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## *Anopina*, a New Genus of the Cnephasiini from the New World (Lepidoptera, Tortricidae)

BY NICHOLAS S. OBRAZTSOV<sup>1</sup>

For a group of species distributed in North, Central, and South America and usually treated as *Tortrix* Linné, *Eulia* Hübner, or *Cnephasia* Curtis, the late August Busck provided a separate genus, *Anopina*, the description of which he never published. This name has become known to the students of the Tortricidae in the United States National Museum, but only as written on labels. It was also mentioned in draft notes by Busck, always without any definitive diagnosis or description. The present author is satisfied to recognize the establishment of this new genus for expedience and gives its description in the present paper. The word *Anopina*, although apparently an arbitrary combination of letters, can nevertheless be treated as a Latin noun of feminine gender. This paper includes the descriptions of five new *Anopina* species, three of which have already been recognized as such by Busck and provided with his manuscript names. Also, 11 more species are transferred to this genus and reviewed in the present paper.

The author is very grateful to Dr. F. H. Rindge and Prof. A. B. Klots of the American Museum of Natural History, Dr. J. F. Gates Clarke of the United States National Museum, and Mr. J. D. Bradley of the British

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<sup>1</sup> Research Fellow, Department of Entomology, the American Museum of Natural History. The work for the present paper was done under the auspices of the National Science Foundation.

Museum (Natural History), for supplying materials in their charge and providing excellent facilities during his work on them.

### ANOPINA, NEW GENUS

Figures 1-9

*Sciaphila* (not Treitschke), WALSINGHAM, 1884, Trans. Ent. Soc. London, p. 124.

*Tortrix* (in part), FERNALD, "1902" [1903], Bull. U. S. Natl. Mus., no. 52, p. 484. KEARFOTT, 1908, Jour. New York Ent. Soc., vol. 16, p. 179. MEYRICK, 1912, in Wagner, Lepidopterorum catalogus, pt. 10, p. 27; 1913, in Wytzman, Genera insectorum, fasc. 149, p. 29. WALSINGHAM, 1914, Biologia Centrali-Americana, Lepidoptera Heterocera, vol. 4, pp. 285-288. BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of Boreal America, p. 177. McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 57. KLOTS, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 415.

*Phalonia* (in part), KEARFOTT, 1907, Bull. Amer. Mus. Nat. Hist., vol. 23, p. 161. KLOTS, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 417.

*Cnephasia* (in part), MEYRICK, 1912, in Wagner, Lepidopterorum catalogus, pt. 10, p. 45; 1913, in Wytzman, Genera insectorum, fasc. 149, p. 45; 1917, Trans. Ent. Soc. London, p. 11. BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of Boreal America, p. 178. McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 58. CLARKE, 1950, Catalogue of the type specimens of Microlepidoptera in the British Museum described by Edward Meyrick, vol. 1, p. 256.

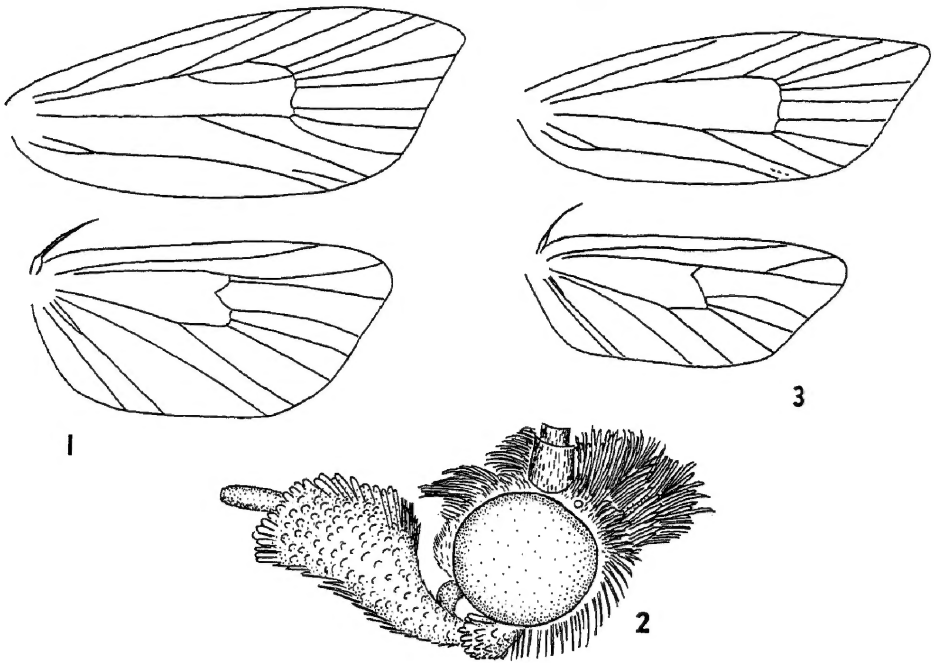
*Eulia* (in part), CLARKE, 1958, Catalogue of the type specimens of Microlepidoptera in the British Museum described by Edward Meyrick, vol. 3, p. 135.

TYPE SPECIES: *Tortrix triangulana* Kearfott, 1908.

Head roughly scaled. Antennae in male bidentate or serrate, long fasciculate-ciliated or simply ciliated; in female, simple or slightly serrate, equally ciliated or covered with sparse setae. Labial palpi porrected, slightly bent; second segment dilated by scales apically; terminal segment rather thin and long. Proboscis developed. Thorax with deciduous posterior crest. Fore femora of male generally with long hair pencils at base, usually hidden under coxae.

Forewings elongate, sometimes rather broad, slightly dilated externally; costa gently arched; apex rather acute; termen oblique, rather straight; tornus broadly rounded; dorsum slightly convex. No costal fold in male. Twelve veins, all separate; vein S straight or slightly bent at origin;  $R_1$  from behind middle of discal cell;  $R_2$  almost twice as near to  $R_3$  as to  $R_1$ ;  $R_3$  through  $M_1$  almost equidistant;  $R_4$  to costa,  $R_5$  to termen; upper internal vein of discal cell from between  $R_1$  and  $R_2$ , or missing;  $M_2$ ,  $M_3$ , and  $Cu_1$  almost equidistant, or the latter two veins slightly approximated;  $Cu_1$  from lower angle of discal cell;  $Cu_2$  from about two-thirds;  $A_1$  generally distinct only at tornus; basal fork of  $A_{2+3}$

about one-quarter as long as entire vein. Hind wings subtrapezoidal, as broad as forewings or a little narrower; costa very flatly arched; apex broadly rounded; termen flat or slightly concave; tornus broadly rounded; dorsum flat externally, convex basally. Eight veins; vein S almost straight; R and  $M_1$  approximated at origin and parallel along about one-third of their length, or stalked;  $M_2$  slightly bent downward basally;  $M_2$ ,  $M_3$ , and  $Cu_1$  variously remote from one another;  $Cu_1$  from lower angle of



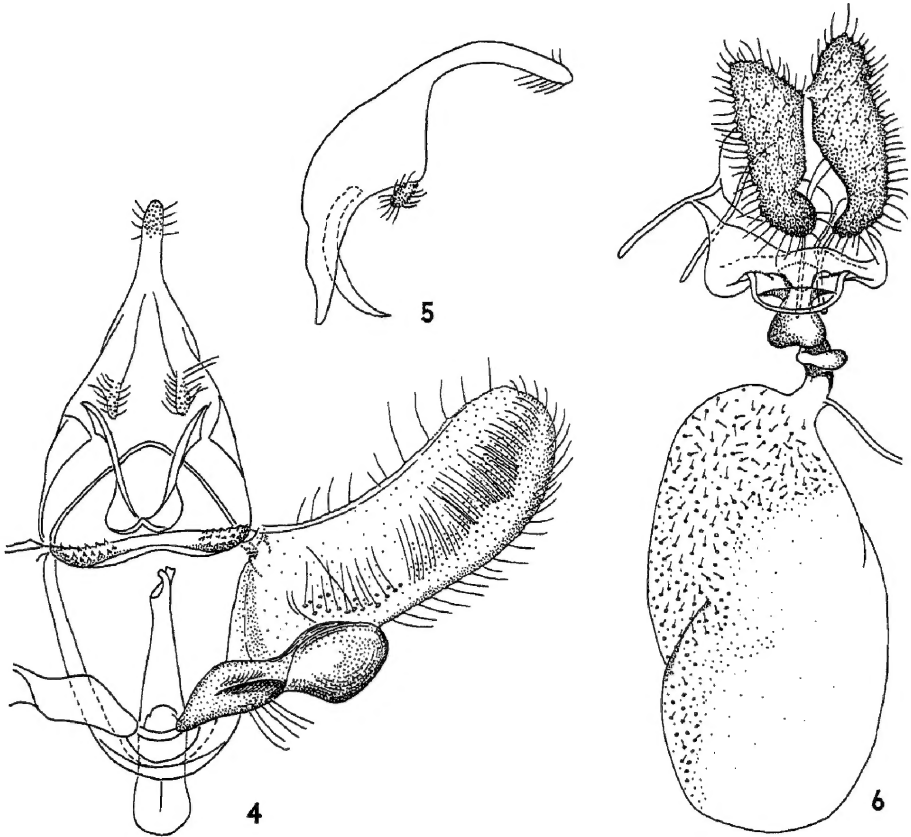
FIGS. 1, 2. *Anopina triangulana* (Kearfott), male. 1. Wing venation. 2. Head, lateral aspect.

FIG. 3. Wing venation of *Anopina incana* (Walsingham), male.

discal cell;  $Cu_2$  from three-quarters;  $A_1$ ,  $A_2$ , and  $A_3$  more or less distinct, the two latter veins sometimes very close to each other. Cubital vein smooth.

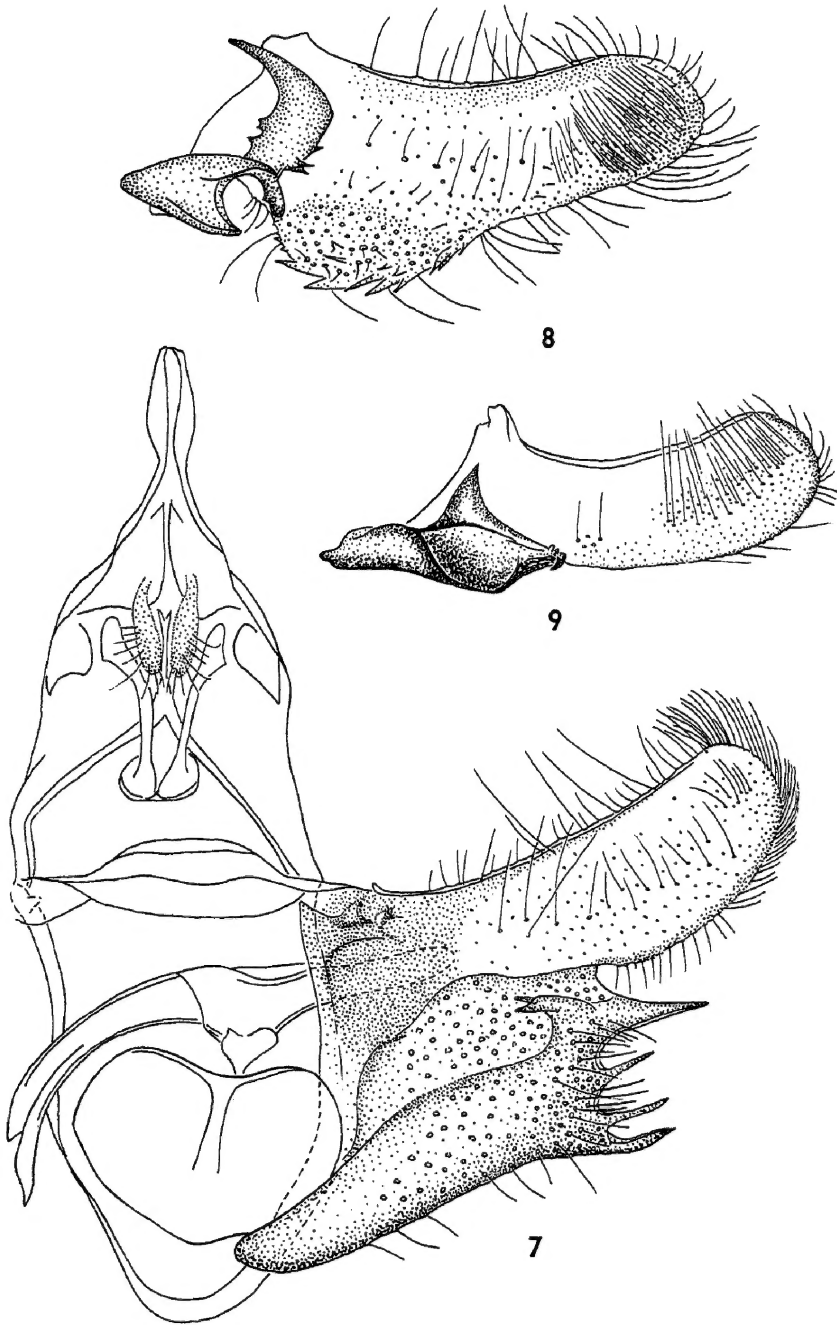
**MALE GENITALIA:** Tegumen moderately broad, with oblique shoulders; pedunculi dilated dorsally, more or less (sometimes very strongly) narrowed ventrally; saccus complete, rounded or flattened. Valvae weak, elongate, moderately and equally broad, widely rounded externally, occasionally somewhat curved upward; length larger than width; costa generally narrowly sclerotized; sacculus well developed, vari-

