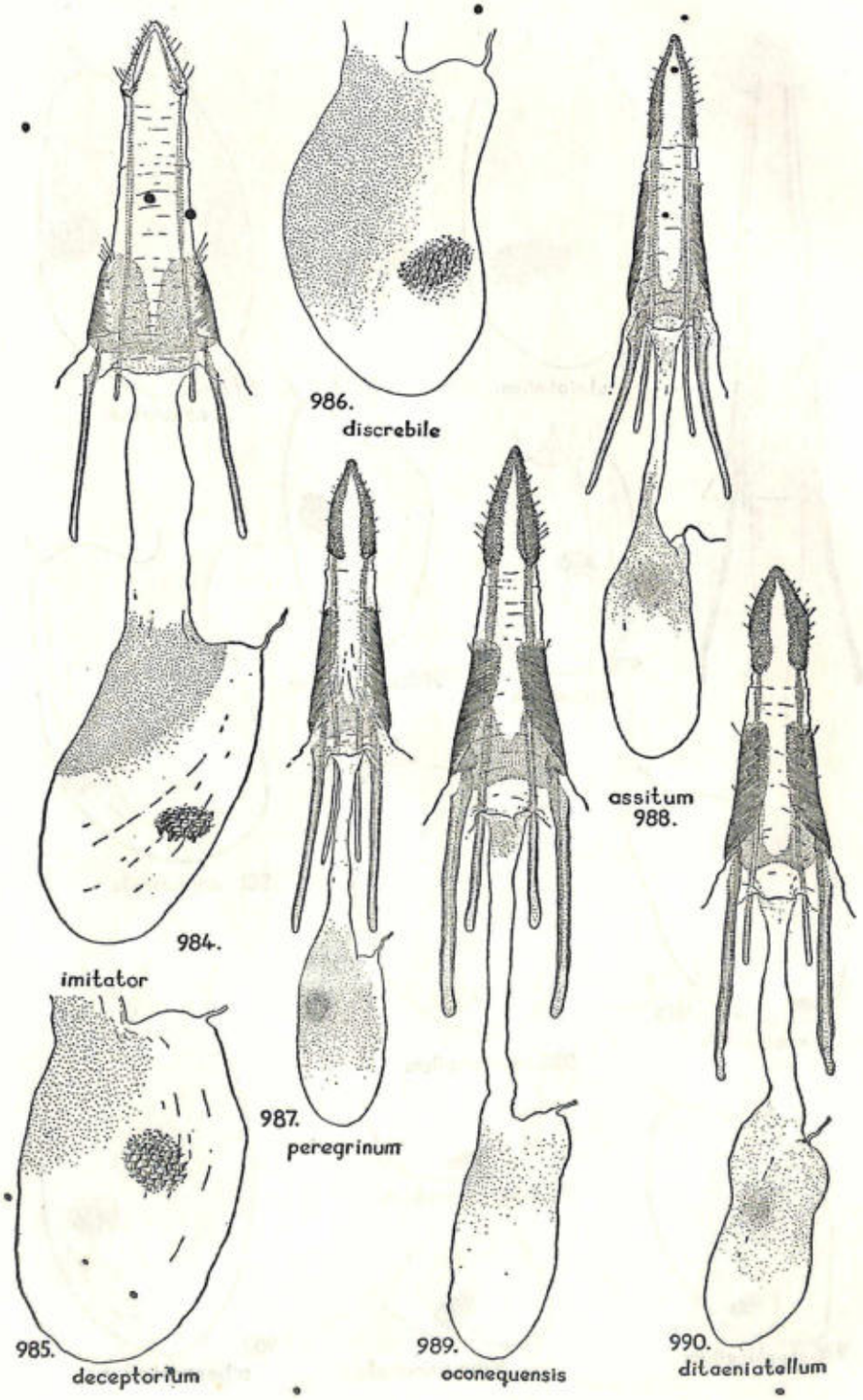
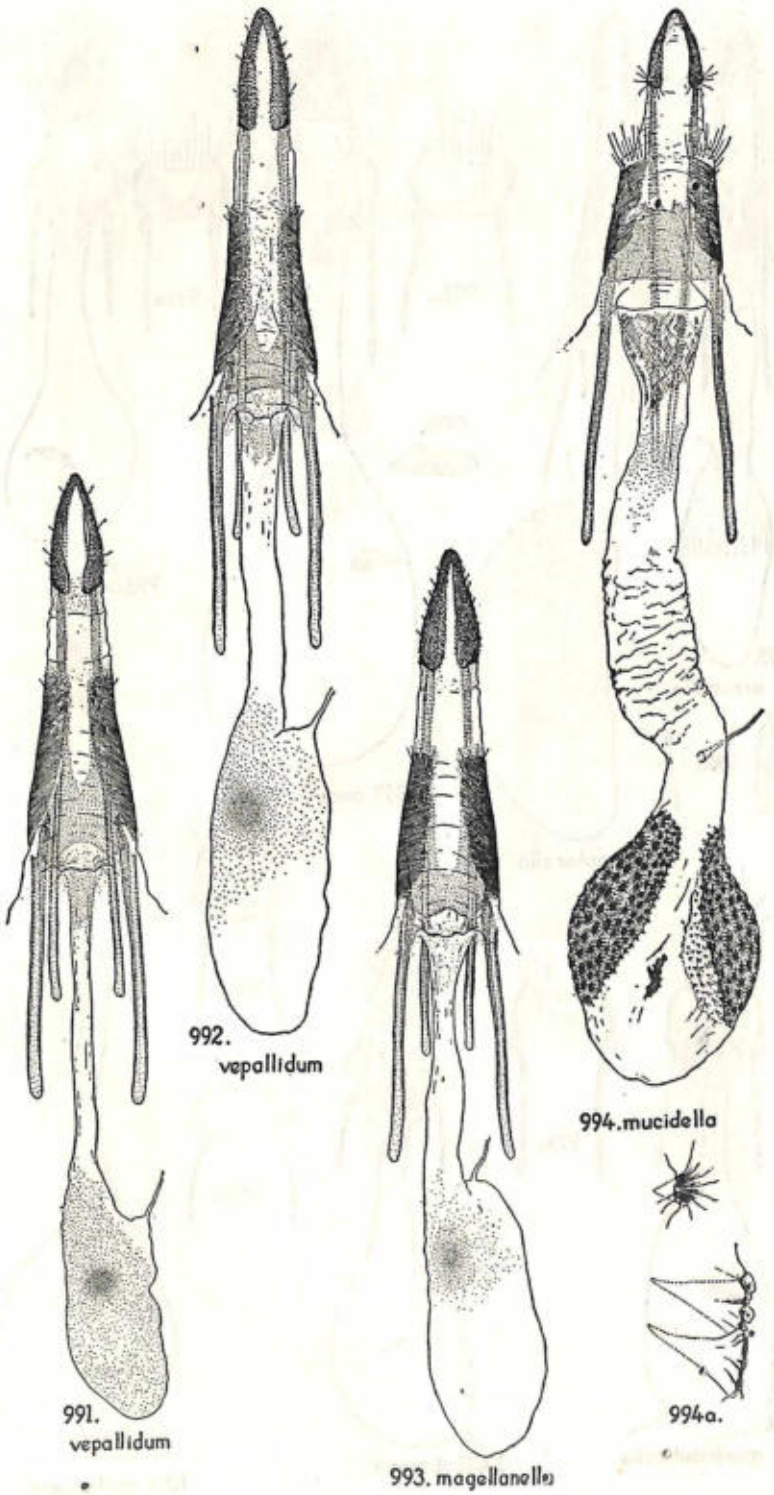
FIGURES 984–990.—FEMALE GENITALIA.

984. *Homoeosoma imitator* Heinrich, new species.
985. *Homoeosoma deceptorium* Heinrich, new species, bursa.
986. *Homoeosoma discrebile* Heinrich, new species, bursa.
987. *Homoeosoma peregrinum* Heinrich, new species.
988. *Homoeosoma assitum* Heinrich, new species.
989. *Homoeosoma oconequensis* (Dyar), type.
990. *Homoeosoma ditaeniatellum* Ragonot, type.



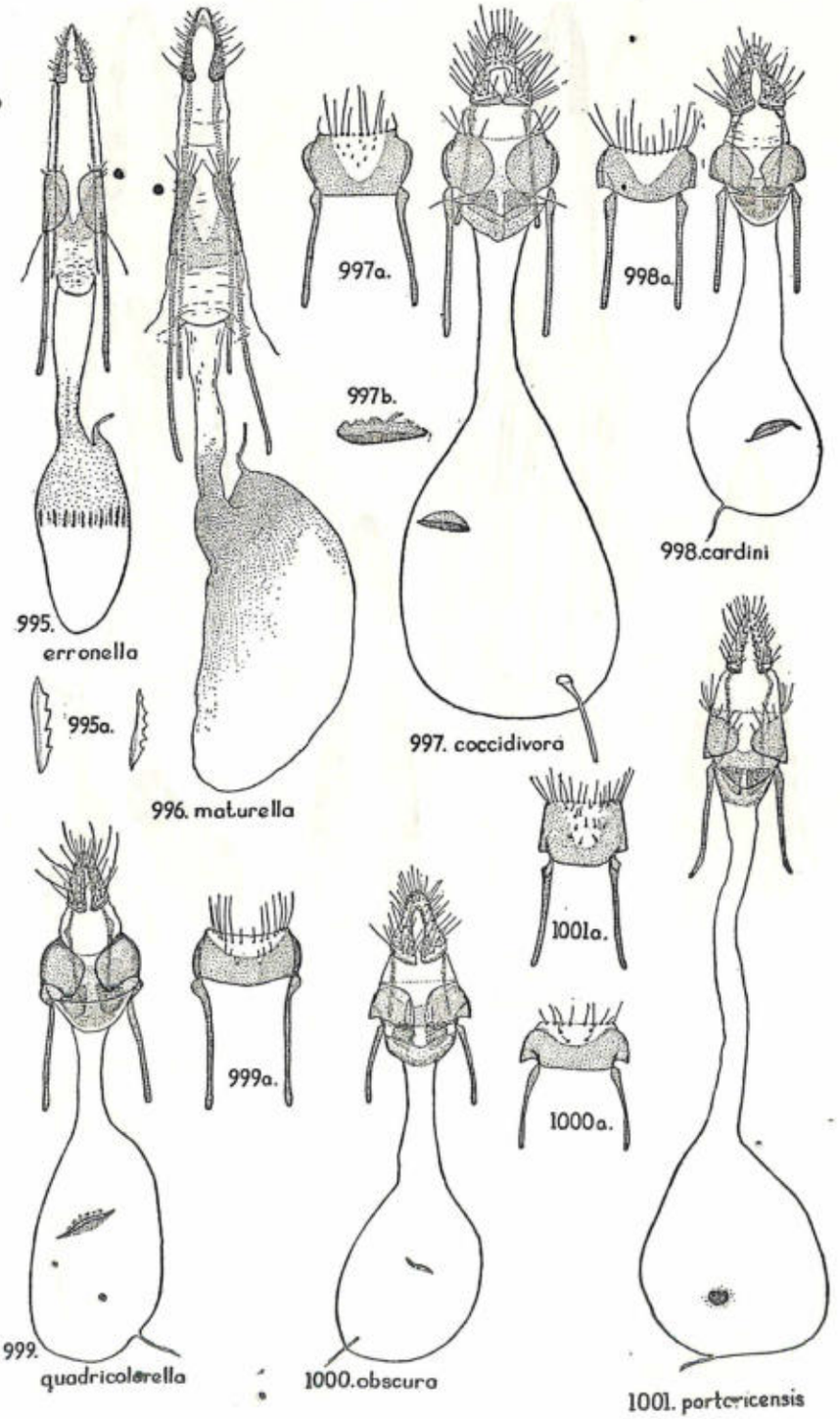


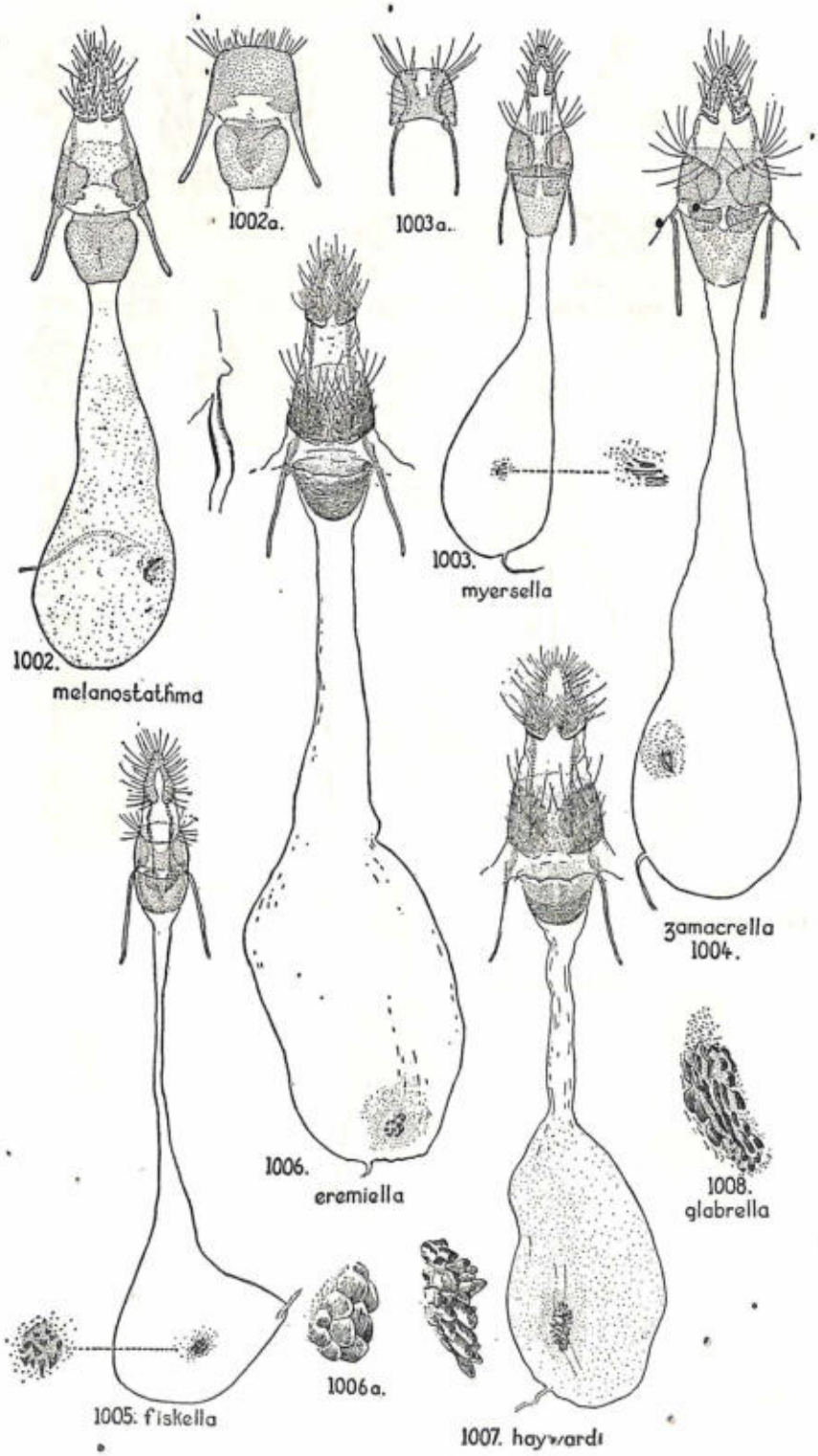
FIGURES 991–994.—FEMALE GENITALIA.

991. *Homoeosoma vepallidum* Heinrich, new species, paratype.
992. *Homoeosoma vepallidum* Heinrich, new species, specimen from Sierra de Córdoba, Argentina.
993. *Patagonia magellanella* (Ragonot), type.
994. *Rotruda mucidella mucidella* (Ragonot); 994a, samples of spines of signum, greatly enlarged and shown in two projections.

FIGURES 995–1001.—FEMALE GENITALIA.