ously shaped, strongly sclerotized, as a rule, generally with more or less numerous acute teeth or other processes; upper basal angle of valva more or less produced; no pulvinus and processus basales. Uncus either rather narrow, tapering apicad, or somewhat spatulate with a narrow base, smooth or very sparsely haired; gnathos strong, with an acute or



FIGS. 4-6. Genitalia of *Anopina triangulana* (Kearfott). 4, 5. Male (slide No. 340-Obr.). 4. Caudal aspect of the genitalia. 5. Lateral aspect of the tegumen with uncus, socii, and gnathos. 6. Female genitalia (slide No. 103-Obr.).

spatulate middle process; socii weak, moderate, drooping, digitate or somewhat dilated. Fultura superior sclerotized, complete or composed of two separate lateral pieces, sometimes dilated, generally scobinate, at least laterally; dorsal surface of vallum penis occasionally with sclerotized plate. Fultura inferior more or less large, shell-shaped; caulis short, broadly enveloping aedoeagus. Aedoeagus strong, moderate or rather long, generally curved, either with acute, simple, or bifurcate tip, or



FIGS. 7-9. Male genitalia of *Anopina* species. 7. *Anopina undata* (Walsingham), holotype, caudal aspect. 8. *Anopina confusa*, new species, holotype, right valva. 9. *Anopina ednana* (Kearfott), specimen from Hampton, New Hampshire, right valva.

flatly ending distally; sometimes variously shaped processes in apical portion of aedoeagus; coecum penis either rather narrow, elongate, or stout, dilated, variously shaped; vesica with a cuneus of minute, coniform spines.

**FEMALE GENITALIA:** Papillae anales weak, elongate, generally somewhat dilated distally. Sinus vaginalis wide; sterigma more or less distinctly differentiated into two lamellae; lamella antevaginalis variously shaped, more or less sclerotized in middle portion, and joined to lamella postvaginalis by means of narrow, rather strong lateral strips or dilated, sometimes scobinate lateral lobes; lamella postvaginalis weakly sclerotized, often semimembranous, sometimes with transverse folds ("lobuli vaginales"). Antrum sclerotized, as a rule, sometimes fused with lamella antevaginalis, occasionally not differentiated. Ductus bursae coincident with cervix bursae, either short and broad, or rather long and narrow; no cestum. Corpus bursae elongate, more or less ovate, finely spinulate over a large surface, receiving ductus seminalis caudally; no separate signum.

**REMARKS:** The new genus differs from the remaining known Nearctic and Neotropical genera of the tribe Cnephasiini in having a peculiarly shaped sacculus of the valva. Even in cases in which the sacculus of *Anopina* species is not armed with various processes or teeth, its shape is distinct from that of the other genera in the tribe. In some instances, the serrate sacculus of this new genus could be compared to the similar structure in the genera *Aplastoceros* Diakonoff, *Rhomboceros* Meyrick, and some others. However, all of them are of Papuan origin, and, having the uncus haired on the ventral surface, they belong rather to the tribe Epitymbiini. Some of the present *Anopina* species were treated previously as members of the genus *Cnephasia* Curtis, but they differ from this latter genus in having the forewing vein  $R_1$  originating distinctly from behind the middle of the discal cell, and in the ciliated antennae. The uncus of *Anopina* is smooth, never spined as in *Cnephasia*. The female genitalia show also that there is no close relationship between these two genera. The papillae anales of *Anopina* are simple, and the sterigma and the antrum are much more complicated than in *Cnephasia*. Moreover, no separate signum is present in *Anopina*, and the entire surface of the corpus bursae is covered by fine, minute spines. The latter character has something in common with that in the genus *Eulia* Hübner, but in most other characters both genera are quite distinct. *Eulia* (cf. Obraztsov, 1955, pp. 157-158) has a split-shaped sinus vaginalis and no sterigma, and the male genitalia in this genus are completely unlike those of *Anopina*.

The specific modification of certain genitalic structures in *Anopina* is rather wide, but their basic characters remain constant. In the forewing

markings most of the species are very similar to one another and have a subtrapezoidal or triangular patch at the middle of the costa. Only *praecipua* Meyrick, *desmatana* Walsingham, *confusa*, new species, and *scintillans* Walsingham have this pattern scheme replaced by transverse fasciae, complete or broken. The wing markings of *Anopina* species cannot nevertheless be treated as a generic character, because there are many other Neotropical Tortricinae species with a similar pattern. The generic position of these latter species has not yet been properly verified, but a preliminary examination of some of them has shown that they definitely do not belong to *Anopina*.

*Anopina triangulana* (Kearfott), new combination

Figures 1, 2, 4-6, 10-14

*Tortrix triangulana* KEARFOTT, 1908, Jour. New York Ent. Soc., vol. 16, p. 179. MEYRICK, 1912, in Wagner, Lepidopterorum catalogus, pt. 10, p. 27; 1913, in Wytzman, Genera insectorum, fasc. 149, p. 29. BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of Boreal America, p. 177, no. 7371. McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 57, no. 7427. KLOTS, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 415.

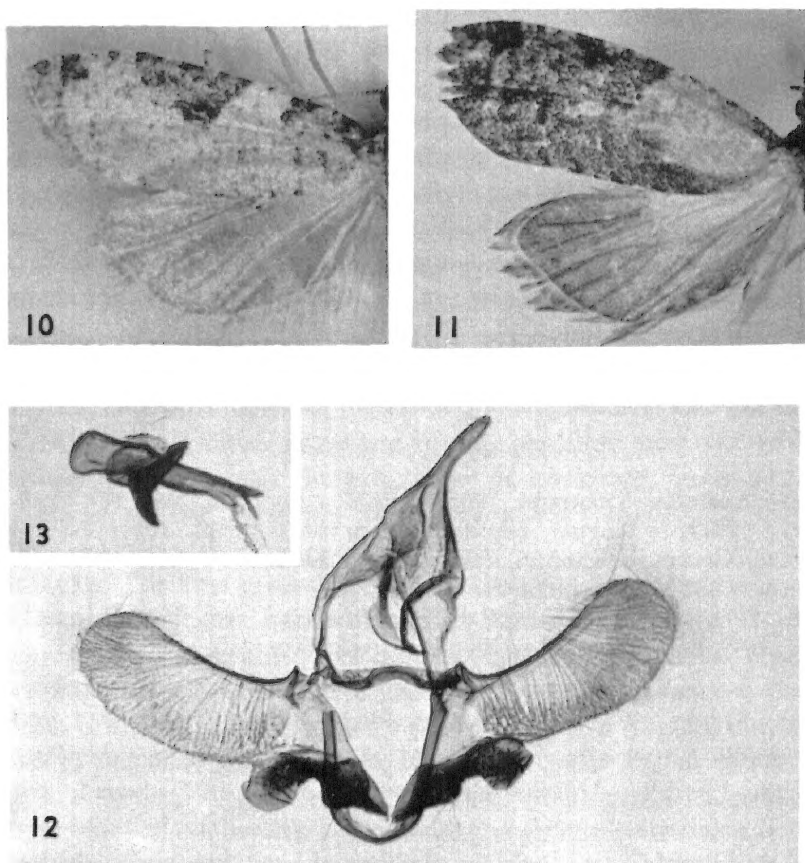
**MALE GENITALIA:** Uncus rather slender, slightly narrowed at base, and equally broad along its length. Fultura superior a complete bar, scobinate laterally. Valvae elongate, almost equally broad, curved, rounded externally; sacculus rather broad, geniculate in basal portion, narrowed at middle, and widely disciform-dilated externally. Aedoeagus rather straight, bifurcate apically; coecum penis dilated, somewhat irregularly rounded.

**FEMALE GENITALIA:** Sterigma well developed, differentiated into two lamellae; lateral parts of lamella postvaginalis slightly sclerotized, rounded cephalically and acute caudally; its middle portion semimembranous, with some transverse, slightly scobinate folds; lamella antevaginalis more strongly sclerotized, obtrapezoidal, joined to lamella postvaginalis by means of dark sclerotized strips—two long, S-shaped, external ones, and two much shorter, C-shaped, internal ones. Antrum a moderately long, blind, slightly sclerotized sac.

On the photograph of the female genitalia (fig. 14), the large, dark patches in the corpus bursae represent the fragments of an incompletely removed spermatophore.

**TYPE:** Lectotype, male, San Diego, California, July 31, 1907 (W. S. Wright); deposited in the United States National Museum.

**OTHER SPECIMENS EXAMINED:** *California:* One male ("pseudotype"),



FIGS. 10-13. *Anopina triangulana* (Kearfott). 10. Right wings of a male from San Diego, California, image reversed. 11. Left wings of a female from Morongo Valley, California. 12, 13. Male genitalia (slide prepared by A. Busck on January 24, 1926). 12. Caudal aspect of the genitalia. 13. Ventrolateral aspect of the aedeagus and the fulcrum inferior.

Santa Clara; deposited in the American Museum of Natural History. One female (genitalia on slide, prepared by A. Busck on December 2, 1925), San Bernardino, October 8-15; one male (genitalia on slide, prepared by A. Busck on January 24, 1926), Camp Baldy, San Bernardino Mountains, July 8-15; one male (genitalia on slide, prepared by A. Busck on December 1, 1925), Claremont (Mets); one male (genitalia on slide, prepared by A. Busck on October 19, 1931), Riverside, October 13, 1930 (C. M. Dammers); one male, San Diego, May 31, 1911 (W. S. Wright); the above five specimens are deposited in the United States National Museum. One female (genitalia on slide, No. 108-Obr.), Morongo Valley, May 11, 1937 (G. H. and J. L. Sperry); 17 males and



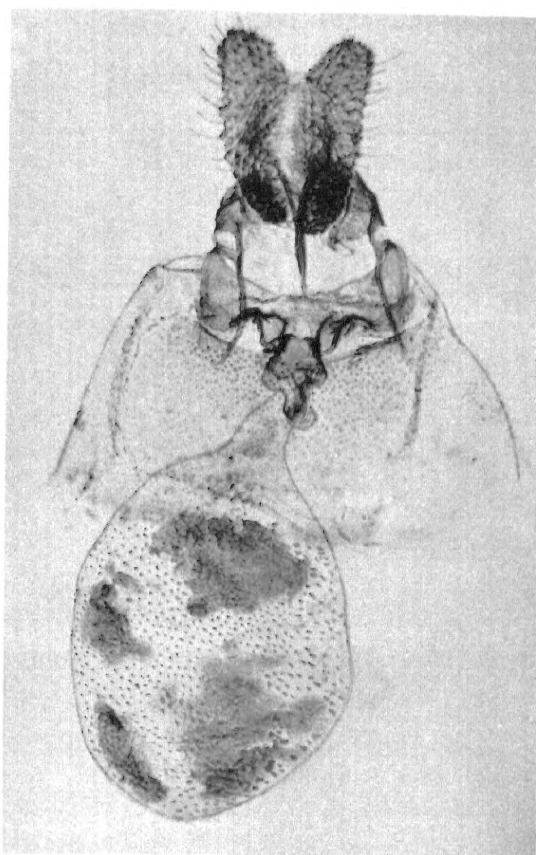


FIG. 14. Female genitalia of *Anopina triangulana* (Kearfott) (slide No. 108-Obr.).

one female (genitalia on slides, of a male No. 340-Obr., and the female No. 103-Obr.), San Diego, June 20, 1908; June 12, 1909; April 29, May 4, 19, 21, 25, 28, and 31, June 1, 18, and 29, July 24, 1911 (W. S. Wright); the above 19 specimens are deposited in the American Museum of Natural History. *Connecticut*: Two males (genitalia of one of them on slide, No. 3-Obr. 1/27, 1960), Putnam, June 22, 1934 (A. B. Klots); deposited in Klots collection.

**REMARKS:** In the original description of *triangulana*, Kearfott (1908) wrote: "Described from three males, one from San Francisco, two from San Diego, California, July 27-31, collected by W. S. Wright, and received through U. S. National Museum. Cotypes, Cat. No. 11,933 U.S.N.M. and my collection." In the collection of that museum there is only one specimen of *triangulana* under the above number. It has a red label reading: "Type. No. 11933. U.S.N.M.", but does not have any

label with the specific name. This latter is present only on the genitalic slide, written by A. Busck. Although the number corresponds, this specimen cannot be treated as belonging to the type lot, because the locality label reads "San Diego, Cal. 5.31.11 W. S. Wright," i.e., the specimen was taken in 1911, three years later than the date that the species was established. The present author had no other choice than to select some other specimen as the lectotype. He chose a specimen labeled "San Diego, Cal. 7-31-07 W. S. Wright." A red label of this specimen reads "Type. Collection of W. D. Kearfott." Both labels are printed; only the date is handwritten. A third label, in Kearfott's handwriting, reads "*Tortrix triangulana*. Cotype. Kearfott." As is seen from the above, all data of this specimen correspond to those given by Kearfott in the original description of the species, only the number being omitted. In the American Museum of Natural History there is one more specimen of *triangulana* with a Kearfott "cotype" label, but it does not belong to the type lot, being recorded from Santa Clara, California. Klots (1942) accurately referred to this specimen as a "pseudotype."

*Anopina ednana* (Kearfott), new combination

Figures 9, 15-20

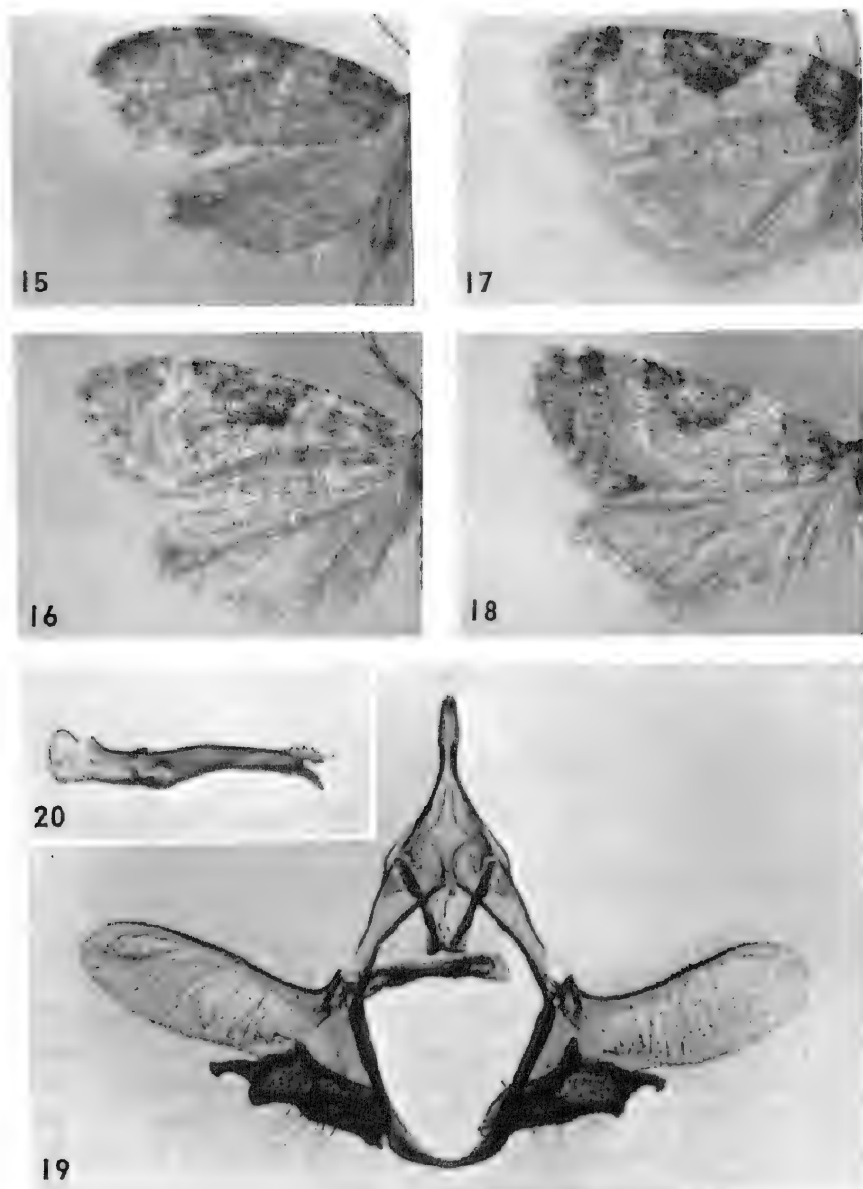
*Phalonia ednana*, KEARFOTT, 1907, Bull. Amer. Mus. Nat. Hist., vol. 23, p. 161. KLOTS, 1942, Bull. Amer. Mus. Nat. Hist., vol. 79, p. 417.

*Cnephasia ednana*, McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 58, no. 7462.

**MALE GENITALIA:** Uncus slightly fusiform, rather slender. Fultura superior a complete bar with dorsal scobination developed more dorsad. Valvae elongate, somewhat shorter than in *triangulana*, but of a rather similar shape; sacculus about half as long as valva, rather thick, with an upright process dorsad and two processes ventrolaterad, the upper one longer and hooked at tip. Aedoeagus rather slender, slightly undulate, bifurcate apicad; upper process of this fork serrate, the lower unguiform; coecum penis somewhat dilated.

**FEMALE GENITALIA:** Unknown.

**TYPES:** Lectotype, male, Black Mountains, North Carolina, "Halfway," June 29 (W. Beutenmuller); deposited in the American Museum of Natural History. Paratypes in the same museum: one male, Ottawa, Ontario, July 10, 1904 (C. H. Young); three males, Wyoming County, Pennsylvania, 2300 feet, June 17, 1906 (W. D. Kearfott); six males, Hazleton, Pennsylvania, July 12-20, 1896-1899 (W. G. Dietz). Paratypes in the United States National Museum: one male (genitalia on slide,



FIGS. 15-20. *Anopina ednana* (Kearfott), males. 15. Right wings of the lectotype, image reversed. 16-18. Left wings. 16. Specimen from Glen House, New Hampshire. 17, 18. Paratypes. 17. Specimen from Ottawa, Ontario, July 10, 1904. 18. Specimen from the same locality, July 4, 1906. 19, 20. Genitalia (slide prepared by A. Busck on September 24, 1925). 19. Caudal aspect of the genitalia. 20. Lateral aspect of the aedeagus.

prepared by A. Busck on September 24, 1925), Ottawa, Ontario, July 4, 1906 (C. H. Young); two males (genitalia on slide, prepared by A. Busck on February 18, 1924), Center Harbor, New Hampshire (H. G. Dyar; No. 18387); two males, Hazleton, Pennsylvania, July 22, 1895, and July 28, 1897 (W. G. Dietz); one male (genitalia on slide, prepared by A. Busck on February 17, 1923), Wyoming County, Pennsylvania, 2300 feet, June 17, 1906 (W. D. Kearfott).

OTHER SPECIMENS EXAMINED: *Nova Scotia*: Three males, White Point Beach, Queens County, July 30, 1953, July 28, 1954, and August 7, 1956 (J. McDunnough); deposited in the American Museum of Natural History. *New Hampshire*: Two males, Glen House, White Mountains, 1600 feet, August 1-7; two males, Bretton Woods, White Mountains, 1600 feet, July 8-15; deposited in the United States National Museum. Two males (genitalia and wings of one of them on slide, No. 101-Obr.), Hampton, August 19, 1906, and July 15, 1908 (S. A. Show); deposited in the American Museum of Natural History. *Connecticut*: Two males (genitalia of one on slide, No. 3-Obr. 1/27, 1960), Putnam, June 22, 1934 (A. B. Klots); deposited in Klots collection.

REMARKS: It is quite remarkable that the females of this species, rather widely distributed along the Atlantic coast, are not yet known.

### ***Anopina eleonora*, new species**

Figures 21-24

Antennae cinereous, dark brown in basal portion and with such annulation apically. Head grayish white to brownish gray, with scales darker speckled. Labial palpi chestnut-brown, with apex of second segment, its inner surface, and terminal segment white. Thorax cinereous, with scales more or less chestnut-brown speckled, and with a chestnut-brown anterior edge. Forewings with ground grayish white, more or less sprinkled and/or transversely striated with dark brown; basal quarter of forewing mottled with chestnut-brown and orange yellowish, outlined by a rather broad, blackish brown fascia, occasionally with blackish brown patches at costa, and with similarly colored streaks at dorsum; a large, trapezoidal, or triangular spot at middle of costa, concolorous with basal quarter of forewing, outlined by a rather broad, blackish brown line, and reaching to lower edge of discal cell, or overcrossing this edge; four to six minute, blackish brown dots at costa, within above-mentioned costal spot; occasionally a less-defined fascia, concolorous with this spot and, being its continuation, not reaching dorsum, or some dark brown lines instead of this fascia; some small, chestnut-brown patches at costa, occasionally

confluent and forming a common, wedge-shaped spot extending from costa before apex to upper portion of tornus, or reaching lower portion of tornus; often gray-brown dots at dorsum, connected by fine, transverse lines with patches at costa; cilia grayish white, with darker gray tips and basal line. Under surface of forewings brown, with whitish or yellowish spots at costa and dorsum, and with indistinct shadows of dark markings of upper surface. Length of forewing, 7–8 mm. Hind wings fuscous, faintly grayish sprinkled, more distinctly on under surface; cilia as in forewings.