995. *Unadilla erronella* (Zeller); 995a enlargements of individual signa.
996. *Unadilla maturella* (Zeller), specimen from Guatemala.
997. *Laetilia coccidivora* (Comstock); 997a, dorsal view of eighth-segment collar; 997b, enlargement of signum.
998. *Laetilia coccidivora cardini* Dyar, type; 998a, dorsal view of eighth-segment collar.
999. *Laetilia coccidivora quadricolorella* (Dyar); 999a, dorsal view of eighth-segment collar.
1000. *Laetilia obscura* Dyar; 1000a, dorsal view of eighth-segment collar.
1001. *Laetilia portoricensis* Dyar; 1001a, dorsal view of eighth-segment collar.





FIGURES 1002–1008.—FEMALE GENITALIA.

1002. *Laetilia melanostathma* (Meyrick); 1002a, dorsal view of eighth-segment collar and apical portion of ductus bursae.

1003. *Laetilia myersella* Dyar, with enlargement of signum shown to the side of bursa; 1003a, dorsal view of eighth-segment collar.

1004. *Laetilia zamacrella* Dyar.

1005. *Laetilia fiskella* Dyar, with enlargement of signum shown to the side of bursa.

1006. *Baphala basimaculatella* (Ragonot), figured from its synonym *Laetilia eremiella* Dyar; 1006a, enlargement of signum.

1007. *Baphala haywardi* Heinrich, new species, with enlargement of signum shown to the side of bursa.

1008. *Baphala glabrella* (Dyar), type, signum, greatly enlarged.

FIGURES 1009–1015.—FEMALE GENITALIA.

1009. *Baphala goyensis* (Ragonot), signa, showing extremes of variation.

1010. *Baphala goyensis olivacea* Heinrich, new race; 1010a–d, various modifications of the signum in this race.

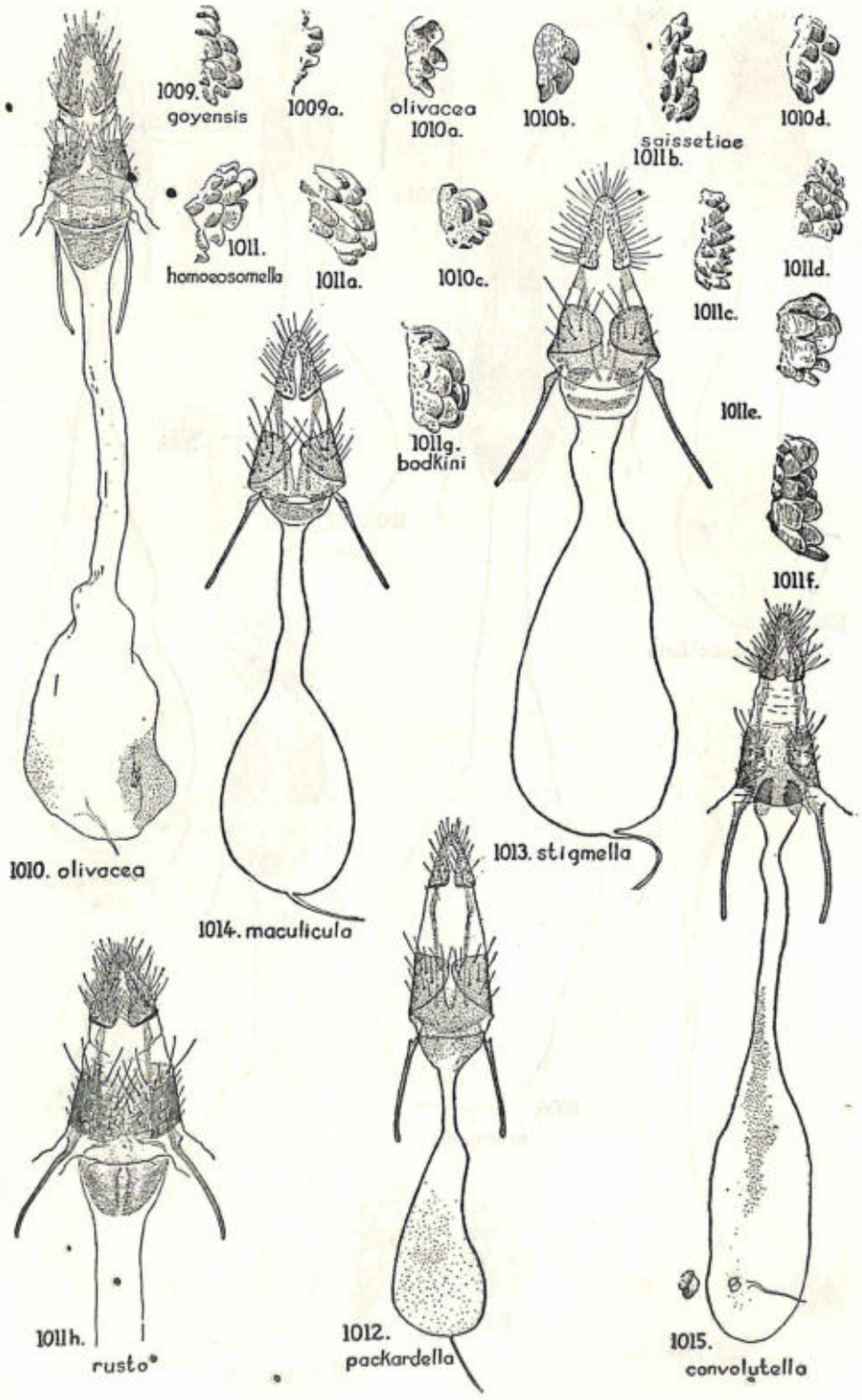
1011. *Baphala homoeosomella* (Zeller): 1011–1011a, Varieties of signa of female genitalia in typical examples; 1011b–1011f, varieties of signa in a synonym, *saissetiae* (Dyar); 1011g, signum of another synonym, *bodkini* (Dyar); 1011h, apical part of ductus bursae, collar, and ovipositor of another synonym, *rusto* (Dyar).

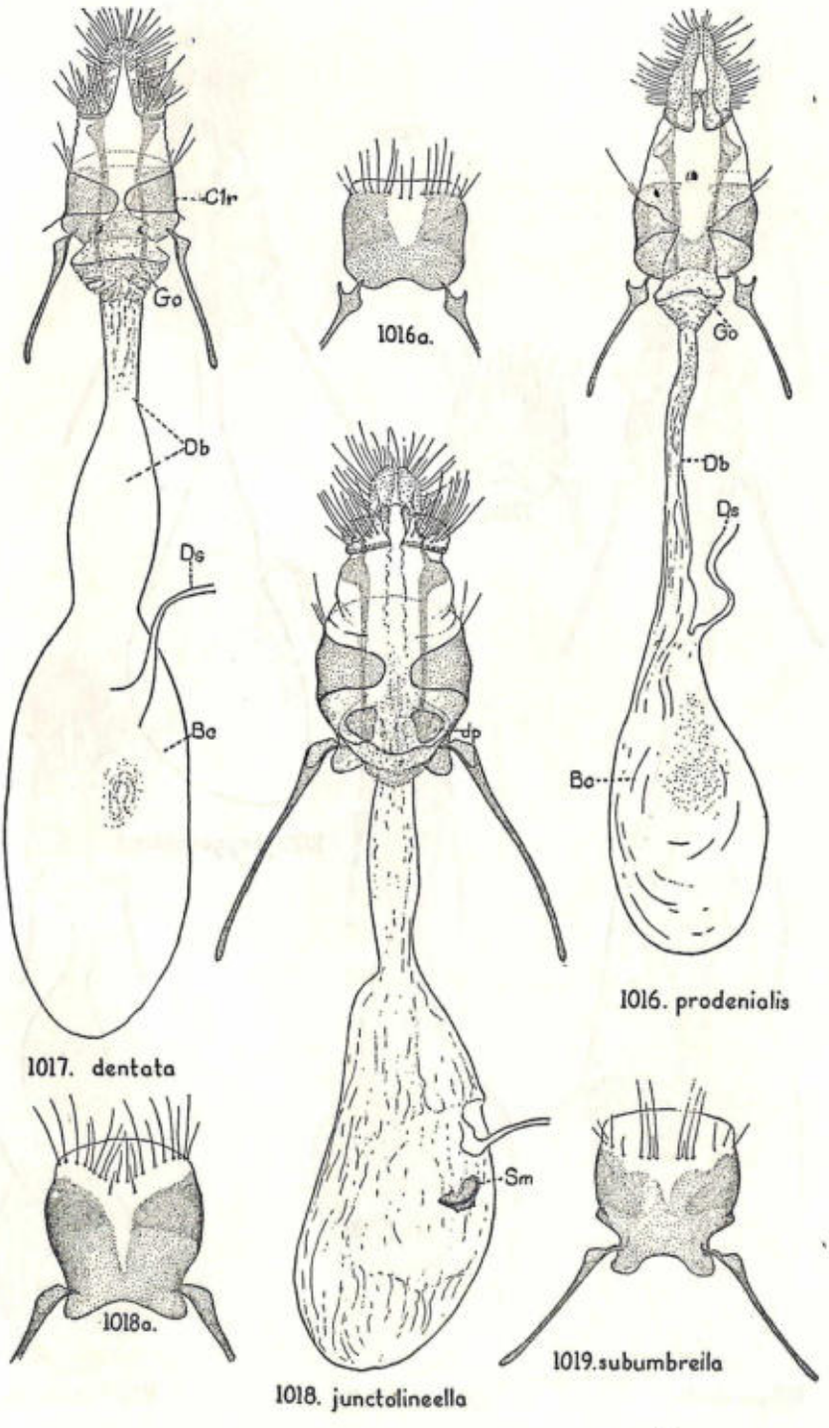
1012. *Rhagea packardella* (Ragonot).

1013. *Rhagea stigmella* (Dyar).

1014. *Rhagea maculicula* (Dyar), a synonym of *R. stigmella* (Dyar).

1015. *Zophodia convolutella* (Hübner).





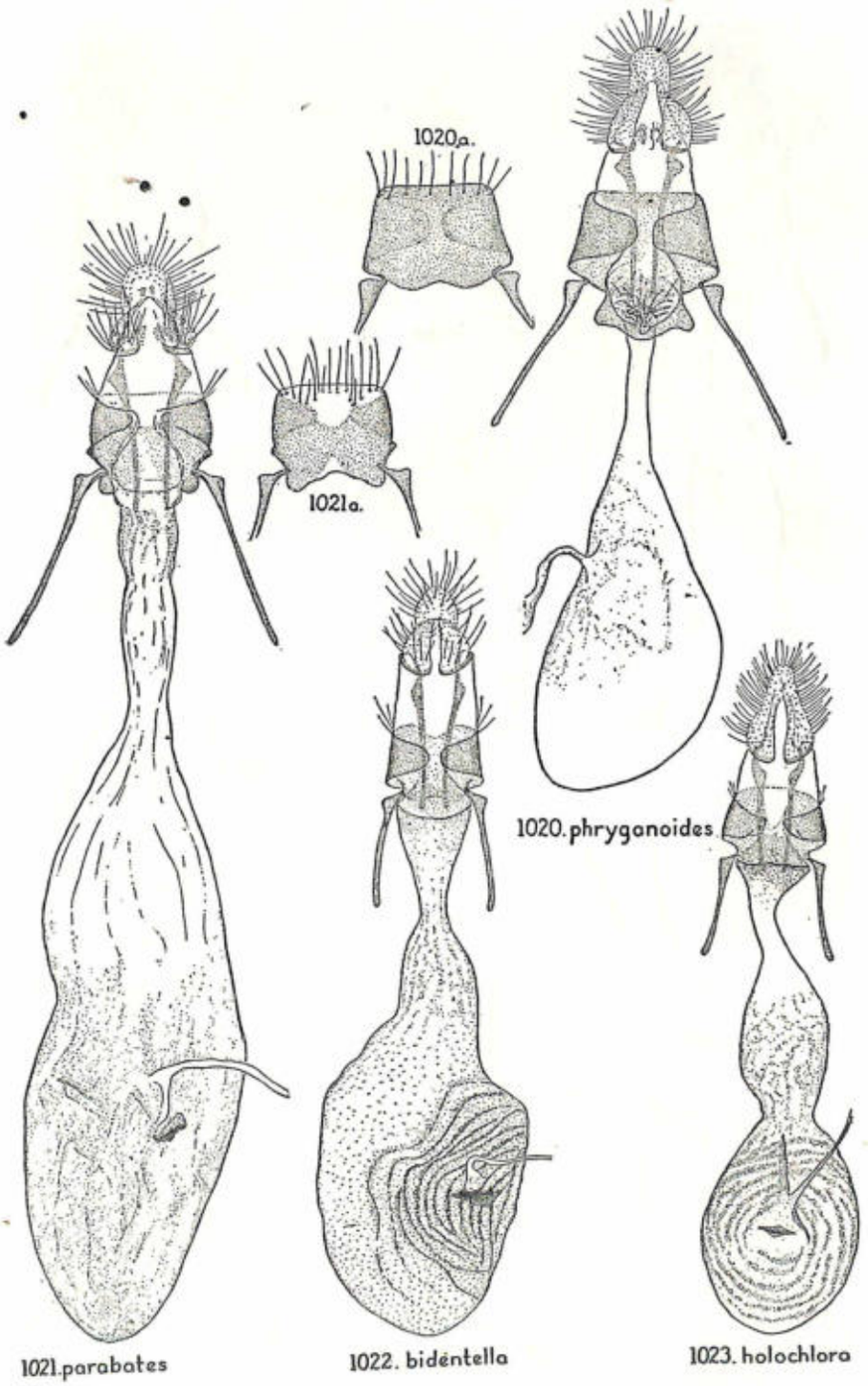
FIGURES 1016–1019.—FEMALE GENITALIA.

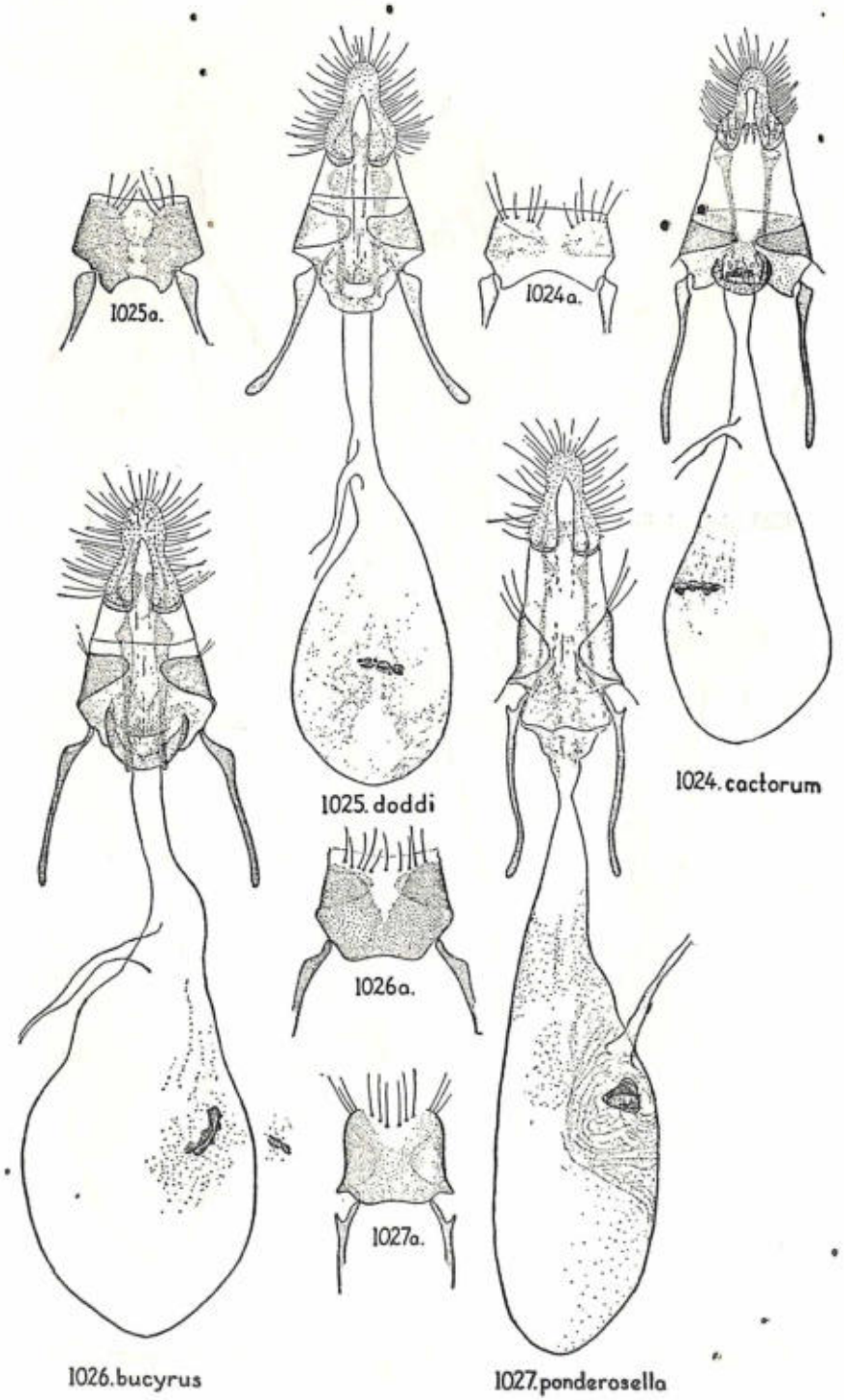
1016. *Melitara prodenialis* Walker; 1016a, dorsal view of eighth-segment collar.
1017. *Melitara dentata* (Grote).
1018. *Olycella junctolineella* (Hulst); 1018a, dorsal view of eighth-segment collar.
1019. *Olycella subumbrella* (Dyar), paratype from type locality, collar of eighth abdominal segment, dorsal view.