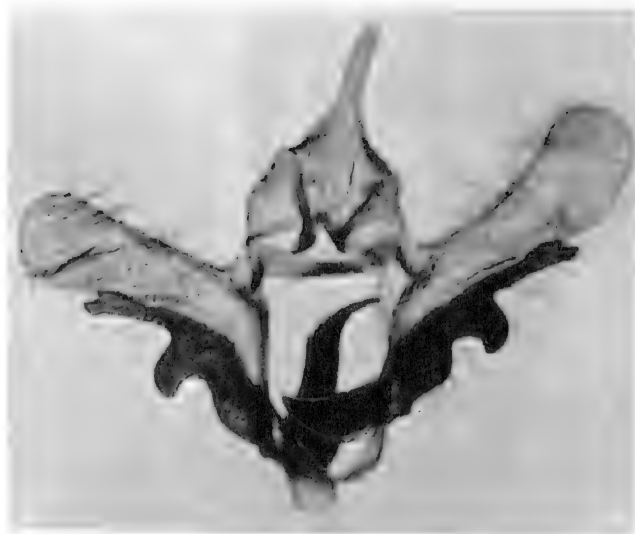
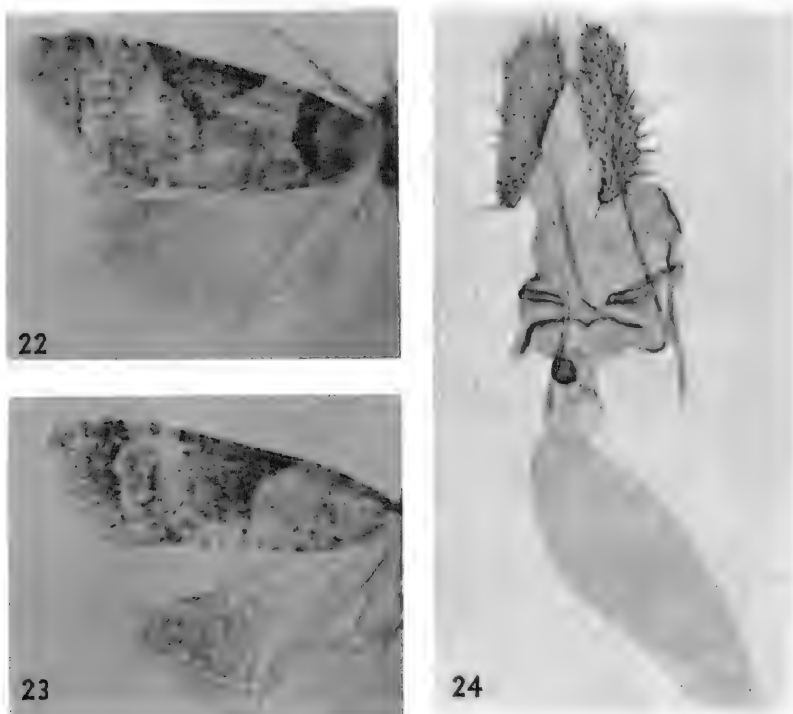


FIG. 21. Male genitalia of *Anopina eleonora*, new species, holotype.

**MALE GENITALIA:** Uncus moderately long, equally but not much dilated, rounded at tip. Valvae elongate, rather narrow, slightly and roundly dilated externally; saccus strong, reaching to end of two-thirds of length of valva, obtusely pointed at tip, and with a broad, median, ventral process preceded by an excavation. Fultura superior moderately broad. Aedeagus rather thick, slightly sinuate, with a long, tapering tip curved ventrally; coecum penis rounded.

**FEMALE GENITALIA:** Sterigma rather narrow, with linear sclerotization at cephalic margin, and a similar sclerotization making a loop on each side of caudal margin. Antrum weakly sclerotized, hammer-shaped, with a round, more strongly sclerotized lateral process in cephalic portion. Corpus bursae elongate, without any noticeable sculpture on surface.

**TYPES:** Holotype, male (genitalia on slide, No. 3018, J.F.G.C.), Alpine, Arizona, June 6, 1937; allotype, female (genitalia on slide, No. 3020, J.F.G.C.), Greer, Arizona, June 8, 1937; one male paratype (genitalia on slide, No. 3019, J.F.G.C.), Alpine, Arizona, June 14, 1937; three male paratypes (genitalia of one of them on slide, No. 3017, J.F.G.C.), Greer, Arizona, June 11 and 13, 1936; one male paratype,



FIGS. 22-24. *Anopina eleonora*, new species. 22. Left wings of the holotype, male. 23. Right wings of the allotype, female, image reversed. 24. Female genitalia, allotype.

White Mountains, Arizona, June 27, 1935; all specimens collected by G. H. and J. L. Sperry. One male paratype (genitalia on slide, prepared by A. Busck on April 3, 1929), Redington, Arizona. All type specimens are deposited in the United States National Museum.

**OTHER SPECIMEN EXAMINED:** One male (genitalia on slide, No. 1-Obr. 2/1, 1960), Cloudcroft, New Mexico, May 24, 1902; deposited in the United States National Museum.

**REMARKS:** This new species resembles somewhat the Mexican *parasema* Walsingham, but lacks the color richness of that species, being uniformly

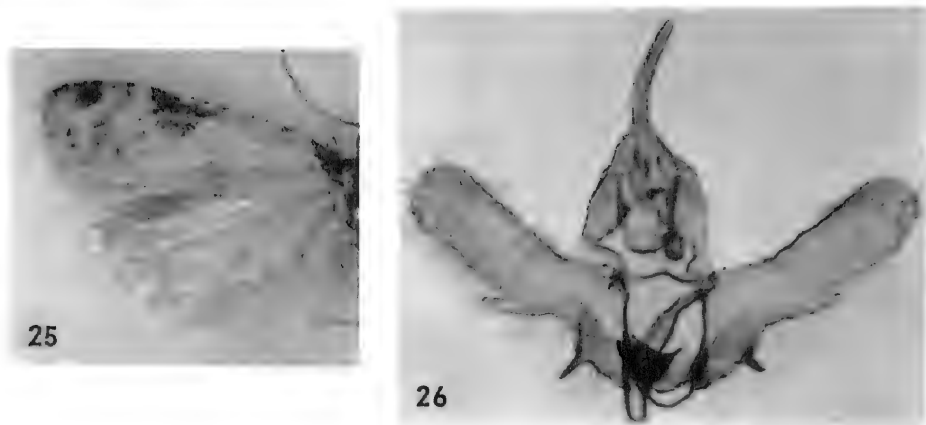
grayish white, with dark brown markings on the forewings. The external portion of the forewings is not deeply darkened, and the cilia are pale. The genitalia distinguish *leonora* from all known *Anopina* species.

***Anopina guerrerana*, new species**

Figures 25, 26

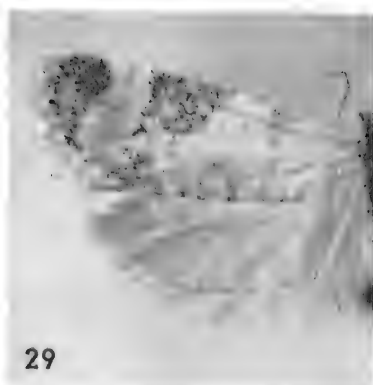
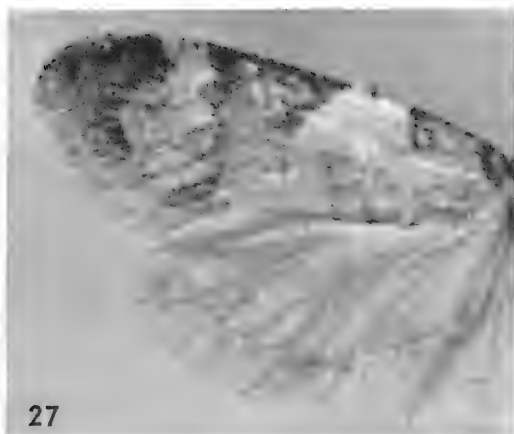
*Tortrix arizonana*, WALSINGHAM, 1914 (not Walsingham, 1884), *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 285 (misidentification).

MALE: Antennae brown. Head chestnut-brown; front white. Labial palpi chestnut-brown, with upper margin, inner side, and terminal



FIGS. 25, 26. *Anopina guerrerana*, new species, holotype, male. 25. Left wings. 26. Caudal aspect of the genitalia.

segment cream-white. Thorax chestnut-brown, with posterior edge grayish white; tegulae with cream-white tips. Forewings cream-white; extreme base chestnut-brown, outlined obliquely from costa to base of dorsum; a large, trapezoidal, chestnut-brown costal spot slightly behind middle of costa, narrowed dorsad, and reaching lower edge of discal cell; another smaller and rather triangular costal spot closely before wing apex; from between these two spots, a pale ochreous line from costa to tornus, slightly bent outward, and dark brown, irregularly mottled; some little, blackish brown patches at costa, termen, and dorsum; cilia pale ochreous, with a darker dividing line. Under surface of forewings brownish, with dark spots on costa and termen. Length of forewing, 7 mm. Hind wings cream-white, paler than forewings, slightly grayish externally; under surface sprinkled with dark gray.



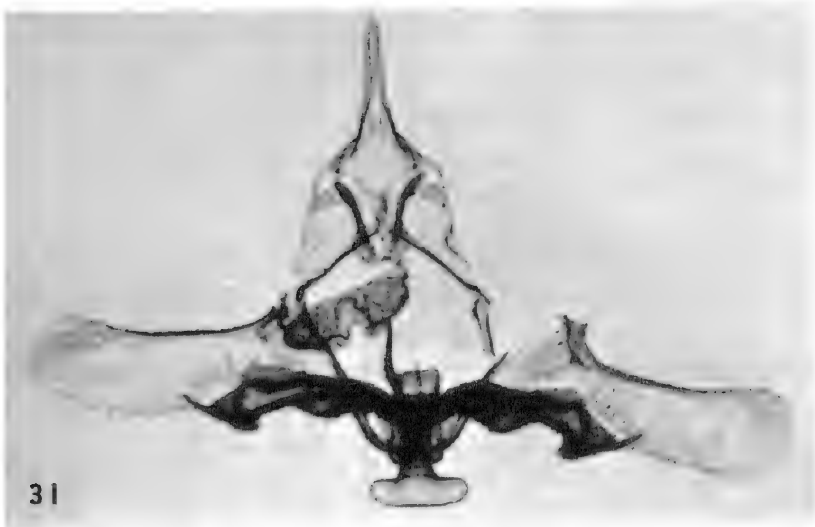
FIGS. 27-29. *Anopina arizonana* (Walsingham). 27. Left wings of a male from Silverton, Colorado, July 8-15. 28. Right wings of a male from Rocky Mountain National Park, Colorado, August 15, 1937, image reversed. 29. Left wings of a male from Waterton Lakes, Alberta, July 25, 1923.

FEMALE: Unknown.

MALE GENITALIA: Uncus slender, long, equally broad. Valvae elongate, rather narrow, equally broad along their length, rounded externally; sacculus slightly curved, dilated basad, narrow externad, with a blunt, free tip, reaching over half of length of valva, with an acute ventral thorn in basal third and slight serration externad from this thorn. Futura superior narrow, slightly arcuate. Aedoeagus moderately thick, abruptly narrowed in last quarter, tapering apically; coecum penis elongate, rounded.

TYPES: Holotype, male (genitalia on slide, prepared by A. Busck on April 1, 1929), Sierra de las Aguas Escondidas, Guerrero, Mexico,





FIGS. 30, 31. Male genitalia of *Anopina arizonana* (Walsingham). 30. Lectotype. 31. Specimen from Waterton Lakes, Alberta.

9500 feet, July (H. H. Smith); deposited in the United States National Museum. One male paratype (genitalia on slide, No. 6601), Omilteme, Guerrero, Mexico, 8000 feet, July (H. H. Smith); deposited in the British Museum (Natural History).

**REMARKS:** This is the species confused by Walsingham (1914) for *arizonana*, from which it differs in having the front of the head and the inner side of the labial palpi cream-white. The entire ground of the

forewings is, in *guerrerana*, more white than in *arizonana*, and the trapezoidal costal spot is considerably smaller. In view of some variation of external characters in *arizonana* and some other *Anopina* species, only the genitalia of the new species can be admitted as a good distinguishing feature. No other of the known *Anopina* species has such a basal thorn of the sacculus as *guerrerana*, and the entire shape of its sacculus is rather unique.

*Anopina arizonana* (Walsingham), new combination

Figures 27-33

*Sciaphila arizonana*, WALSINGHAM, 1884, Trans. Ent. Soc. London, p. 124, pl. 4, fig. 1.

*Tortrix arizonana*, FERNALD, "1902" [1903], Bull. U. S. Natl. Mus., no. 52, p. 484, no. 5416.

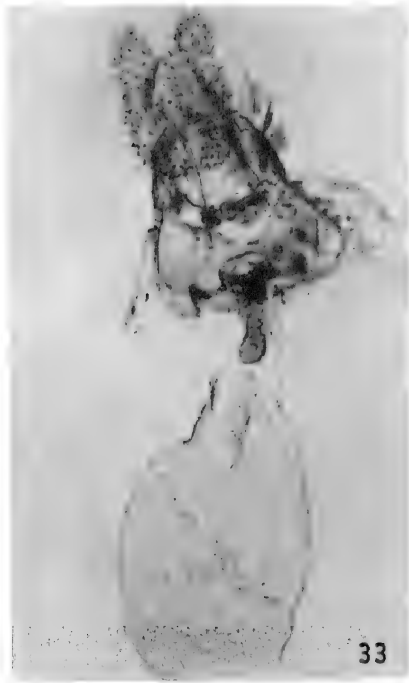
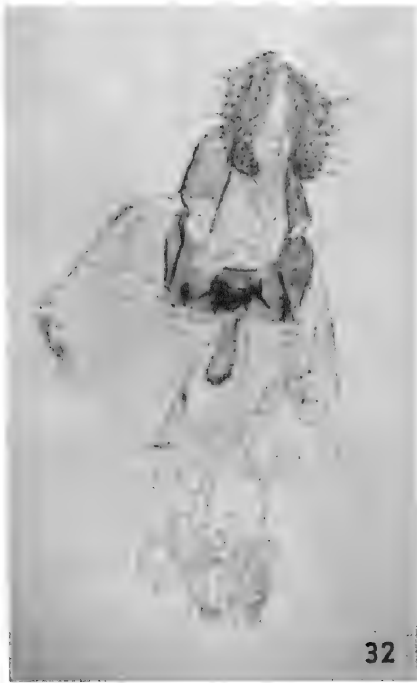
*Cnephasia arizonana*, MEYRICK, 1912, in Wagner, Lepidopterorum catalogus, pt. 10, p. 45; 1913, in Wytzman, Genera insectorum, fasc. 149, p. 45. BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of Boreal America, p. 178, no. 7404. McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 58, no. 7461.

**MALE GENITALIA:** Uncus rather long, equally tapering apically. Valvae elongate, equally broad, slightly curved upward, and rounded externally; sacculus strongly sclerotized, almost reaching half of length of valva, and ending with a narrow process. Fultura superior broad, strongly sclerotized, scobinate, narrowed at middle. Aedoeagus rather stout, with a long, acute, latero-apical process; coecum penis widely dilated, hammer-shaped.

**FEMALE GENITALIA:** Sterigma with a sclerotized plate around antrum; the part corresponding to a lamella antevaginalis more strongly sclerotized and connected with remaining sterigma by means of strong, narrow folds. Antrum elongate, rounded cephalically. Corpus bursae ovate, finely spined.

**TYPES:** Lectotype, male (genitalia on slide, No. 5357), Arizona (Morrison; No. 36576); one male paratype (genitalia on slide, No. 6602), the same data but No. 36577; both of them are deposited in the British Museum (Natural History).

**OTHER SPECIMENS EXAMINED:** One female (genitalia on slide, prepared by A. Busck on July 2, 1923), no data but "21475" (H. G. Dyar); deposited in the United States National Museum. *British Columbia:* One male (genitalia on slide, prepared by A. Busck on October 31, 1922), Kaslo. *Alberta:* One male and one female (genitalia on slides, prepared by A. Busck on May 29, 1925), Waterton Lakes, July 10 and 25, 1923



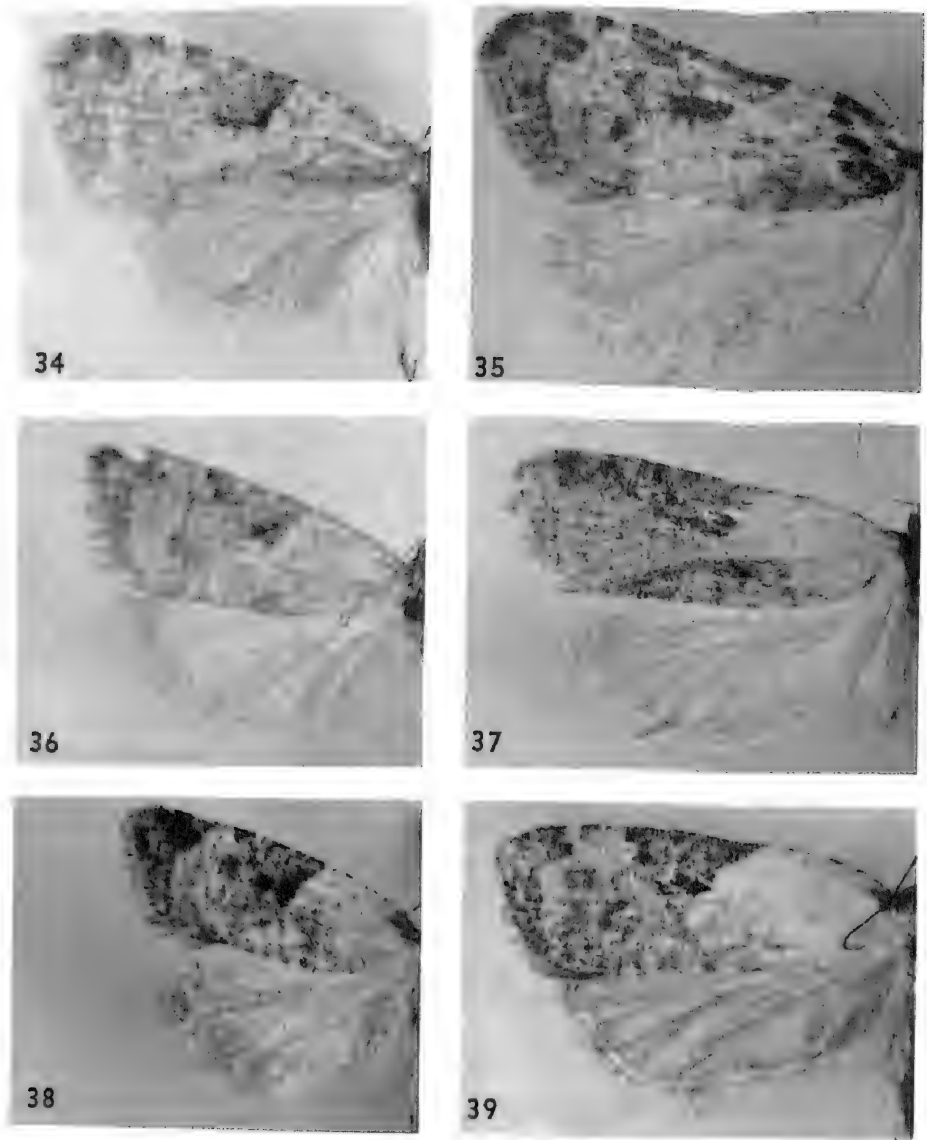
FIGS. 32, 33. Female genitalia of *Anopina arizonana* (Walsingham). 32. Specimen without data ("21475"). 33. Specimen from Rock Creek, Colorado.

(J. McDunnough). The above specimens from British Columbia and Alberta are deposited in the United States National Museum. *Colorado*: One female, Rocky Mountain National Park, August 15, 1937 (A. B. Klots); one male and three females (genitalia on slides, Nos. 588-Obr. and 589-Obr.), Rock Creek, vicinity of Colorado Springs, July 8–11, 1935, and August 15, 1937 (A. B. Klots); the above five specimens are deposited in the American Museum of Natural History. One male and one female (genitalia on slide, No. 7-Obr. 1/27, 1960), the last-mentioned locality, July 9, 1935, and August 1–4, 1939 (A. B. Klots); deposited in Klots collection. Two males and one female (genitalia on slides, prepared by A. Busck on April 10, 1929, September 20, 1920, and April 4, 1929), Silverton, July 8–23; deposited in the United States National Museum.

***Anopina silvertonana*, new species**

Figures 34–42

MALE: Antennae brown. Head and thorax grayish brown; tegulae chestnut-brown, with grayish brown tips. Labial palpi unicolorous with



FIGS. 34-39. *Anopina silvertonana*, new species. 34, 35. Left wings of two males. 34. Holotype. 35. Paratype, Silverton, Colorado. 36-39. Females. 36, 37. Left wings. 36. Allotype. 37. Paratype. 38. Right wings of a specimen from Warner Ranger Station, Utah, image reversed. 39. Left wings of a specimen from Riverside, California.

head, but darker from outer side; extreme tip of terminal segment white. Forewing ground from whitish ochreous to brownish ochreous; basal quarter of forewing more or less brownish, mottled with chestnut-brown;

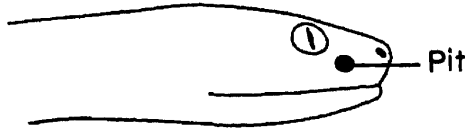


FIG. 14. Diagrammatic lateral view of head of pit viper, showing location of pit.

47. Dorsal scales pointed and imbricated; head large and body very stout. . . . .  
 . . . . . *Astrotia stokesi* (Large-headed Sea Snake)  
 Coastal waters.  
 Dorsal scales juxtaposed; habitus not as above. . . . . 48
48. Head long and flat; neck short; body strongly compressed laterally. . . . .  
 . . . . . *Pelamis platurus* (Pelagic Sea Snake; fig. 72)  
 Open sea as well as coastal waters but rarely entering tidal creeks;  
 common.  
 Head small; neck long and slender; body subcylindrical. . . . . 49
49. Ventrals more than 400. . . . .  
 . . . . . *Microcephalophis cantoris* (Cantor's Small-headed Sea Snake)  
 Coastal waters.  
 Ventrals fewer than 350. . . . .  
 . . . . . *Microcephalophis gracilis* (Russell's Small-headed Sea Snake)  
 Coastal waters.

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 1935. [Same title.] London, Taylor and Francis, vol. 2, Sauria, xiii + 440 pp., figs., pl. 1, map.  
 1943. [Same title.] London, Taylor and Francis, vol. 3, Serpentes, xii + 583 pp., figs., map.

large, dark brown, quadrate, or triangular spots at costa, not always distinct; short, dark brown streaks or dots at dorsum, not always present; some inconstant, fine, transverse, dark brown lines in light portions of forewing; cilia brownish ochreous, with darker basal and dividing lines. Under surface of forewing more or less dark brown, with a paler, sometimes almost white costa, with dark spots on it. Length of forewing, 8.0–9.5 mm. Hind wings fuscous, in some specimens dark-sprinkled, especially distinctly on under surface.

**FEMALE:** Similar to male, but with forewings in basal half usually paler, more purely ochreous or slightly pinkish dorsad; markings of external remainder of forewings more or less fused; costal spot generally indistinct.

**MALE GENITALIA:** Uncus moderate, slender, slightly rotundate-spatulate apically. Valvae rather broad, rotundate apically; sacculus arcuate, with a long basal process ending acutely at middle of valva; preapical portion of this process slightly swollen, with a long, acute, basal thorn. Fultura superior somewhat dilated. Aedoeagus slender, bifurcate apically; coecum penis small, hammer-shaped.