(Explanation of symbols applied to female genitalia: *Bc*, bursa copulatrix; *Clr*, collar of eighth abdominal segment; *Db*, ductus bursae; *dp*, dorsal plates behind genital opening; *Ds*, ductus seminalis; *Go*, genital opening; *Sm*, signum.)

FIGURES 1020–1023.—FEMALE GENITALIA.

1020. *Olyca phryganoides* Walker; 1020a, dorsal view of eighth-segment collar.
1021. *Alberada parabates* (Dyar); 1021a, dorsal view of eighth-segment collar.
1022. *Alberada bidentella* (Dyar).
1023. *Alberada holochlora* (Dyar).





FIGURES 1024–1027.—FEMALE GENITALIA.

1024. *Cactoblastis cactorum* (Berg); 1024a, dorsal view of eighth-segment collar.
1025. *Cactoblastis doddi* Heinrich; 1025a, dorsal view of eighth-segment collar.
1026. *Cactoblastis bucyrus* Dyar; 1026a, dorsal view of eighth-segment collar.
1027. *Cahela ponderosella* Barnes and McDunnough, paratype from type locality; 1027a, dorsal view of eighth-segment collar.

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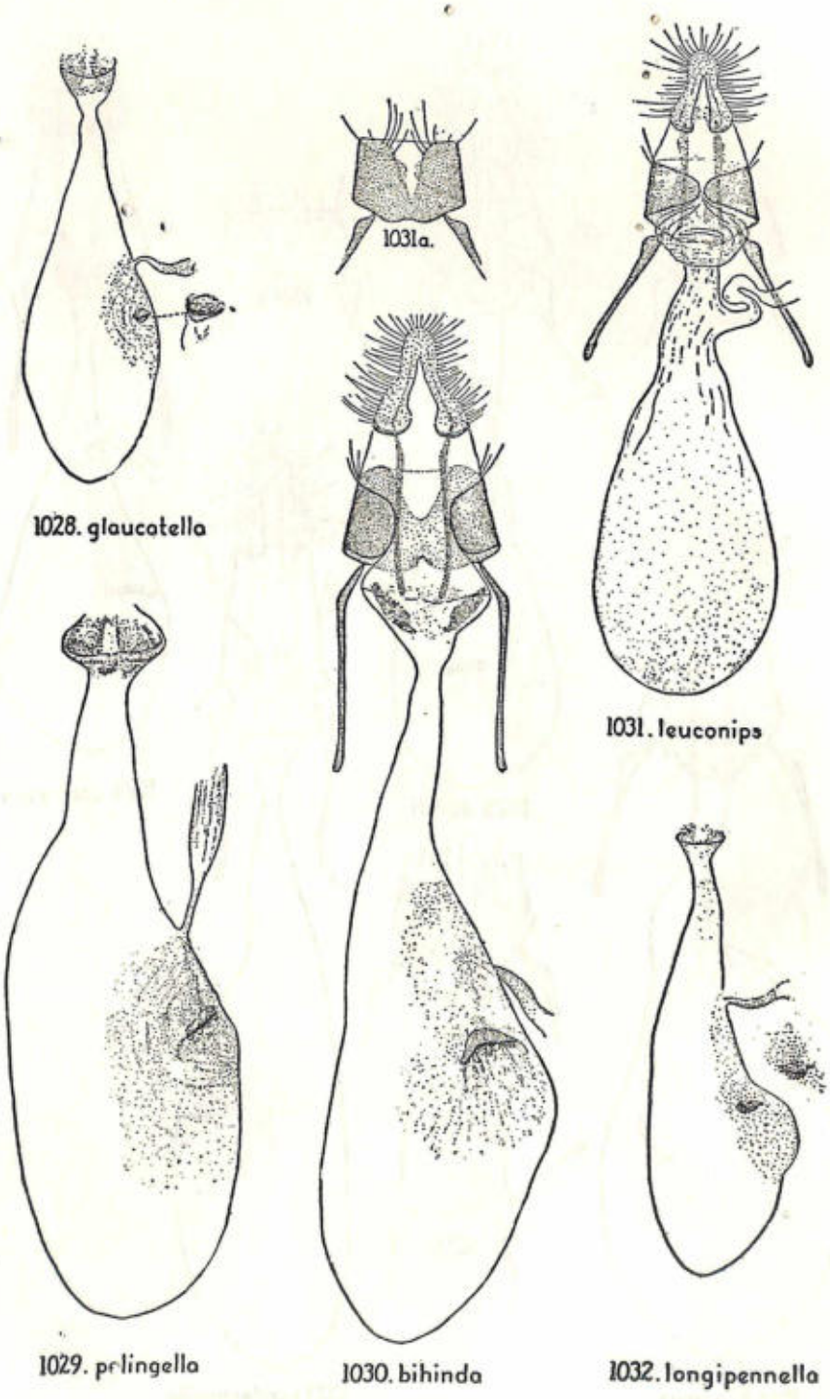
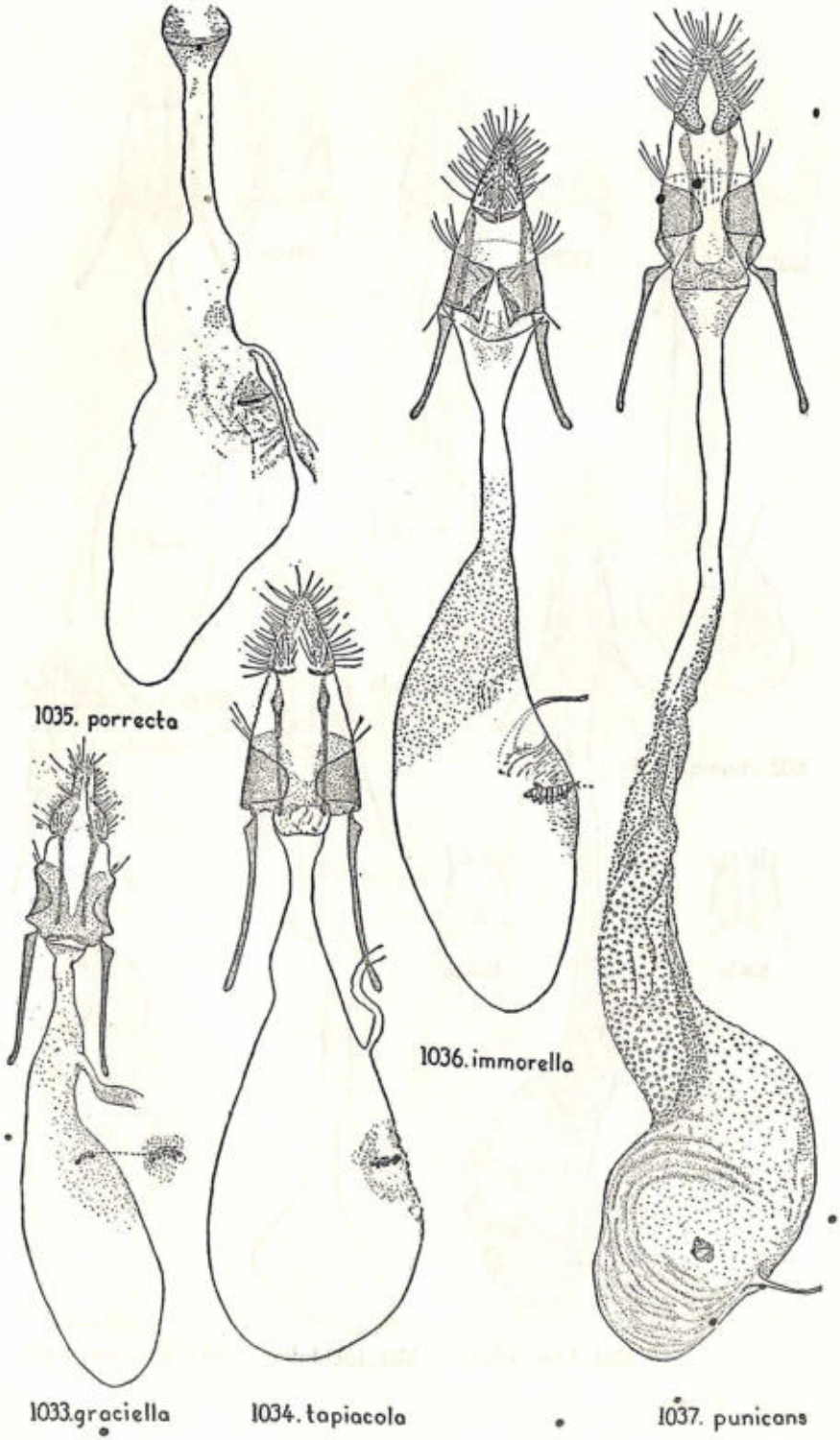
FIGURES 1028–1032.—FEMALE GENITALIA.

1028. *Rumatha glaucatella* (Hulst), with eighth-segment collar and ovipositor omitted and with signum shown, much enlarged, to the side of bursa.
1029. *Rumatha polingella* (Dyar), with eighth-segment collar and ovipositor omitted.
1030. *Rumatha bihinda* (Dyar).
1031. *Eremberga leuconips* (Dyar); 1031a, dorsal view of eighth-segment collar.
1032. *Yosemitia longipennella* (Hulst), with eighth-segment collar and ovipositor omitted and with signum, much enlarged, shown to the side of bursa.



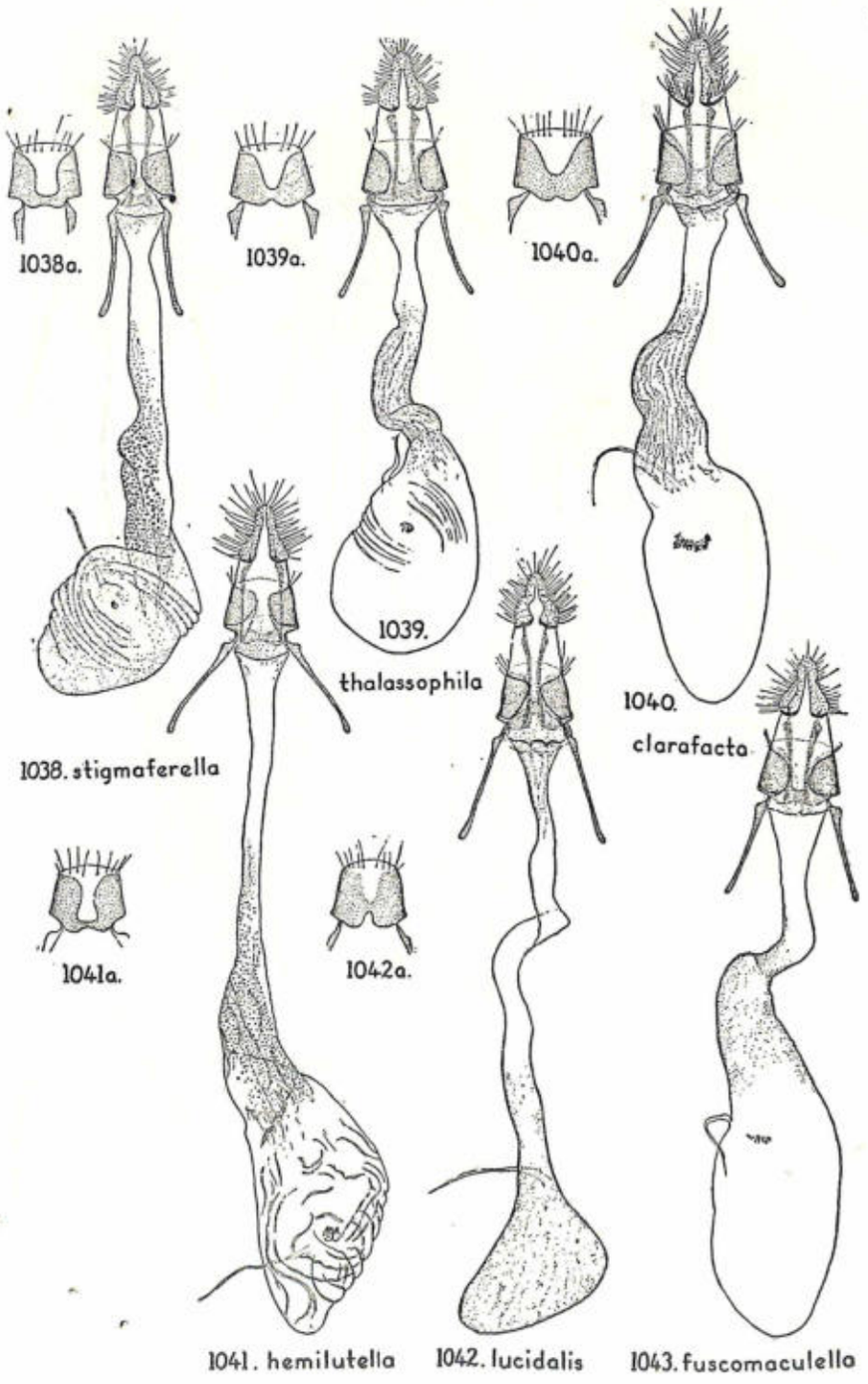


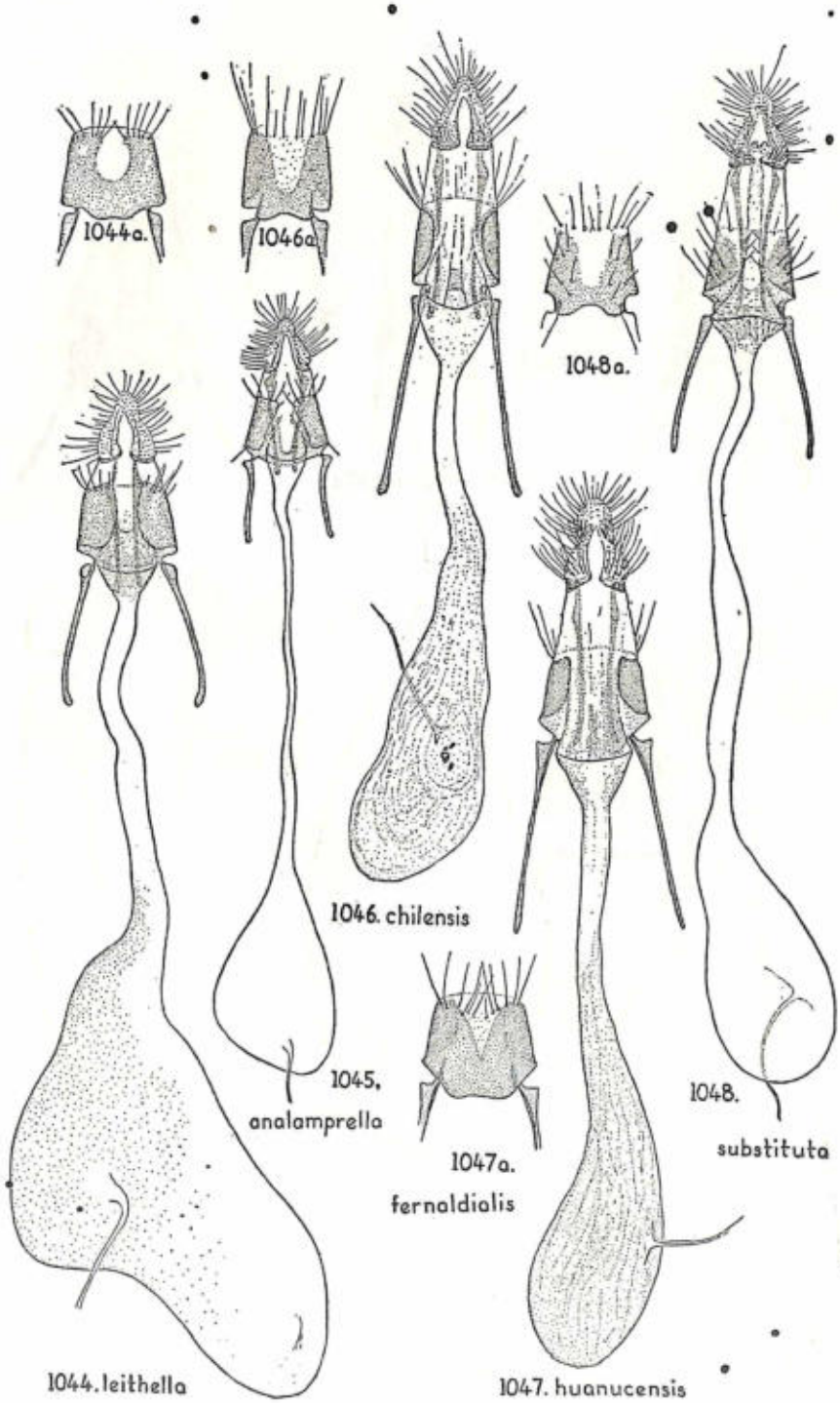
FIGURES 1033–1037.—FEMALE GENITALIA.

1033. *Yosemitia graciella* (Hulst).
1034. *Tucumania tapiacola* Dyar.
1035. *Tucumania porrecta* Dyar, with eighth-segment collar and ovipositor omitted.
1036. *Ozamia immorella* (Dyar).
1037. *Ozamia punicans* Heinrich.

FIGURES 1038–1043.—FEMALE GENITALIA.

1038. *Ozamia stigmaferella* (Dyar), type; 1038a, dorsal view of eighth-segment collar.
1039. *Ozamia thalassophila* Dyar, type; 1039a, dorsal view of eighth-segment collar.
1040. *Ozamia fuscomaculella clarefacta* Dyar; 1040a, dorsal view of eighth-segment collar.
1041. *Ozamia hemilutella* Dyar; 1041a, dorsal view of eighth-segment collar.
1042. *Ozamia lucidalis* (Walker); 1042a, dorsal view of eighth-segment collar.
1043. *Ozamia fuscomaculella* (Wright).





FIGURES 1044–1048.—FEMALE GENITALIA.

1044. *Amalafrida leithella* (Dyar); 1044a, dorsal view of eighth-segment collar.
1045. *Salambona analamprella* (Dyar).
1046. *Sigelgaita chilensis* Heinrich; 1046a, dorsal view of eighth-segment collar.
1047. *Sigelgaita huanucensis* Heinrich, type; 1047a, dorsal view of eighth-segment collar.
1048. *Nanaia substituta* Heinrich; 1048a, dorsal view of eighth-segment collar.

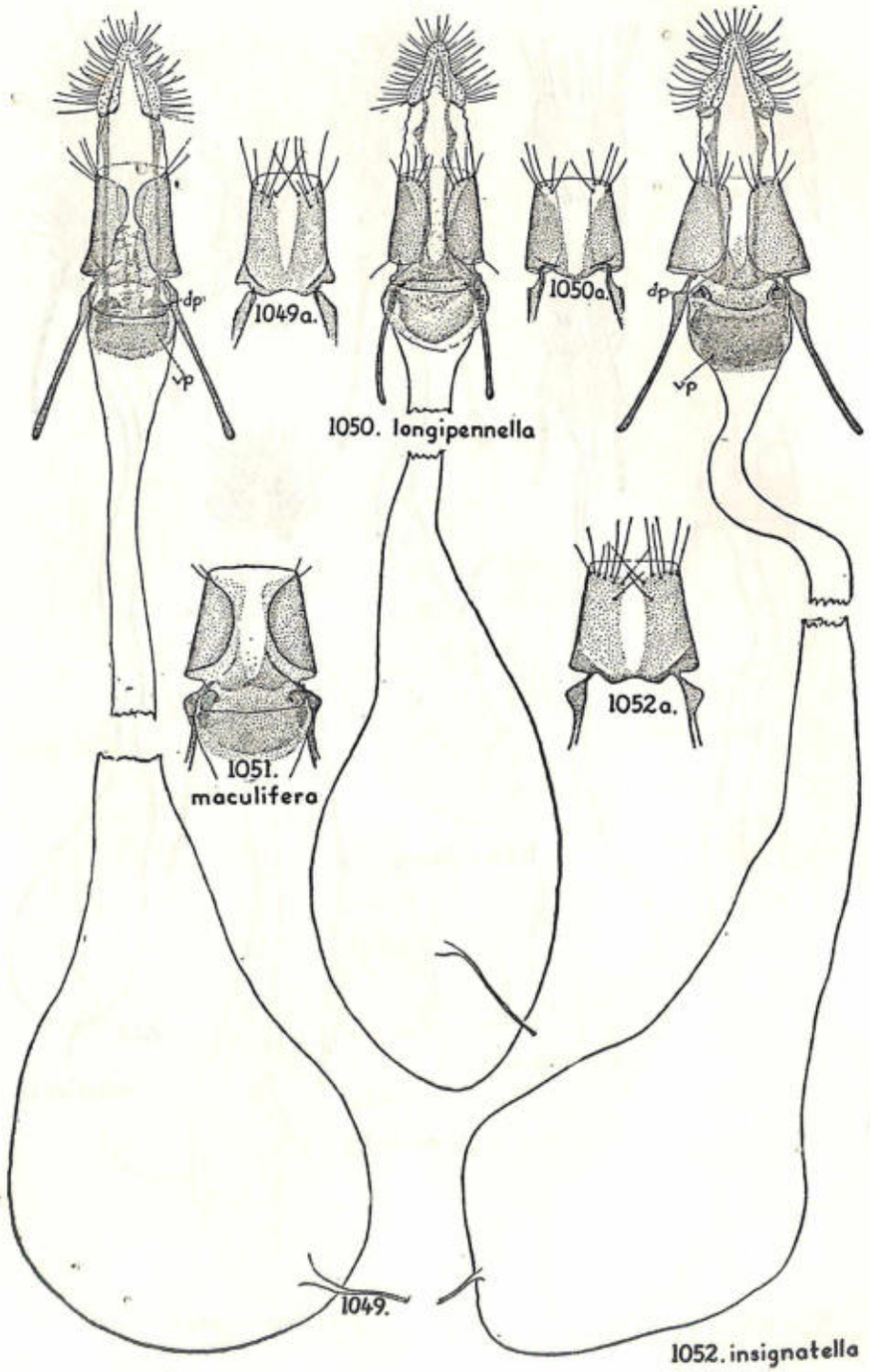
FIGURES 1049–1052.—FEMALE GENITALIA.

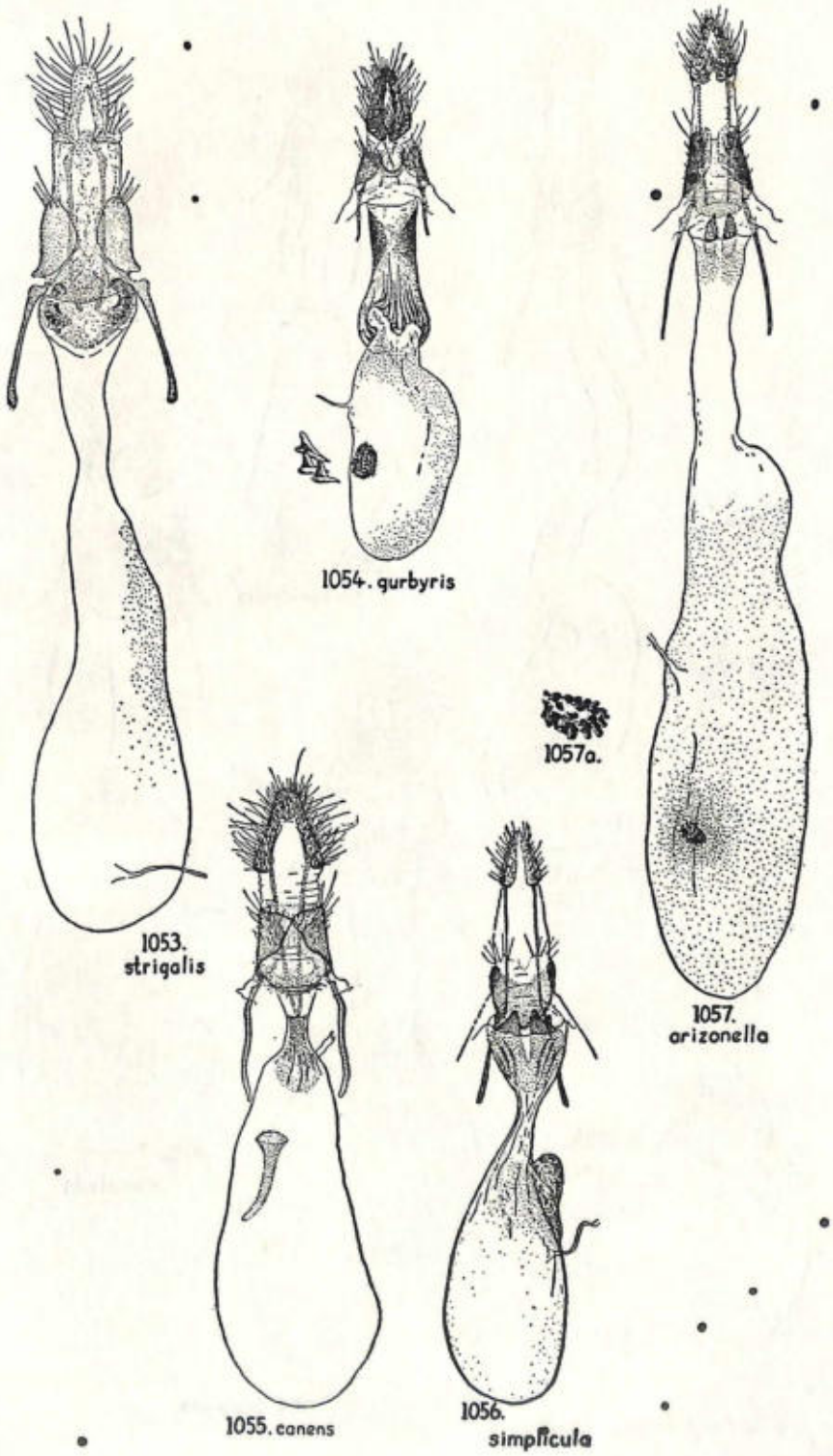
1049. *Cactobrosis fernaldialis* (Hulst); 1049a, dorsal view of eighth-segment collar.

1050. *Cactobrosis longipennella* (Hampson), specimen from Oaxaca, México; 1050a, dorsal view of eighth-segment collar.

1051. *Cactobrosis maculifera* Dyar, eighth-segment collar and apical portion of ductus bursae.

1052. *Cactobrosis insignatella* Dyar, type; 1052a, dorsal view of eighth-segment collar.