**FEMALE GENITALIA:** Sterigma with lateral lobes widely dilated and finely scobinate. Antrum sclerotized, T-shaped, with very long lateral processes (corresponding to the serifs of the horizontal line of the letter T), joined directly to corpus bursae. Surface of corpus bursae with scobination more strong and dense on some areas.

**TYPES:** Holotype, male (genitalia and wings on slides, prepared by A. Busck on July 10, 1923), Silverton, Colorado, July 24–31; allotype, female (genitalia on slide, prepared by A. Busck on April 6, 1929), the same data but July 8–15; two male and two female paratypes (genitalia of three specimens on slides, prepared by A. Busck on November 15, 1922, February 17, 1923, and September 22, 1925), the same data as the holotype. All the type specimens are deposited in the United States National Museum.

**OTHER SPECIMENS EXAMINED:** *California:* One female, Riverside, May 22, 1930 (Dammers); deposited in the United States National Museum. *Wyoming:* One male (genitalia on slide, No. 586-Obr.), Green River Lake, Wind River Range, between July 24 and August 2, 1935 (A. B. Klots); one male (genitalia on slide, No. 608-Obr.), Lower Green River Lake, Wind River Range, Sublette County, 8000 feet, August 6, 1959 (F., P., and B. Rindge); deposited in the American Museum of Natural History. *Colorado:* Two males (genitalia of one of them on slide, No. 584-Obr.), Capitol City, Hinsdale County, July 25–26, 1936 (A. B. Klots), deposited in the American Museum of Natural History; one male



**FIGS. 43, 44.** Male genitalia of *Anopina* species. 43. *Anopina praecisana* (Walsingham), holotype. 44. *Anopina parasema* (Walsingham), paratype.

(genitalia on slide, No. 1-Obr. 1/29, 1960), Rocky Mountain National Park, August 15, 1937 (A. B. Klots), deposited in Klots collection. *New Mexico*: Three males (genitalia of one of them on slide, No. 587-Obr.),

Little Tesuque Canyon, vicinity of Santa Fe, 9200 feet, between July 27 and August 10, 1932 (A. B. Klots), deposited in the American Museum of Natural History; one male, Pecos National Forest, 10,000 feet, August 24, 1916 (C. Heinrich), deposited in the United States National Museum; one male (genitalia on slide, No. 4-Obr. 1/29, 1960), Cowles, July 2, 1935 (A. B. Klots), deposited in Klots collection. *Utah*: Three males and one female (genitalia of two of these specimens on slides, Nos. 583-Obr. and 585-Obr.), Warner Ranger Station, La Sal Mountains, July 21, 1936 (A. B. Klots), deposited in the American Museum of Natural History.

REMARKS: This new species somewhat resembles *ednana*, but is larger and has dissimilar genitalia. The shapes of the sacculus and the aedoeagus in the male and the sterigma and the antrum in the female are quite distinct from those in all other known *Anopina* species.

*Anopina praecisana* (Walsingham), new combination

Figure 43

*Tortrix praecisana* WALSINGHAM, 1914, *Biologia Centrali-Americana*, *Lepidoptera Heterocera*, vol. 4, p. 285, pl. 8, fig. 26.

MALE GENITALIA: Uncus spatulate. Valvae elongate, distinctly dilated externad; sacculus rather broad, longer than half of valva, bearing a long, serrate, dorsal process before serrate tip. Fultura superior a complete bar. Aedoeagus robust, with an angulate dorsal process distally; coecum penis narrower than remaining portion of aedoeagus, directed downward; vallum penis with a subquadrate, sclerotized, dorsal plate.

FEMALE: Unknown.

TYPE: Holotype, male (genitalia on slide, No. 4774), Sierra de las Aguas Escondidas, Guerrero, Mexico, 9500 feet, July (H. H. Smith); deposited in the British Museum (Natural History).

REMARKS: The holotype is the only known specimen of *praecisana*.

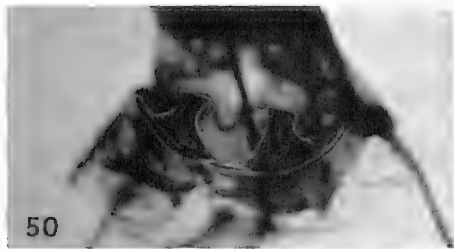
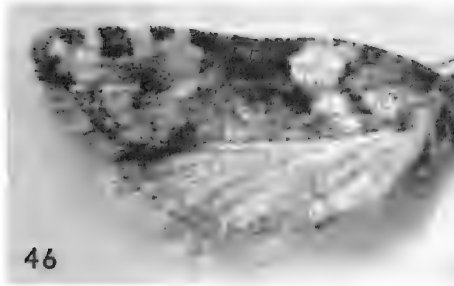
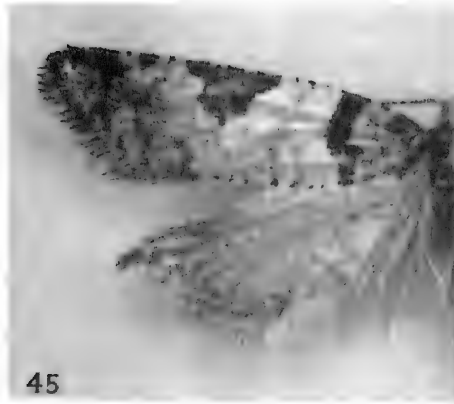
*Anopina parasema* (Walsingham), new combination

Figures 44-50

*Tortrix parasema* WALSINGHAM, 1914, *Biologia Centrali-Americana*, *Lepidoptera Heterocera*, vol. 4, p. 285.

MALE GENITALIA: Uncus elongate-spatulate, dilated apically. Valvae elongate, subrectangular, with external margin rather straight; sacculus rather narrow, reaching slightly over middle of valva, with two dorsal



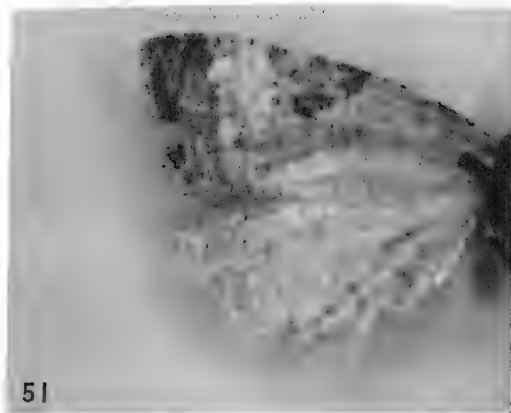


FIGS. 45-50. *Anopina parasema* (Walsingham). 45. Right wings of the male, lectotype, image reversed. 46. Left wings of the female, lectoallotype. 47, 48. Male genitalia, lectotype. 47. Caudal aspect of the genitalia. 48. Lateral aspect of the aedoeagus. 49, 50. Female genitalia, lectoallotype. 49. Ventral view. 50. Detail of the ostium bursae.

spines before acute tip. Fultura superior somewhat dilated laterally and at middle. Aedoeagus slightly undulate in apical half, with a moderate apical process; coecum penis curved downward.

**FEMALE GENITALIA:** Sterigma with caudolateral lobes subrectangular, dilated basad. Antrum weak, rather wide. Corpus bursae elongate, scobinate in cephalic portion.

**TYPES:** Lectotype, male (genitalia on slide, No. 5651), Totonicapam, Guatemala, 8500–10,500 feet, August (G. C. Champion; No. 66601); lectoallotype, female (genitalia on slide, No. 5652), the same data (No.



FIGS. 51, 52. *Anopina undata* (Walsingham), male paratype. 51. Left wings. 52. Caudal aspect of the genitalia.

66602); both of the above types are deposited in the British Museum (Natural History). One male paratype (genitalia on slide, prepared by A. Busck on October 5, 1929), the same data (No. 66605); deposited in the United States National Museum.

**REMARKS:** The genitalia of the lectotype have the valvae broken, but

their remaining parts are quite recognizable. In the photograph, the aedoeagus of the lectotype is figured together with the sclerotized parts of the vallum penis. These parts and the valvae are distinctly seen on the photograph of the genitalia of the male paratype, in which the aedoeagus was lost in the process of preparation, and drawn schematically by Busck on the label of the slide.

*Anopina undata* (Walsingham), new combination

Figures 7, 51, 52

*Tortrix undata* WALSINGHAM, 1914, *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 286.

**MALE GENITALIA:** Uncus spatulate. Valvae with a rather narrow cucullus and a widely dilated basal portion; sacculus broad, with strong, long spines distally. Fultura superior a complete, rather broad bar, slightly arched at middle. Aedoeagus long, curved, tapering apically; coecum penis elongate.

**FEMALE:** Unknown.

**TYPES:** Holotype, male (genitalia on slide, prepared by A. Busck on October 14, 1929), Popocatepetl Park, Mexico, Mexico, 800–1000 feet, June–July, 1906 (W. Schaus; No. 6043); deposited in the United States National Museum. One male paratype (genitalia on slide, No. 5650), the same data (No. 33948); deposited in the British Museum (Natural History).

*Anopina orinoma* (Walsingham), new combination

Figures 53, 55

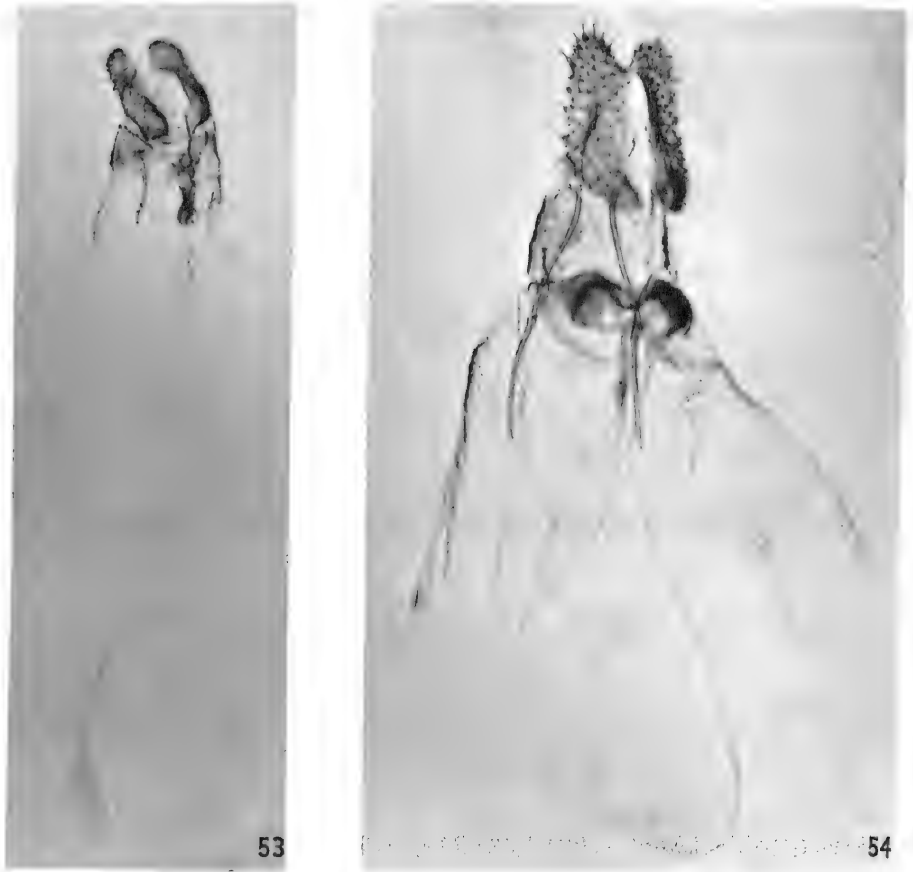
*Tortrix orinoma* WALSINGHAM, 1914, *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 287, pl. 8, fig. 27.