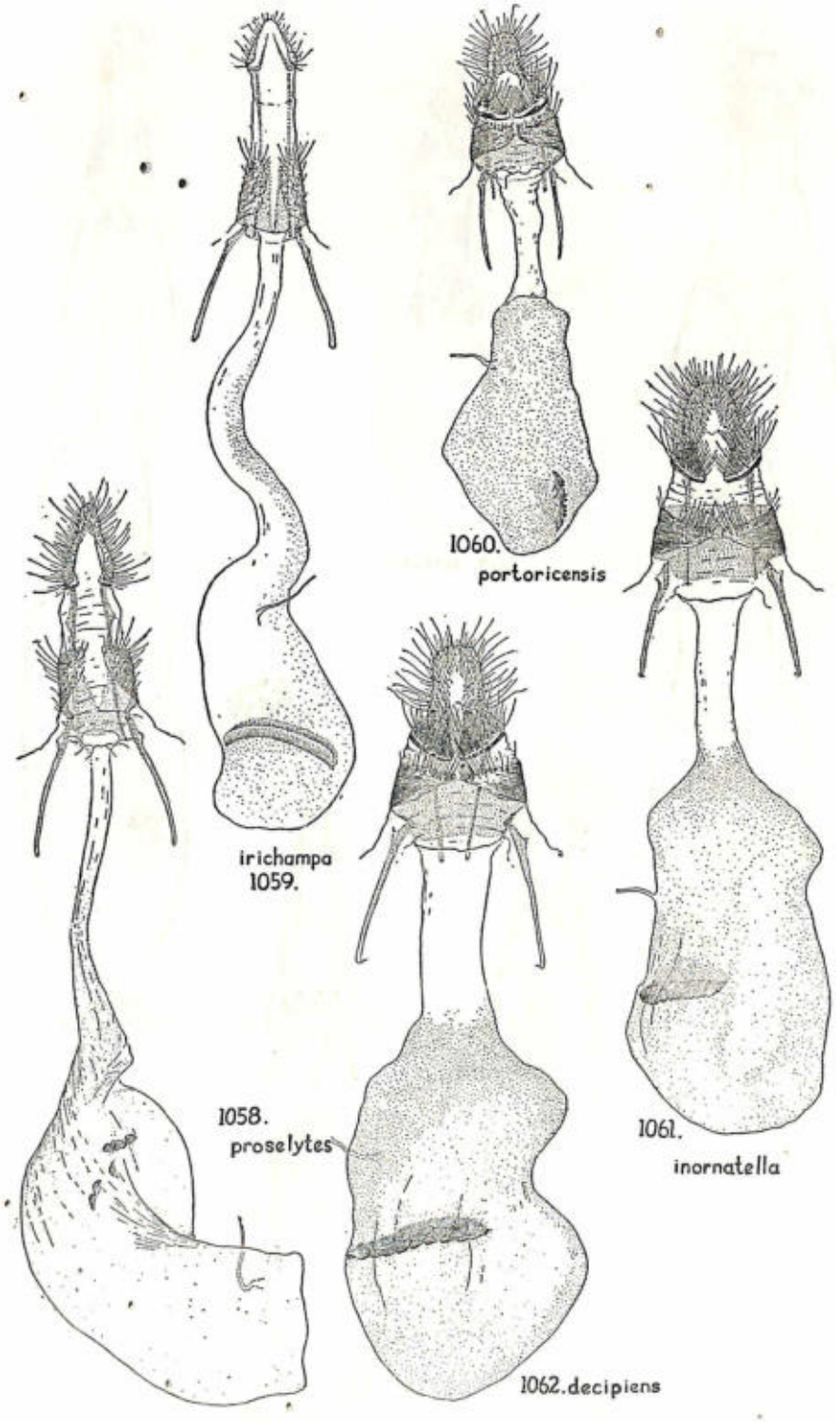


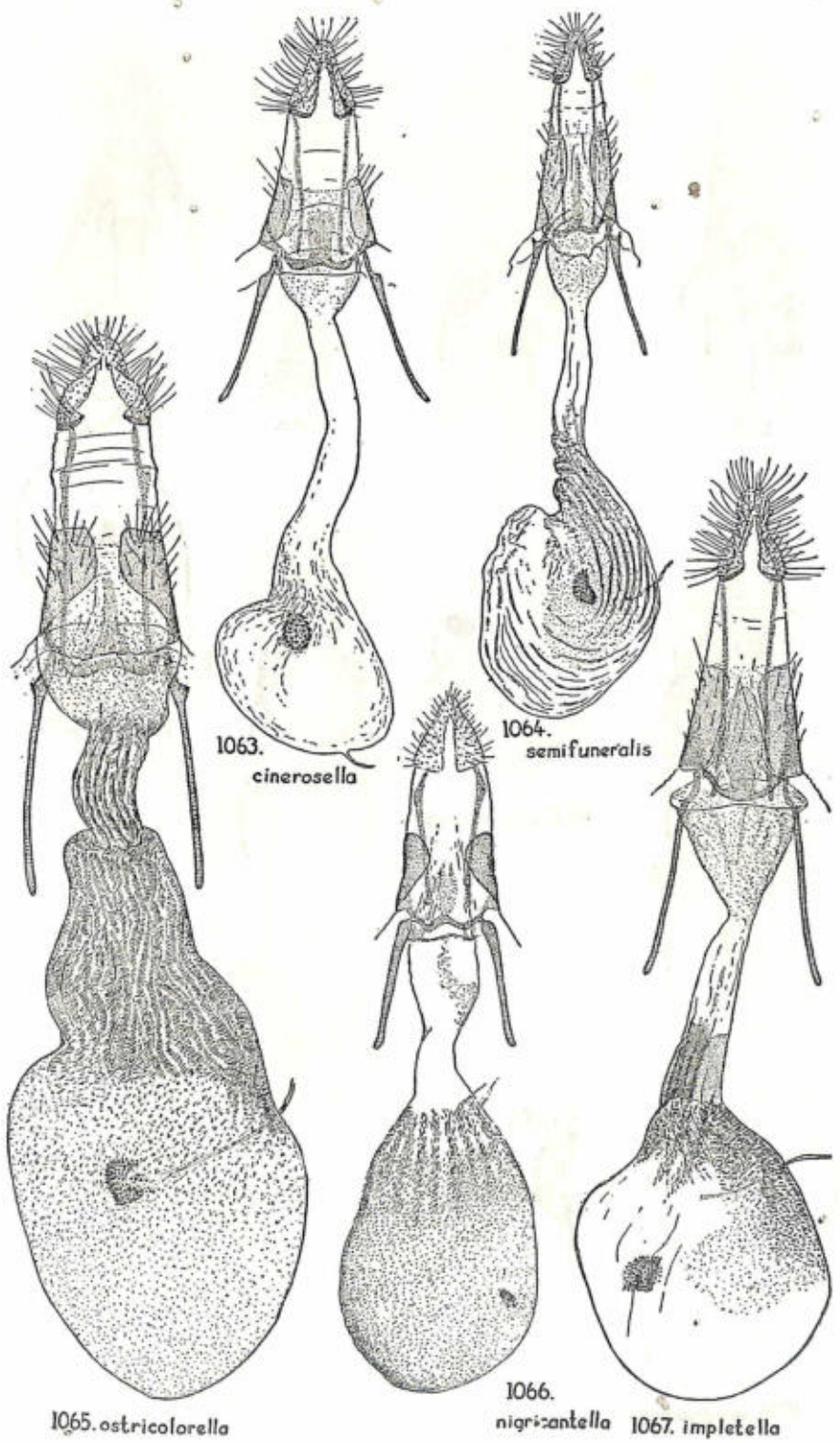
FIGURES 1053–1057.—FEMALE GENITALIA.

1053. *Cactobrosis strigalis* Barnes and McDunnough.
1054. *Illatila gurbyris* Dyar, with enlargement of signum shown to the side of bursa.
1055. *Lascelina canens* Heinrich, new species.
1056. *Metephestia simplicula* (Zeller).
1057. *Selga arizonella* (Hulst); 1057a, signum, greatly enlarged.

FIGURES 1058–1062.—FEMALE GENITALIA.

1058. *Entmemacornis proselytes* Dyar.
1059. *Anthropteryx irichampa* Dyar, type.
1060. *Moodnopsis portoricensis* Heinrich, new species.
1061. *Moodnopsis inornatella* (Ragonot).
1062. *Moodnopsis decipiens* Dyar.





FIGURES 1063–1067.—FEMALE GENITALIA.

1063. *Euzophera cinerosella* (Zeller).
1064. *Euzophera semifuneralis* (Walker).
1065. *Euzophera ostricolorella* Hulst.
1066. *Euzophera nigricantella* Ragonot.
1067. *Prosoeuzophera impletella* (Zeller), specimen from Puerto Rico (in Cornell Univ.).

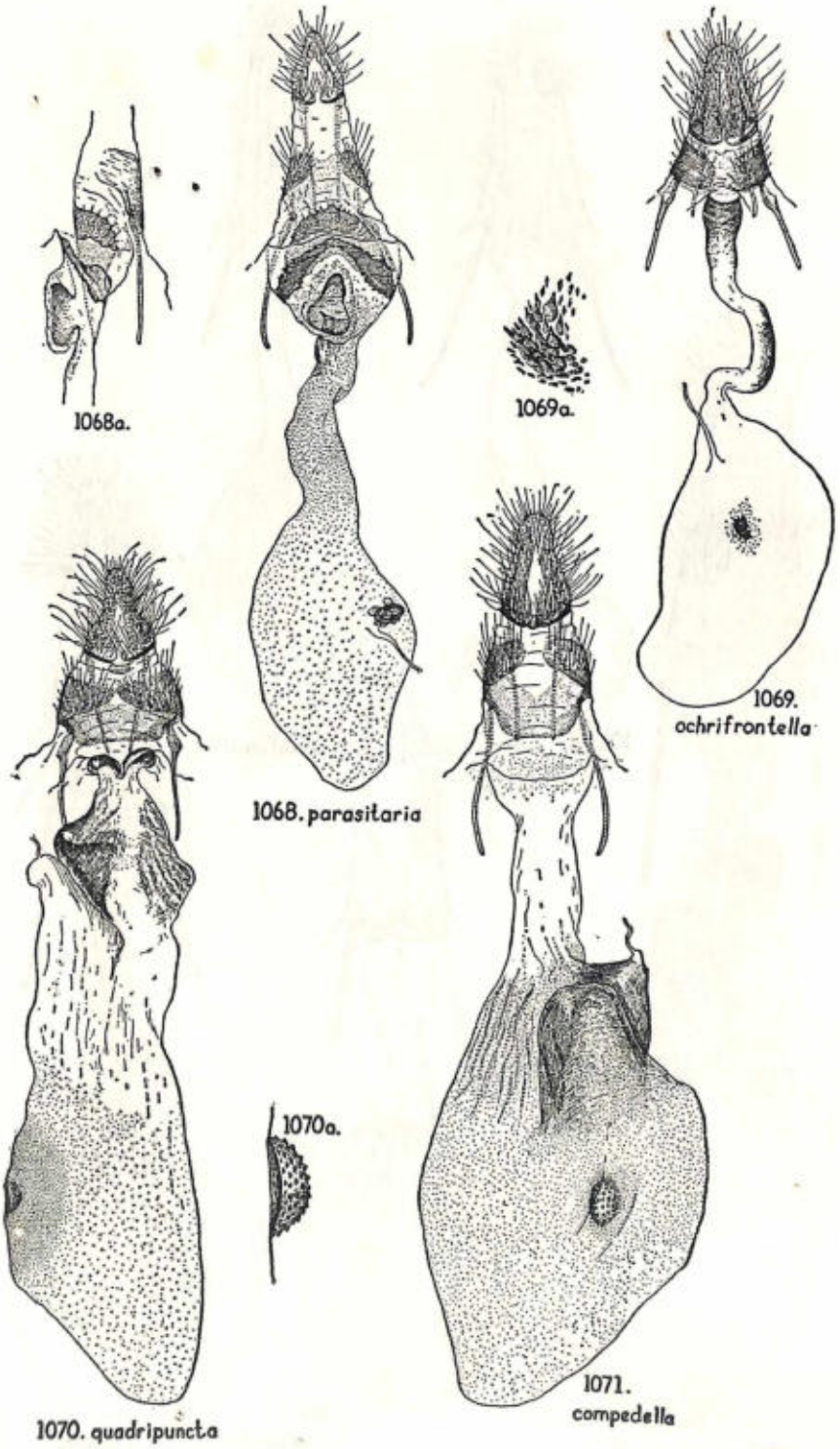
FIGURES 1068–1071.—FEMALE GENITALIA.

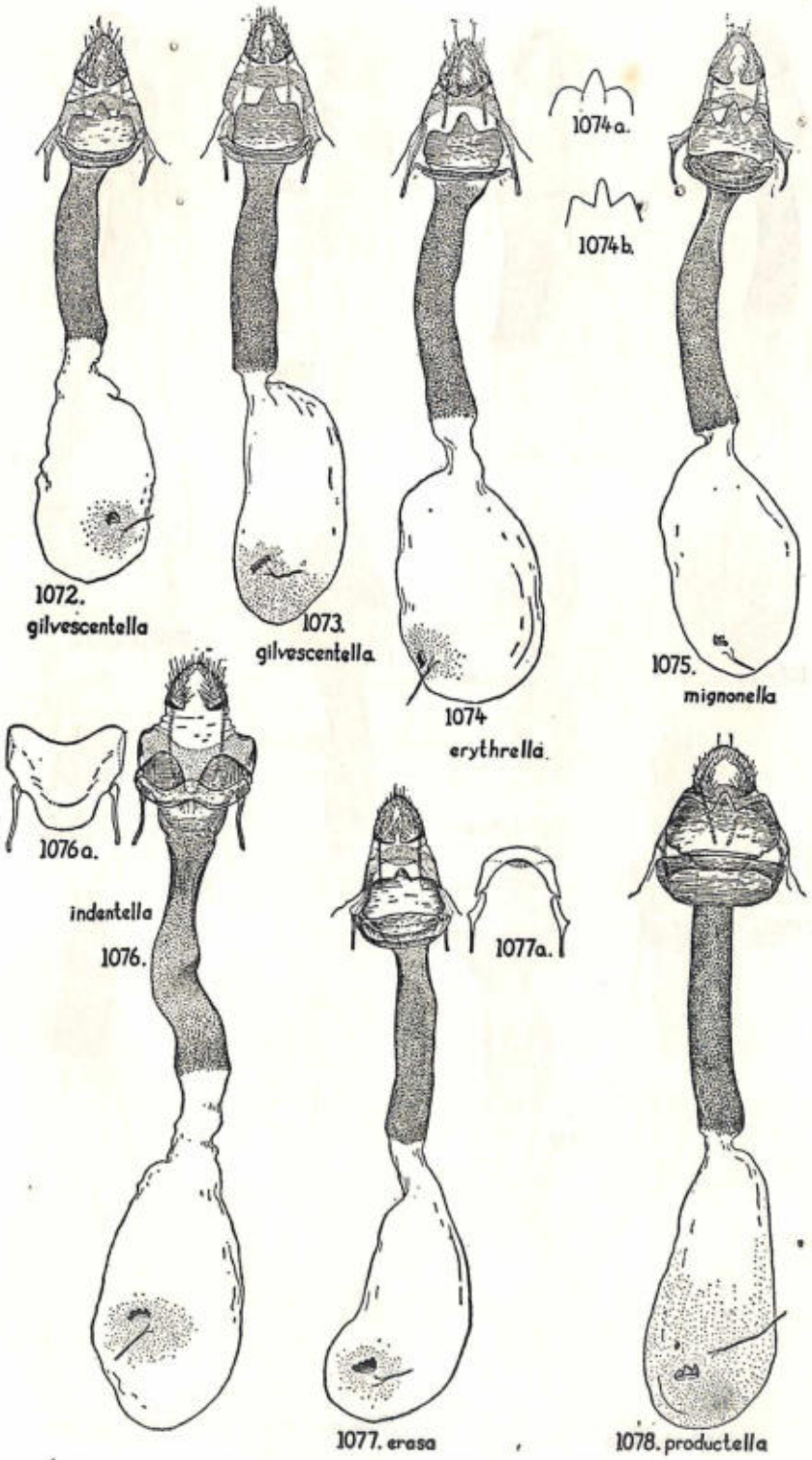
1068. *Vezina parasitaria* Heinrich, new species; 1068a, lateral view of part of genitalia showing sclerotizations at or near genital opening.

1069. *Eulogia ochrifrontella* (Zeller); 1069a, enlargement of signum.

1070. *Farnobia quadripuncta* (Zeller); 1070a, enlargement of signum.

1071. *Edulica compedella* (Zeller).





FIGURES 1072–1078.—FEMALE GENITALIA.

1072, 1073. *Ephestiodes gilvescentella* Ragonot, two examples, showing extent of variation.

1074. *Ephestiodes erythrella* Ragonot; 1074a–b, outlines of two shields behind genital opening, showing extent of variation.

1075. *Ephestiodes mignonella* Dyar, type.

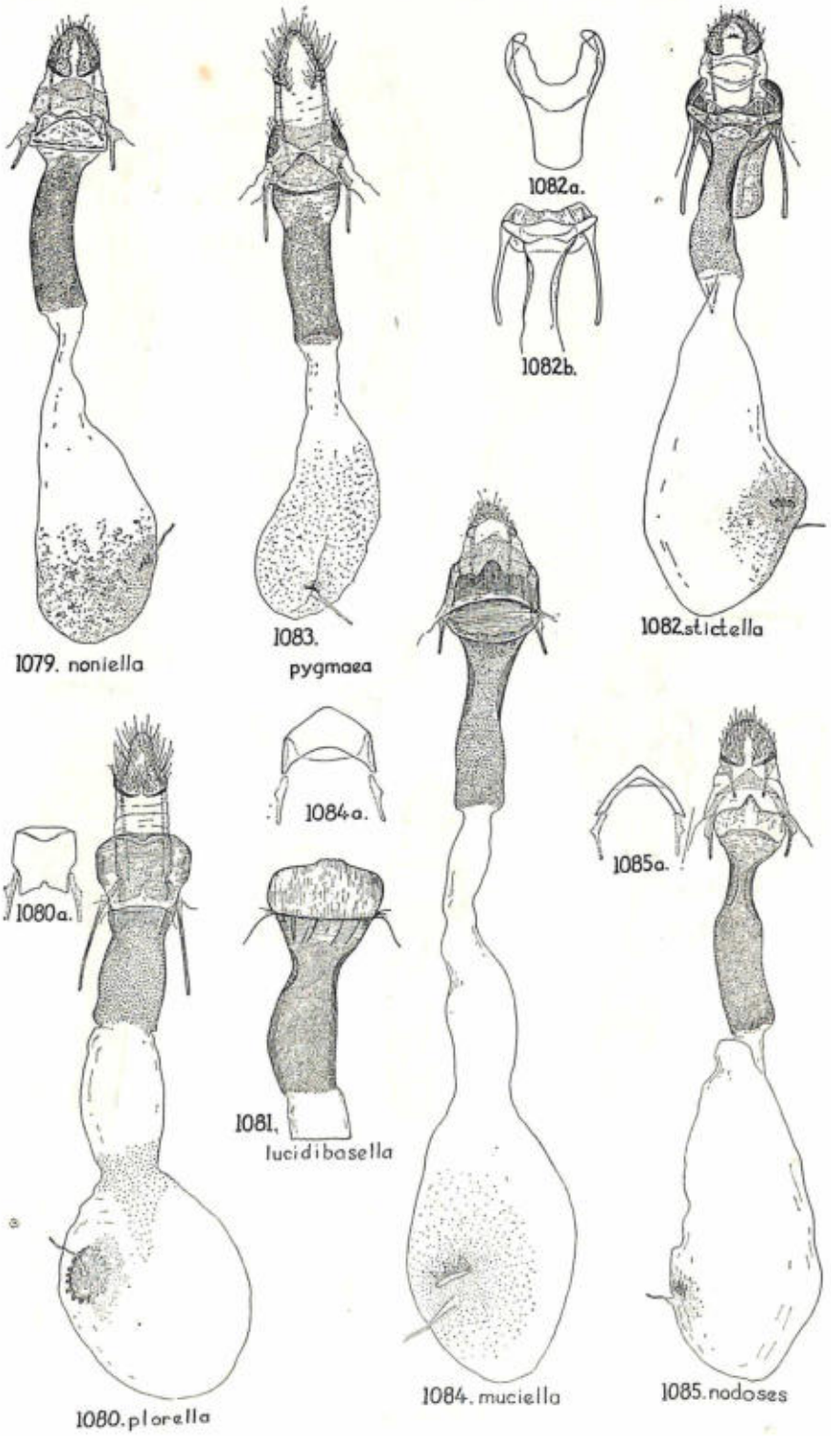
1076. *Ephestiodes indentella* Dyar; 1076a, dorsal view of eighth-segment collar.