**MALE:** Unknown.

**FEMALE GENITALIA:** Sterigma with two swollen, scobinate plates, one on each side of ostium bursae; ostium itself covered by a round, semimembranous plate. Antrum not differentiated; ductus bursae and cervix bursae forming a common, rather long tube.

**TYPE:** Holotype, female (genitalia on slide, No. 4724), Omilteme, Guerrero, Mexico, 8000 feet, July (H. H. Smith; No. 66598); deposited in the British Museum (Natural History).

**REMARKS:** Until the male of *orinoma* is known, the systematic position of this species is somewhat doubtful.



FIGS. 53, 54. Female genitalia of *Anopina* species. 53. *Anopina orinoma* (Walsingham), holotype. 54. *Anopina desmatana* (Walsingham), holotype.

*Anopina desmatana* (Walsingham), new combination

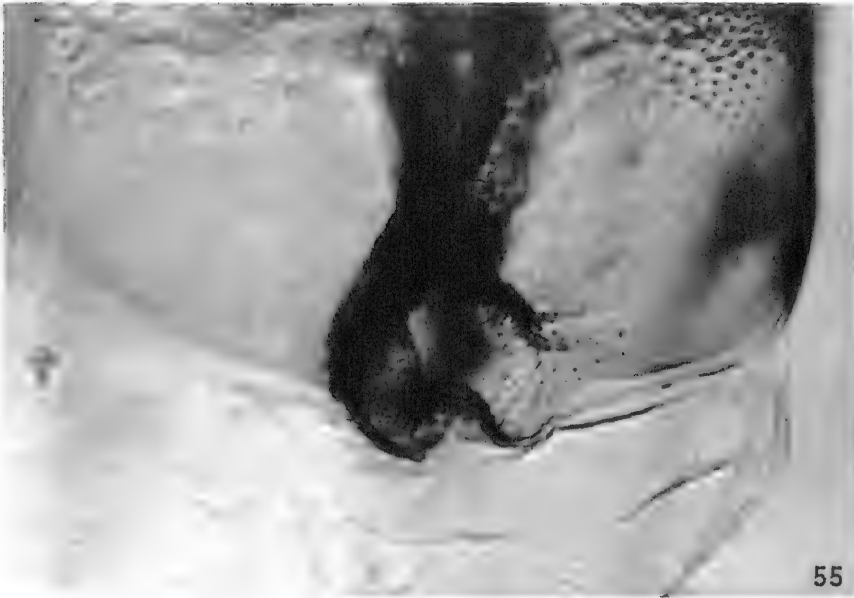
Figures 54, 56

*Tortrix desmatana* WALSINGHAM, 1914, *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 288, pl. 8, fig. 28.

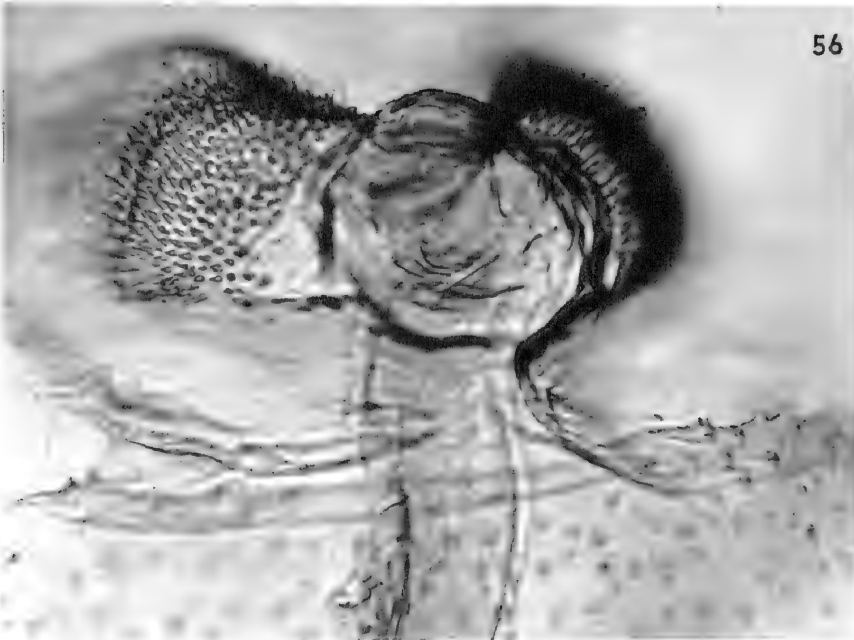
MALE: Unknown.

FEMALE GENITALIA: Sterigma composed of two swollen, finely tuberculate, lateral plates somewhat resembling those in *orinoma* Walsingham. Antrum tubular, strongly sclerotized, roundly dilated cephalically and caudally. Cervix bursae very long.

TYPE: Holotype, female (genitalia on slide, No. 4720), Amula, Guerrero, Mexico, 6000 feet, August (H. H. Smith; No. 66525); deposited in



55



56

FIGS. 55, 56. Details of ostium bursae. 55. *Anopina orinoma* (Walsingham), holotype. 56. *Anopina desmatana* (Walsingham), holotype.

the British Museum (Natural History).

REMARKS: Some likeness of the sterigma of this species to that of *orinoma* permits a supposition of relationship between these two species, the systematic position of which can only be verified through the examination of males, not yet known in either *desmatana* or *orinoma*.

**Anopina confusa**, new species

Figures 8, 57, 58

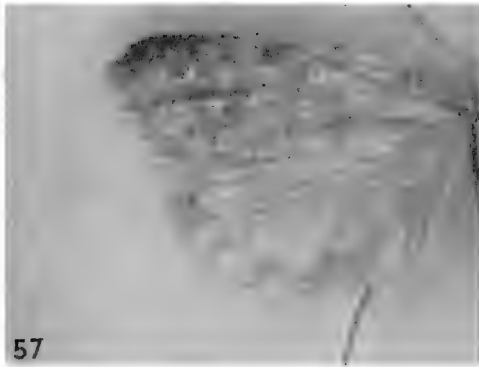
*Tortrix scintillans* (in part), WALSHINGHAM, 1914, *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 286.

MALE: Antennae pale ochreous; scapus slightly speckled with brown. Head pale ochreous. Labial palpi paler than head, cream-white; outer side of second segment and basal half of terminal segment strongly speckled with brown. Thorax ochreous, somewhat darker than head, mixed with brownish, especially at anterior edge. Forewings with a white, silky-shining ground; base of forewing and eight transverse, rather broad fasciae, more or less distinctly separated from one another, brownish ochreous; these fasciae originating from blackish, occasionally rather dilated costal patches, and, especially the fasciae in external portion of wing, sprinkled with blackish brown scales; a similar sprinkling in interspaces of preapical fasciae; some short, slightly oblique, grayish streaks at dorsum; terminal line indicated by blackish scales; cilia brownish ochreous, with white basal line. Under surface of forewings brown, with dark spots and whitish interspaces between them at costa; wing base and three transverse fasciae on disc whitish. Length of forewing, 7 mm. Hind wings shining white, with some grayish speckling along margins and on under surface; cilia slightly cream-white.

FEMALE: Unknown.

MALE GENITALIA: Uncus elongate trapezoidal, strongly narrowed at base. Valvae rather broad, somewhat curved upward; basal portion of lower margin strongly convex, serrate; sacculus heavily sclerotized, complicated, its lower portion broad, abruptly pointed; upper portion of sacculus rather narrow, strongly arched, bearing a somewhat less sclerotized, crescent process dilated and spinose basally, and narrowly tapering apically. Fultura superior broad, with upper margin more strongly sclerotized. Aedoeagus curved, rather thick; coecum penis rounded.

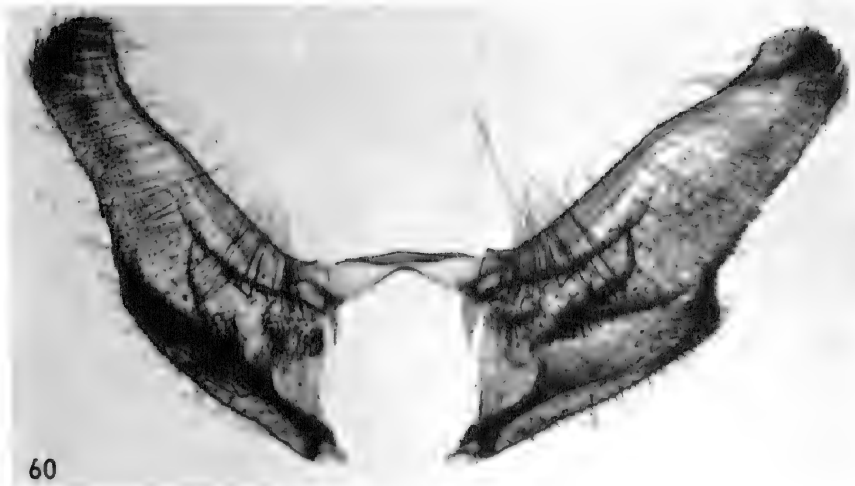
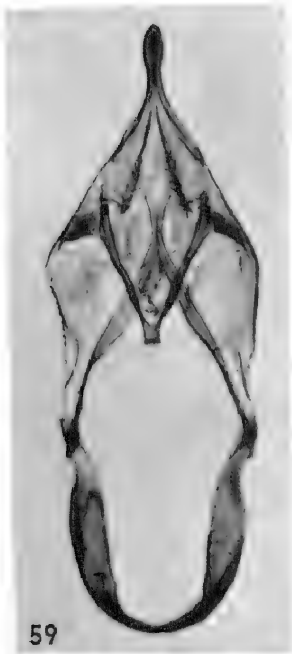
TYPE: Holotype, male (genitalia on slide, prepared by A. Busck on October 11, 1929), Sierra de las Aguas Escondidas, Guerrero, Mexico, 9500 feet, July (H. H. Smith; No. 66609); deposited in the United States National Museum.



FIGS. 57, 58. *Anopina confusa*, new species, holotype, male. 57. Left wings. 58. Caudal aspect of the genitalia.

REMARKS: Walsingham (1914) treated the above specimen as a paratype of his *scintillans*. He described this specimen as "a paler variation" of that species, with "the markings much less conspicuous." Nothing can be added to these external distinguishing features of *confusa* and *scintillans*, and it is difficult to separate these two species without dissection.

The genitalia of both are so distinct that there is no doubt that they belong to separate species. Especially noticeable is the complicated,



FIGS. 59-62. Male genitalia of *Anopina scintillans* (Walsingham), holotyp  
 59. Vinculum with joined parts. 60. Valvae and fultura superior. 61. Later  
 aspect of the aedeagus. 62. Fultura inferior.



strongly sclerotized sacculus of *confusa*. In *scintillans* the sacculus is simple, not separated from the valva.

*Anopina scintillans* (Walsingham), new combination

Figures 59–62

*Tortrix scintillans* WALSINGHAM, 1914, *Biologia Centrali-Americana, Lepidoptera Heterocera*, vol. 4, p. 286.

**MALE GENITALIA:** Uncus rather short, spatulate. Valvae elongate, dilated in basal portion; sacculus broad, simple. Fultura superior a complete bar, slightly narrowed at middle. Aedoeagus strongly curved, slightly tapering apically; coecum penis rounded cephalically, thicker than remaining portion of aedoeagus.

**FEMALE:** Unknown.

**TYPE:** Holotype, male (genitalia on slide, No. 5338), Sierra de las Aguas Escondidas, Guerrero, Mexico, 9500 feet, July (H. H. Smith; No. 66608); deposited in the British Museum (Natural History).

**REMARKS:** Walsingham (1914) described this species on the basis of two male specimens. One of them, which he treated as a pale variation of *scintillans*, has appeared to be a separate species and is described in this paper as *Anopina confusa*, new species.

*Anopina praecipua* (Meyrick), new combination

*Cnephasia praecipua* MEYRICK, 1917, *Trans. Ent. Soc. London*, p. 11. CLARKE, 1955, *Catalogue of the type specimens of Microlepidoptera in the British Museum described by Edward Meyrick*, vol. 1, p. 256.