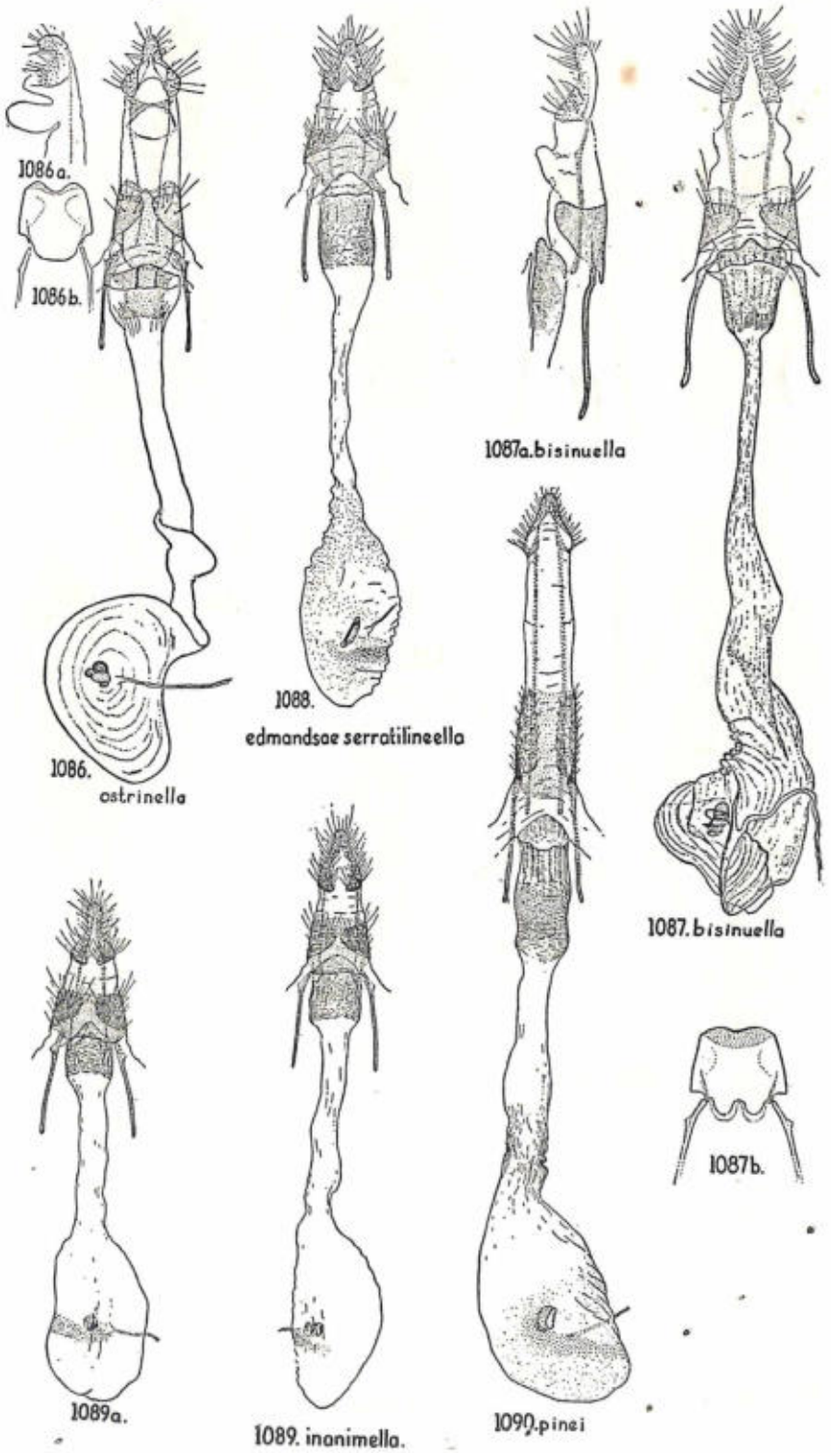
1077. *Ephestiodes erasa* Heinrich, new species; 1077a, dorsal view of eighth-segment collar.

1078. *Ephestiodes productella* Ragonot, type (in Paris Mus.).

FIGURES 1079–1085.—FEMALE GENITALIA.

1079. *Ephestiodes noniella* Dyar.
1080. *Ephestiodes plorella* Dyar; 1080a, dorsal view of eighth-segment collar.
1081. *Ephestiodes lucidibasella* Ragonot, paratype (in BM), apical (sclerotized) part of ductus bursae.
1082. *Ephestiodes stictella* (Hampson); 1082a, dorsal portion of eighth-segment collar; 1082b, apical portion of ductus bursae, plate behind genital opening, and apophyses of eighth-segment collar.
1083. *Micromescinia pygmaea* Dyar.
1084. *Azaera muciella* Schaus; 1084a, dorsal view of eighth-segment collar.
1085. *Azaera nodoses* (Dyar), type; 1085a, dorsal view of eighth-segment collar.





FIGURES 1086–1090.—FEMALE GENITALIA.

1086. *Moodna ostrinella* (Clemens); 1086a, lateral view of ovipositor and intersegmental membrane with lobe, between ovipositor and eighth-segment collar; 1086b, dorsal view of eighth-segment collar.

1087. *Moodna bisinuella* Hampson; 1087a, lateral view of caudal portion of genitalia, showing genital opening, eighth-segment collar, intersegmental lobe and ovipositor; 1087b, dorsal view of eighth-segment collar.

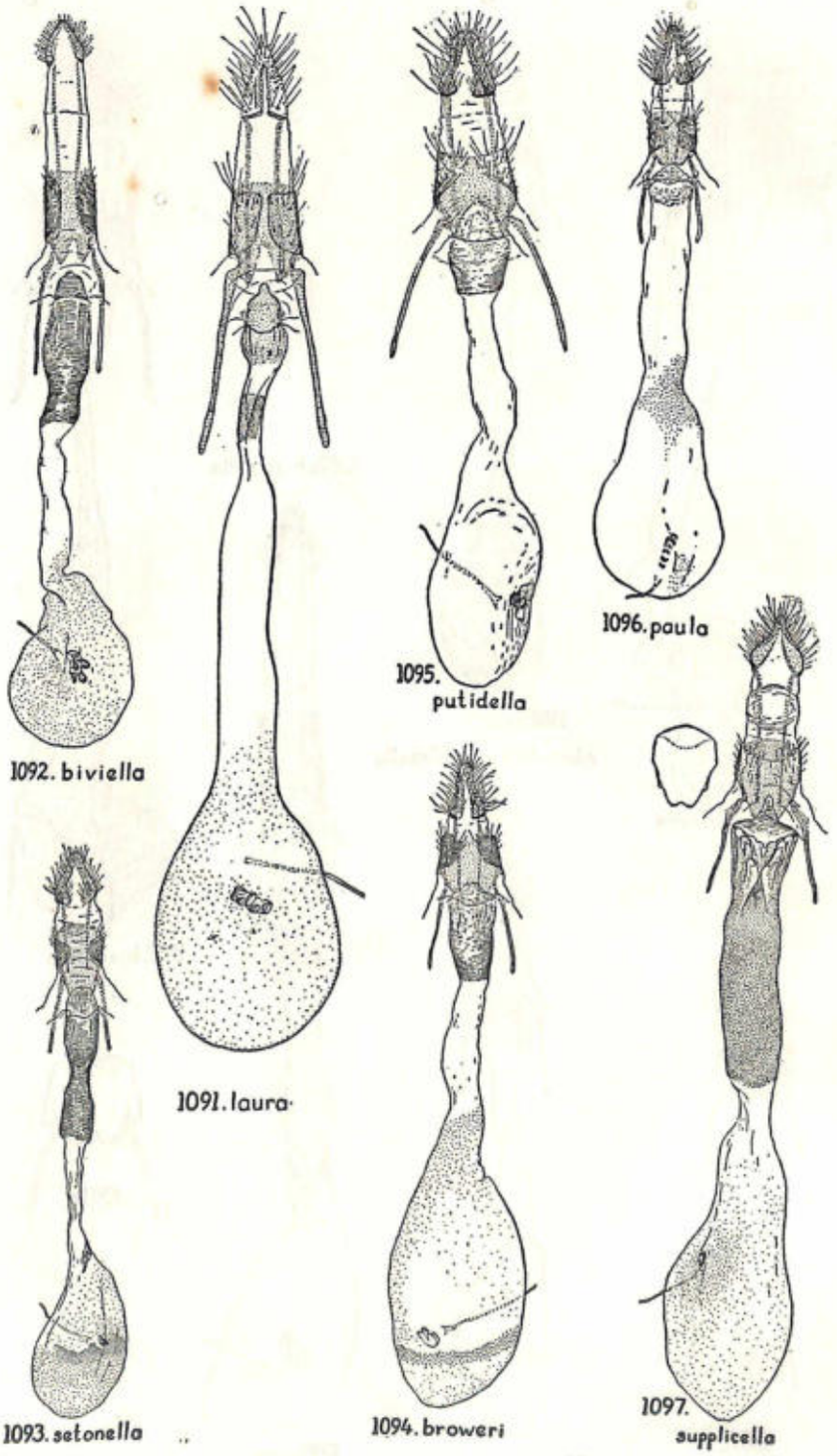
1088. *Vitula edmandsae serratilineella* Ragonot. Female genitalia.

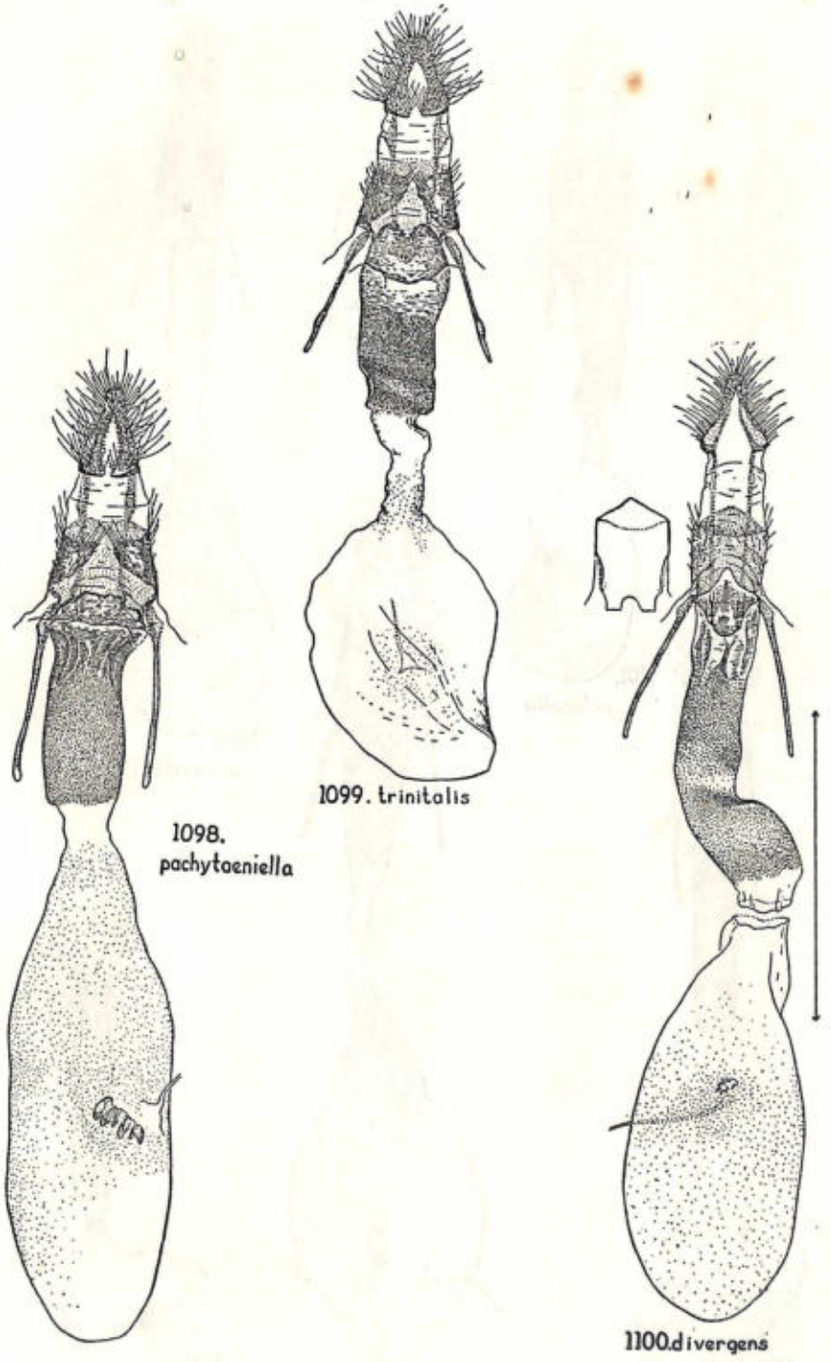
1089. *Vitula inanimella* (Dyar), paratype from Orizaba, México; 1089a, female genitalia figured from type of its synonym *Euzophera ticitoa* Dyar.

1090. *Vitula pinei* Heinrich, new species.

FIGURES 1091–1097.—FEMALE GENITALIA.

1091. *Vitula laura* (Dyar), type.
1092. *Manhatta biviella* (Zeller).
1093. *Manhatta setonella* (McDunnough), paratype (in USNM).
1094. *Manhatta broweri* Heinrich, new species, paratype from type locality.
1095. [*Eucampyla*] *putidella* Schaus, type.
1096. *Moodnella paula* Heinrich, new species.
1097. *Verina supplicella* (Dyar), type.



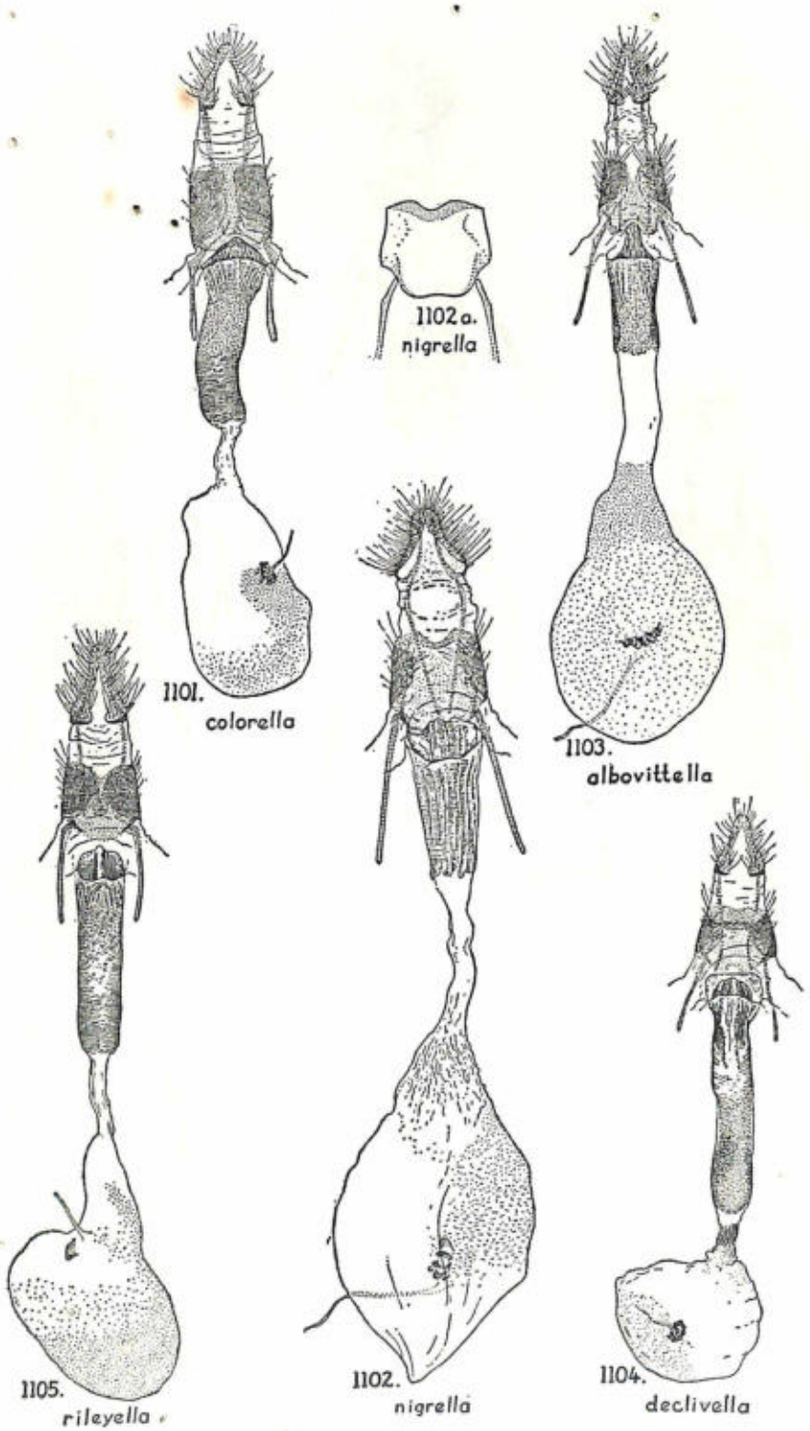


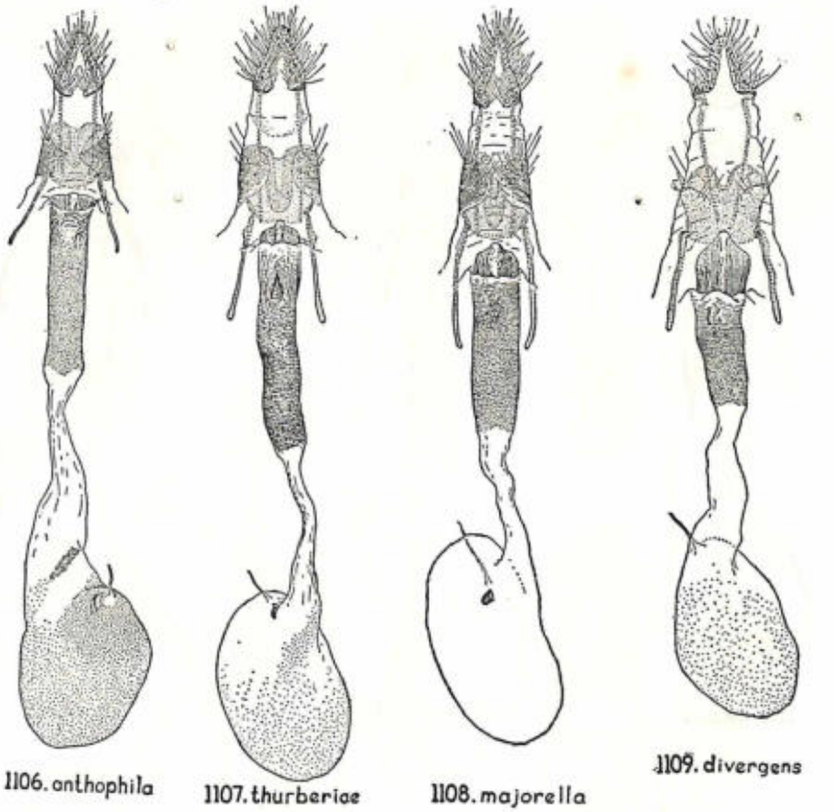
FIGURES 1098–1100.—FEMALE GENITALIA.

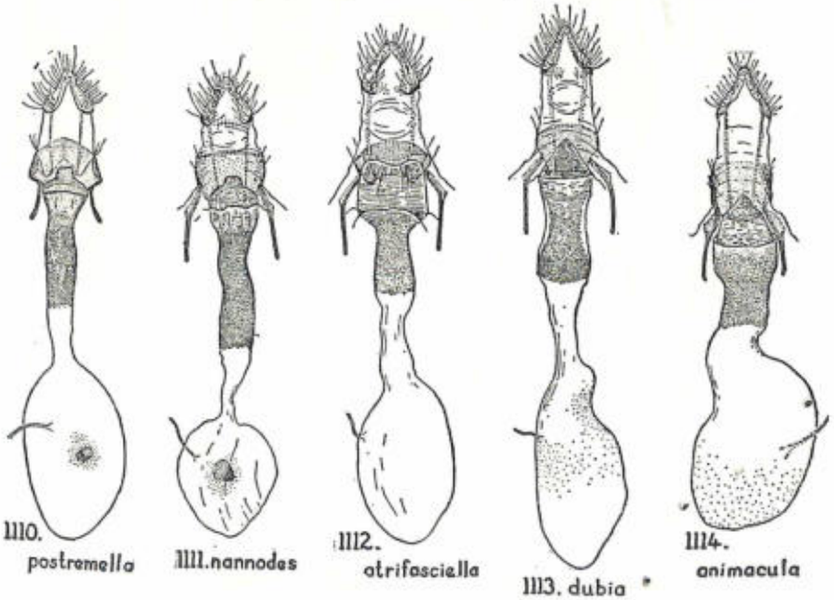
1098. *Volatica pachytaeniella* (Ragonot).
1099. *Volatica trinitatis* Heinrich, new species.
1100. *Vagobanta divergens* (Butler).

FIGURES 1101–1105.—FEMALE GENITALIA.

1101. *Caudellia colorella* (Dyar), type.
1102. *Caudellia nigrella* (Hulst); 1102a, dorsal view of eighth-segment collar.
1103. *Caudellia albovittella* Dyar.
1104. *Caudellia declivella* (Zeller), type.
1105. *Sosipatra rileyella* (Ragonot)





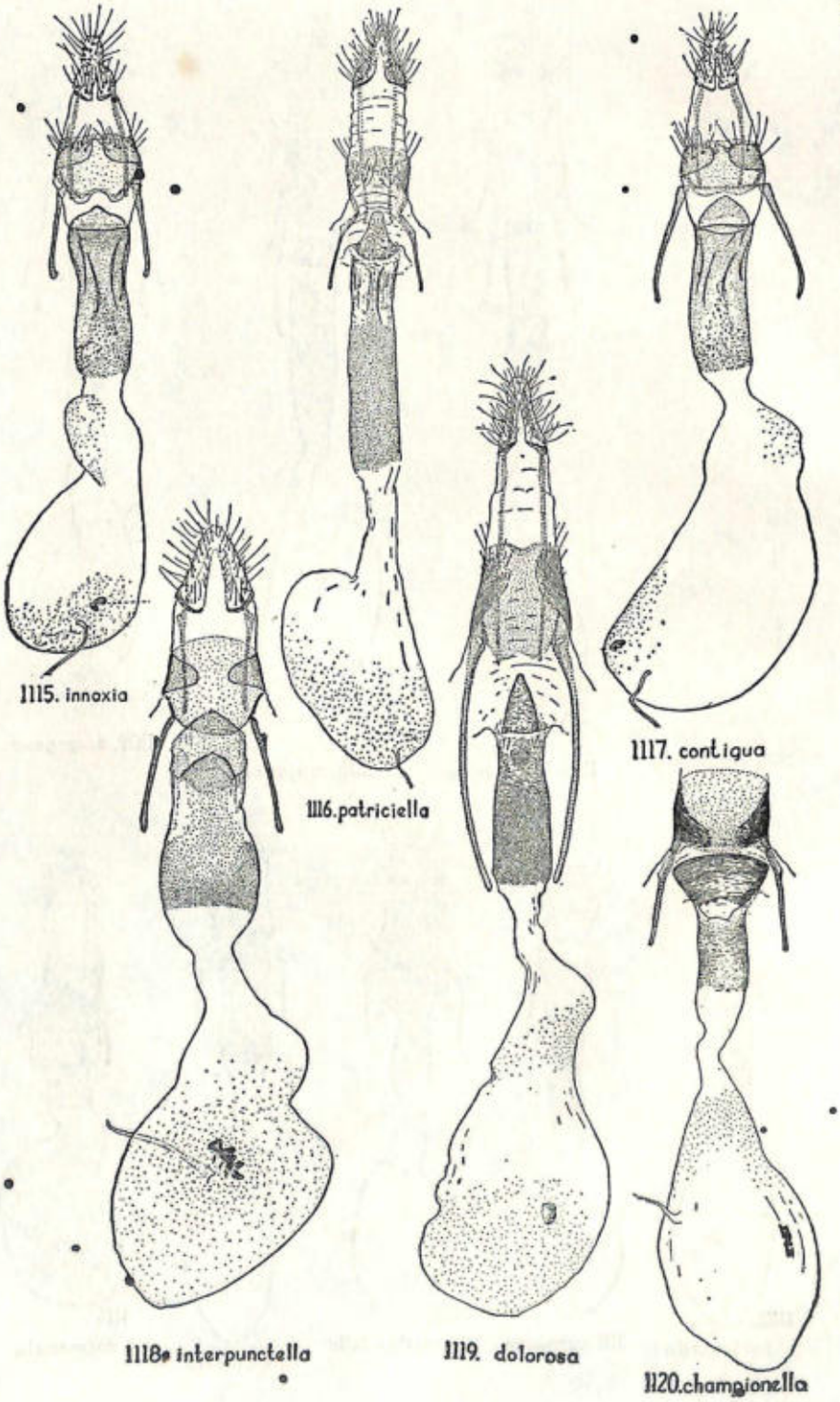


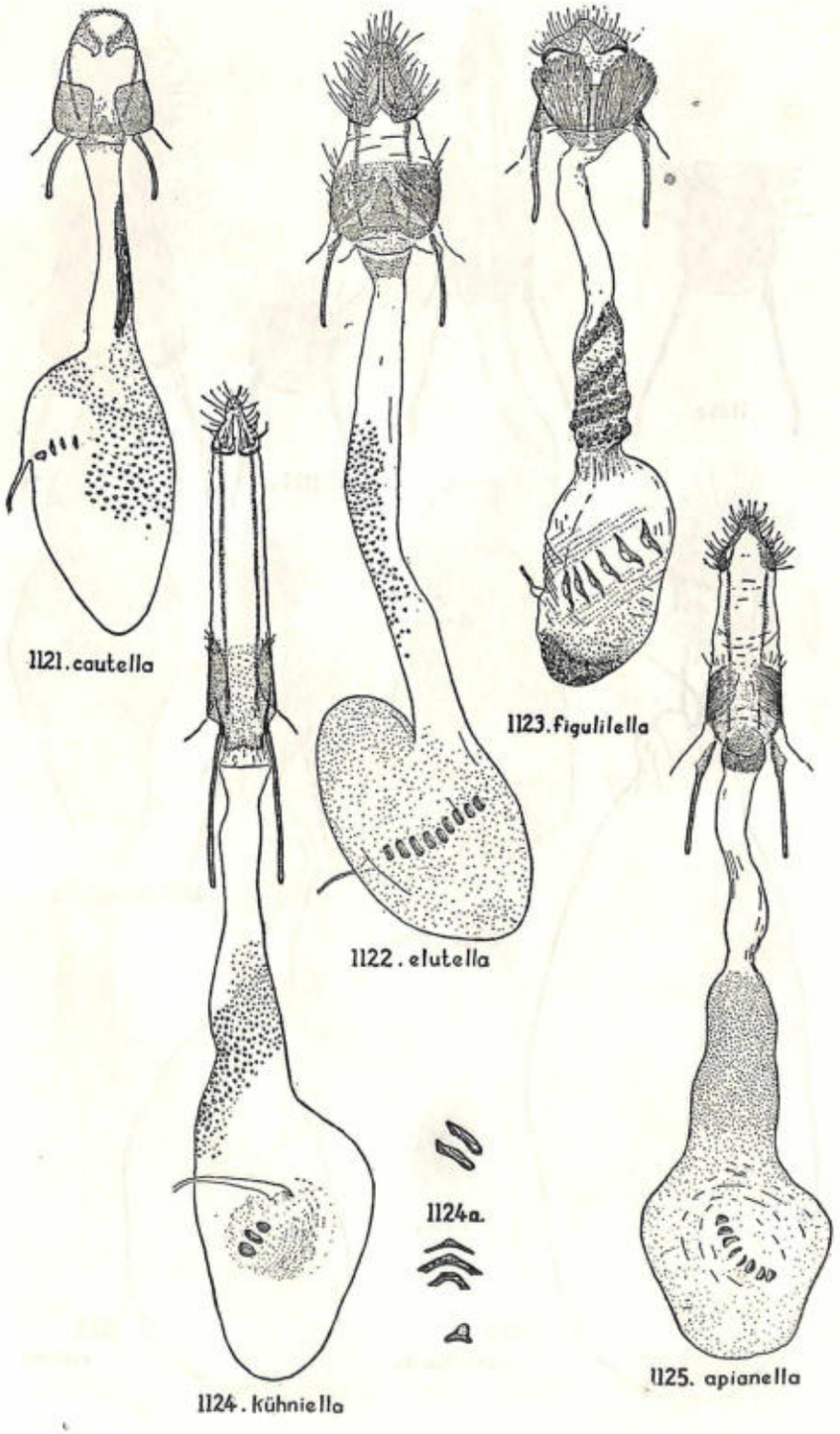
FIGURES 1106–1114.—FEMALE GENITALIA.

1106. *Sosipatra anthophila* (Dyar).
1107. *Sosipatra thurberiae* (Dyar).
1108. *Sosipatre majorella* (Dyar).
1109. *Sosipatra divergens* (Dyar), type.
1110. *Varneria postremella* Dyar, type.
1111. *Varneria nannodes* Dyar, type.
1112. *Varneria atrifasciella* Barnes and McDunnough.
1113. *Varneria dubia* Heinrich, new species.
1114. *Microphestia animacula* Dyar, type.

FIGURES 1115–1120.—FEMALE GENITALIA.

1115. *Ribua innoxia* Heinrich.
1116. *Ribua patriciella* (Dyar), type.
1117. *Ribua contigua* Heinrich, new species.
1118. *Plodia interpunctella* (Hübner).
1119. *Plodia dolorosa* Dyar.
1120. *Bethulia championella* Ragonot, type.