*Eulia praecipua*, CLARKE, 1958, *Catalogue of the type specimens of Microlepidoptera in the British Museum described by Edward Meyrick*, vol. 3, p. 135, pl. 67, figs. 4–4b.

**MALE GENITALIA:** Uncus slender, tapering apicad. Valvae elongate; sacculus simple, broad, with a narrow, pointed tip. Fultura superior a complete bar with an acute middle point. Aedoeagus rather slender, curved; coecum penis elongate, somewhat dilated, rounded cephalically; cuneus composed of minute, coniform thorns.

**FEMALE:** Unknown.

**TYPE:** Holotype, male (genitalia on slide, No. 6355, J.F.G.C.), San Antonio, Colombia, 5800 feet, November, 1907; deposited in the British Museum (Natural History).

**REMARKS:** The holotype of *praecipua* and its genitalia are figured by Clarke (1958).



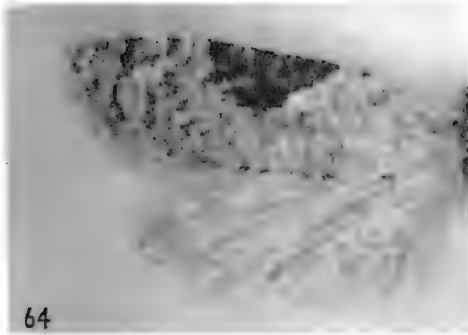
FIG. 63. Male genitalia of *Anopina ainslieana*, new species, holotype.

***Anopina ainslieana***, new species

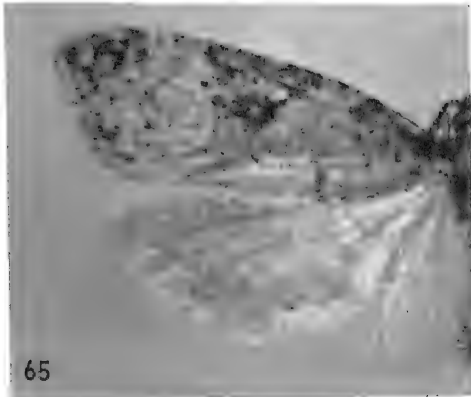
Figures 63–66

Antennae ochreous to brown, with darker annulation. Head brownish ochreous, rather pale. Labial palpi brown, mottled with ochreous or orange-yellow; their inner surface white. Thorax pale brownish ochreous or grayish white to rather dark brown, mottled with ochreous; tegulae darker basally. Forewings with ground brownish ochreous, suffused with dark brown and orange-yellow, or with a similar, more or less distinct striation; wing base indistinctly separated by a brown line, or not separated at all; a trapezoidal, chestnut-brown costal spot extending slightly beyond middle of costa, including three to four blackish brown costal dots; before and behind the above costal spot, some blackish brown dashes and patches at costa, some of them giving origin to fine, undulate, chestnut-brown, transverse lines; some indistinct, minute, chestnut-brown streaks at dorsum; cilia ochreous, with chestnut-brown basal line and a grayish line before tips. Under surface brown, darker externally, with chestnut-brown patches and yellowish interspaces at costa. Length of forewing, 5.5–7.0 mm. Hind wings fuscous, dark sprinkled; cilia whitish ochreous, with lines paler than those on forewings.

**MALE GENITALIA:** Uncus moderately long, rather narrow. Valvae elongate, almost equally broad along their length, slightly upcurved, rounded externally; sacculus short, sclerotized, somewhat infundibuliform, with two apical points, the lower a little longer. Fultura superior narrow at middle, with dilated, obtuse, somewhat rotundate-coniform, scobinate thickening at each side. Aedoeagus thicker in cephalic por-



64



65

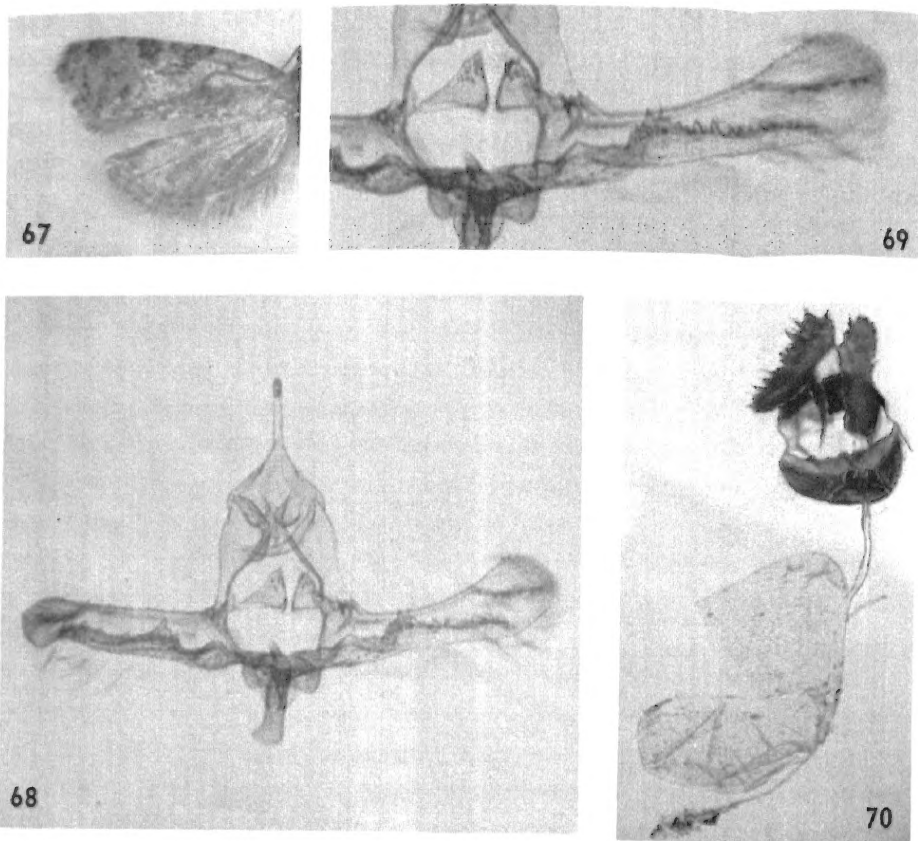


66

**FIGS. 64-66.** *Anopina ainslieana*, new species. 64, 65. Left wings of two males. 64. Holotype. 65. Specimen from Fountain Valley School, Colorado. 66. Female genitalia (slide No. 591-Obr.).

tion, narrower and downcurved in apical third; coecum penis rather long, rounded cephalically.

**FEMALE GENITALIA:** Sterigma moderately broad, cephalically with rather large, rotundate lamella antevaginalis; caudally with two ovate, finely scobinate elevations, one on each side. Antrum sclerotized, T-shaped, slightly dilated at middle. Corpus bursae elongate-ovate, very finely punctate; ductus seminalis joining corpus bursae.



FIGS. 67-70. *Anopina incana* (Walsingham). 67. Left wings of a female paratype. 68-69. Male genitalia, paratype. 68. Caudal aspect of the genitalia. 69. Details of the right valva and fultura superior. 70. Female genitalia, lectotype.

**TYPE:** Holotype, male (genitalia on slide, prepared by A. Busck on April 5, 1929), Mesilla, New Mexico (C. N. Ainslie); deposited in the United States National Museum.

**OTHER SPECIMENS EXAMINED:** Two males and one female (genitalia of two specimens on slides, Nos. 590-Obr. and 591-Obr.), Fountain Valley School, Colorado Springs, Colorado, June 27, and July 7, 1935 (A. B. Klots), deposited in the American Museum of Natural History; one male and one female, the same data but July 12-19, 1932, and July 7, 1935, deposited in Klots collection.

**REMARKS:** This species would hardly be distinguished externally from *ednana*, if not for the base of the forewings which is in *ainslieana* generally dark and distinctly separated. The male genitalia of both species are

quite different in the shapes of all structures. The female genitalia of *ednana* are not known.

*Anopina incana* (Walsingham), new combination

Figures 6, 67-71

*Tortrix incana* WALSINGHAM, 1914, *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 285.

**MALE GENITALIA:** Uncus long, slender, equally broad. Valvae elongate, rather narrow, slightly dilated and rounded externally; sacculus long, reaching over half of length of valva, thorned in external portion; processus basales subtriangular, spinose at tips. Fultura superior narrow, semimembranous, slightly arcuate. Aedoeagus rather stout, abruptly tapering apically; coecum penis small, slightly expanded ventrally.

**FEMALE GENITALIA:** Sterigma broad, with a rotundate plate over antrum; on each side of this plate, a rather large, haired papilla on a thickened base. Antrum membranous. Corpus bursae rotundate, laterally with an area of minute spines; ductus seminalis joining corpus bursae caudolaterally.

**TYPES:** Lectotype, female (genitalia on slide, No. 5358), Amula, Guerrero, Mexico, 6000 feet, August (H. H. Smith; No. 66452); lectoallotype, male (without abdomen), the same data (No. 66451); both of these types are deposited in the British Museum (Natural History). One male paratype (genitalia on slide, No. 1-Obr., 1/15, 1960) and one female paratype (genitalia on slide, No. 2-Obr., 1/15, 1960), the same data (Nos. 66454 and 66453, correspondingly); deposited in the United States National Museum.

**OTHER SPECIMEN EXAMINED:** One male (genitalia on slide, prepared by A. Busck on October 17, 1929), Mexico City, Mexico, April 19 (No. 5736); deposited in the United States National Museum.

**REMARKS:** As the types of *incana*, Walsingham indicated a male and a female. Unfortunately, the male lacks the abdomen. In the female, the genitalia appeared to be so firmly glued to the surrounding tissues that it was impossible to make a good genitalic slide. This slide was compared to the genitalic slide of a female paratype of *incana*, and, insofar as the condition of the genitalia of the type permitted, both slides were found as belonging to one species. The drawing of the female genitalia of *incana* in the present paper was made from the above-mentioned paratype. The figure of the male genitalia represents those of a male paratype. Both types and paratypes originate from the same locality.

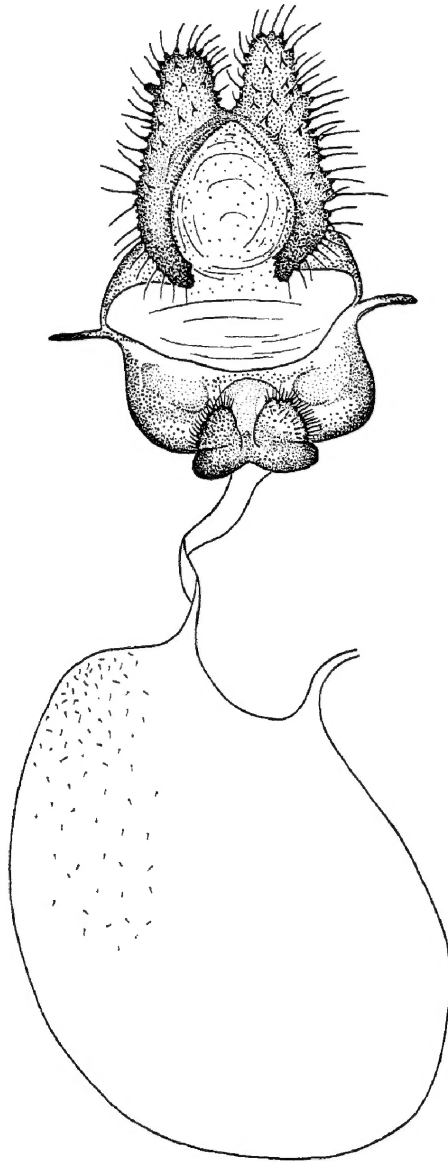


FIG. 71. Female genitalia of *Anopina incana* (Walsingham), paratype.

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