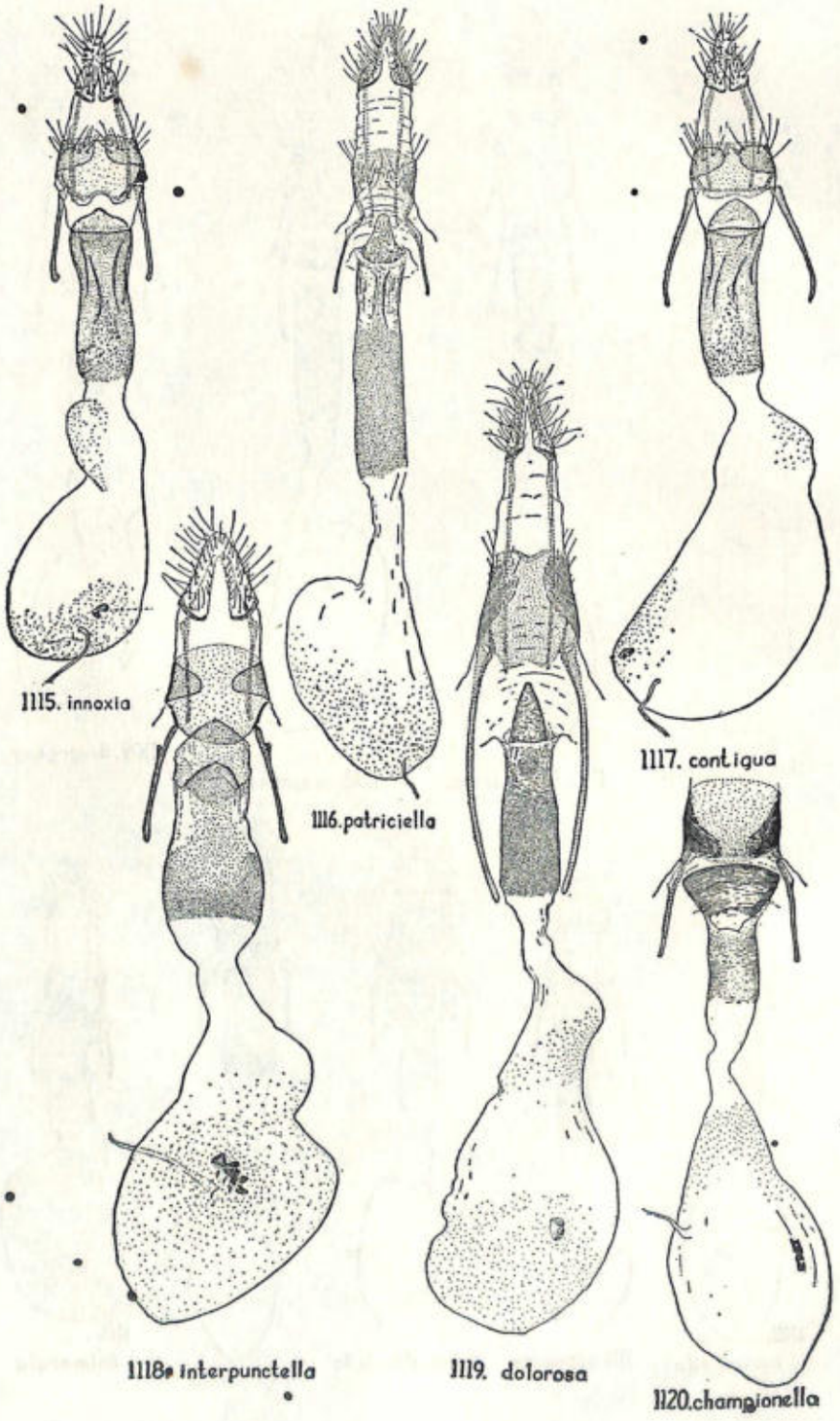


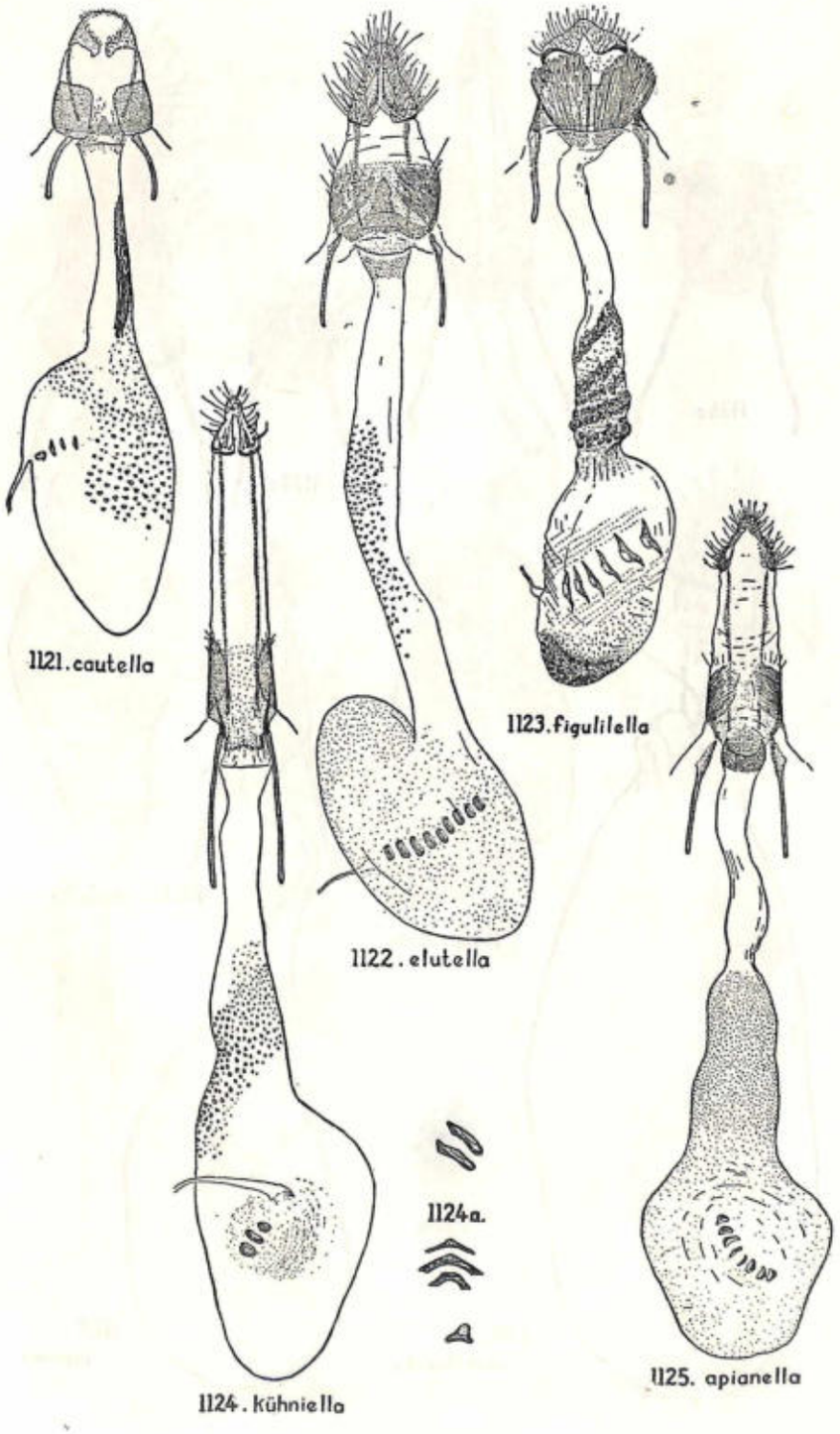
FIGURES 1121–1125.—FEMALE GENITALIA.

1121. *Ephestia cautella* (Walker).
1122. *Ephestia elutella* (Hübner).
1123. *Ephestia figulilella* Gregson.
1124. *Anagasta kühniella* (Zeller); 1124a, some variations in signa, enlarged.
1125. *Nicetiodes apianella* Schaus, paratype from type locality.

FIGURES 1115–1120.—FEMALE GENITALIA.

1115. *Ribua innoxia* Heinrich.
1116. *Ribua patriciella* (Dyar), type.
1117. *Ribua contigua* Heinrich, new species.
1118. *Plodia interpunctella* (Hübner).
1119. *Plodia dolorosa* Dyar.
1120. *Bethulia championella* Ragonot, type.



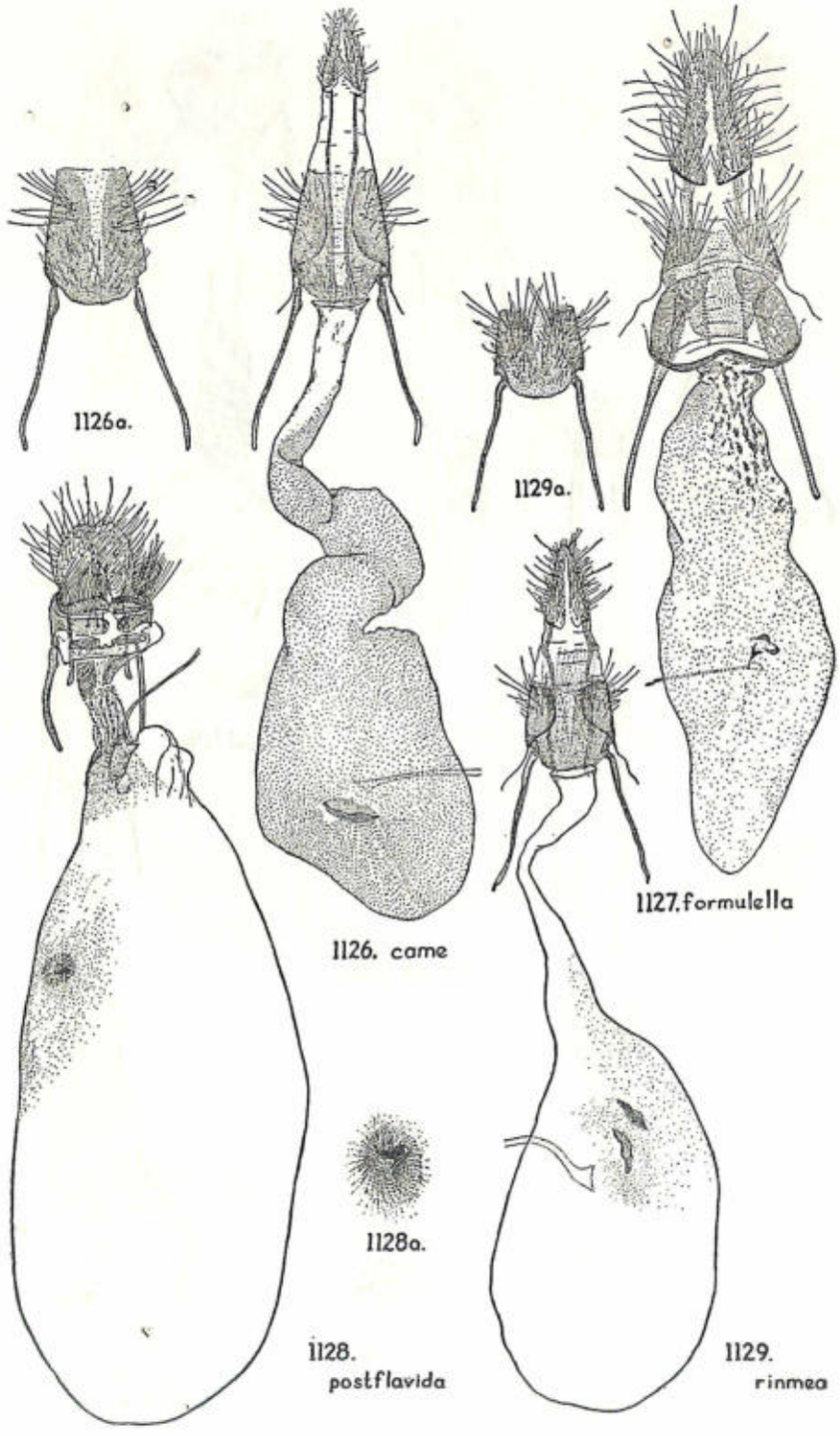


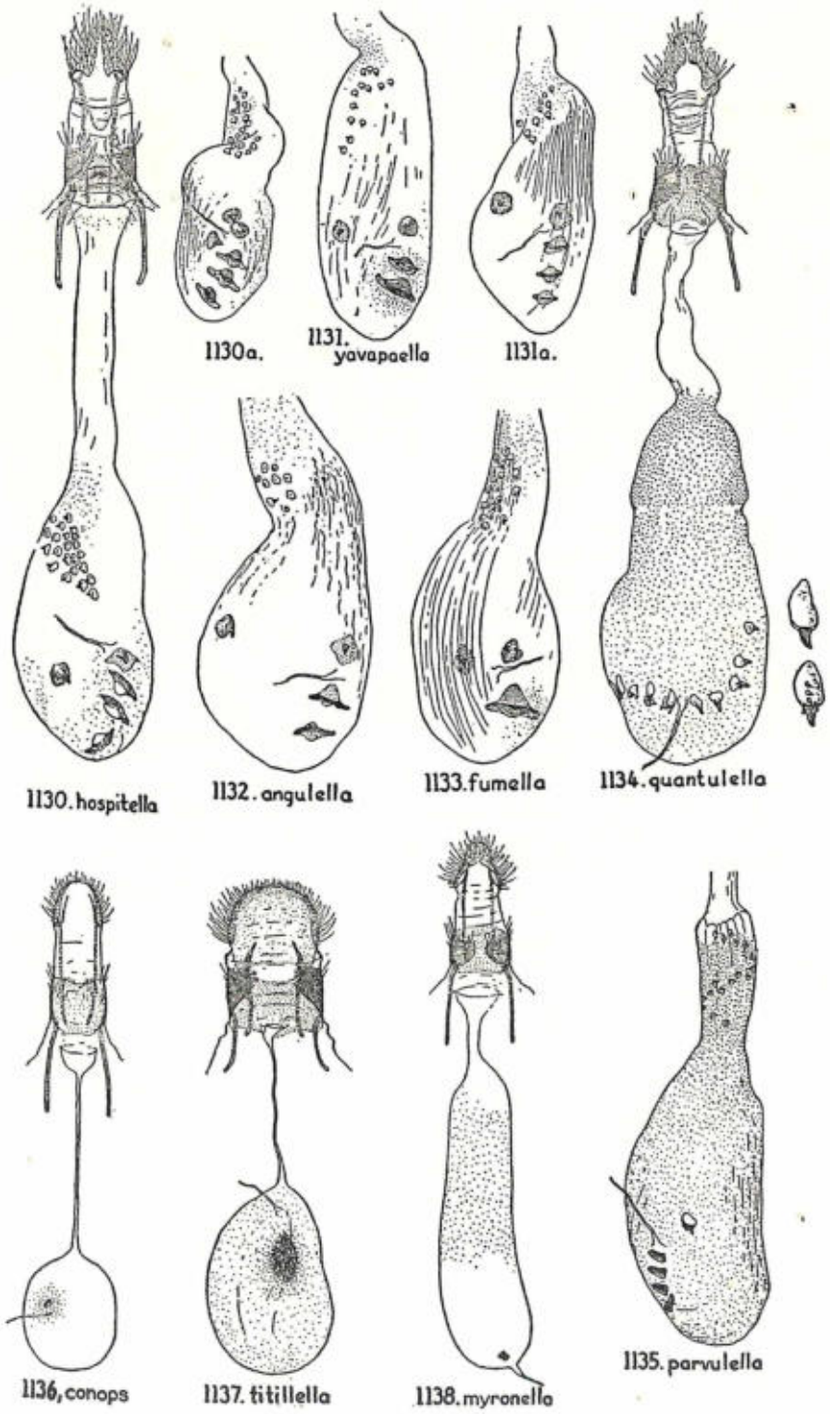
FIGURES 1121–1125.—FEMALE GENITALIA.

1121. *Ephestia cautella* (Walker).
1122. *Ephestia elutella* (Hübner).
1123. *Ephestia figulilella* Gregson.
1124. *Anagasta kühniella* (Zeller); 1124a, some variations in signa, enlarged.
1125. *Nicetiodes apianella* Schaus, paratype from type locality.

FIGURES 1126–1129.—FEMALE GENITALIA.

1126. [*Euzophera*] *came* Dyar, type; 1126a, dorsal view of eighth-segment collar.
1127. [*Moodna*] *formulella* Schaus, type.
1128. [*Euzophera*] *postflavida* Dyar; 1128a, enlargement of signum.
1129. [*Euzophera*] *rinmea* Dyar, type; 1129a, dorsal view of eighth-segment collar.





FIGURES 1130–1138.—FEMALE GENITALIA.

1130. *Eurythmia hospitella* (Zeller), figured from type; 1130a, bursa of a female from Texas, showing variation in number of signa.
1131. *Eurythmia hospitella yavapaella* Dyar, bursa of a female from Glenwood Springs, Colo.; 1131a, bursa of a female from San Diego, Calif.
1132. *Eurythmia angulella* Ely, bursa.
1133. *Eurythmia fumella* Ely, type, bursa.
1134. *Erelieva quantulella* (Hulst), specimen from Blanco County, Tex., showing to the side of bursa a couple of signa, greatly enlarged.
1135. *Erelieva parvulella* (Ely), bursa.
1136. *Rabiria conops* (Dyar), specimen from type locality.
1137. *Microphycita titillella* Dyar.
1138. *Cabnia myronella* Dyar.

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