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New Species and Subspecies of North American Archipini, with Notes on Other Species (Lepidoptera, Tortricidae)

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The present paper is based on notes made during work on a generic revision of the North American Tortricidae. In addition to the descriptions of five new species and two new subspecies of Archipini, new data are given on three other species of this tribe. The author is able to correct the data of *Subargyrotaenia purata* (Meyrick) in this country and to remove this species from the list of the North American Lepidoptera. In the difficult *fumiferana* group of the genus *Choristoneura* Lederer, he examined the types of *retiniana* Walsingham and *lambertiana* Busck. This examination showed a disparity between the type and later determinations of *retiniana* and results in the description of a new species. The species *lambertiana* is shown to be different from *fumiferana* Clemens. It is possible to separate two new subspecies of *lambertiana*, and a new species of *Choristoneura* was found in the process of the study. A new species of *Lozotaenia* is described, a genus hitherto known only in the Palearctic Region. Two new species of the genus *Clepsis* Guenée complete the descriptions in the present paper.

The author wishes to express his sincere gratitude to Dr. F. H. Rindge and Prof. A. B. Klots of the American Museum of Natural History, Dr.

¹ 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.

J. F. G. Clarke of the United States National Museum, and Mr. J. D. Bradley of the British Museum (Natural History), for permission to use the materials of the above museums for the present paper.

Subargyrotaenia purata (Meyrick)

Tortrix purata MEYRICK, 1932, Exotic Microlepidoptera, vol. 4, p. 254. McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 57, no. 7421. CLARKE, 1955, Catalogue of the type specimens of Microlepidoptera in the British Museum (Natural History) described by Edward Meyrick, vol. 1, p. 265.

Argyrotaenia purata (in part), FREEMAN, 1958, Canadian Ent., vol. 90, suppl. 7, p. 53.

Subargyrotaenia purata, OBRAZTSOV, 1961, Amer. Mus. Novitates, no. 2048, p. 41, figs. 81–84.

Meyrick, in his original description of this species, mentioned California and Arizona as North American records. The lectotype and lectoallotype originate from Irazu, Costa Rica. The present author examined five males, identified by Meyrick as "*Tortrix purata*," in his collection at the British Museum (Natural History), where they recently were deposited. Four of them (one male without abdomen; genitalia of the remaining three specimens on slides, Nos. 6619–6621) are labeled "Venice, California, July–September, 1918 (P.)," and prove to be *Argyrotaenia citrana* (Fernald). One additional male labeled "Arizona, 1909 (O.)," genitalia on slide, No. 6622, is *Clepsis virescana* (Clemens). Thus, the records of *purata* for California and Arizona were based on misidentifications, and this species must be removed from the list of North American Lepidoptera.

Choristoneura retiniana (Walsingham)

Figures 1–4, 11, 15, 22

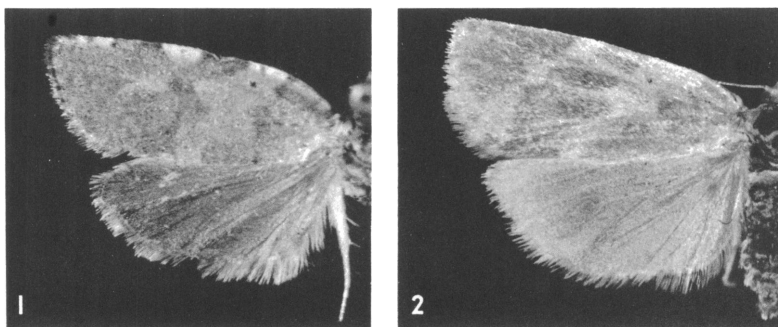
Lozotaenia retiniana WALSINGHAM, 1879, Illustrations of typical specimens of Lepidoptera Heterocera, vol. 4, p. 12, pl. 63, fig. 3.

Archips retiniana, FERNALD, "1902" [1903], Bull. U.S. Natl. Mus., no. 52, p. 481, no. 5379. McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 56, no. 7387.

Cacoecia retiniana, MEYRICK, 1912, in Wagner, Lepidopterorum catalogus, pt. 10, p. 21; 1913, in Wytsman, Genera insectorum, fasc. 149, p. 25. BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of Boreal America, p. 177, no. 7352.

MALE: Antennae dark brown, with whitish ochreous spots on each segment. Head ochreous to ferruginous. Labial palpi ochreous to ferruginous; terminal segment concolorous or darker. Thorax brownish

ochreous to ferruginous; tegulae with whitish tips. Abdomen brownish ochreous. Forewings whitish ochreous to more or less yellowish, suffused by ferruginous or pale orange-brown, except at costa, in some specimens with slight, ferruginous reticulation; basal portion of costa and three costal spots orange-ferruginous to almost brown; one or two short, brownish or somewhat orange streaks at costa, in interspaces of costal spots; basal quarter of forewing, an oblique, angulate fascia from slightly before middle of costa to two-thirds of dorsum, and external area of forewing consisting of a large, triangular spot at middle, and some small terminal spots, orange-brown; in not quite fresh specimens, markings



FIGS. 1, 2. *Choristoneura retiniana* (Walsingham). 1. Male, Lazy T Ranch, Oregon, July 14, 1949. 2. Female, Wofford Lookout, New Mexico, July 18, 1959.

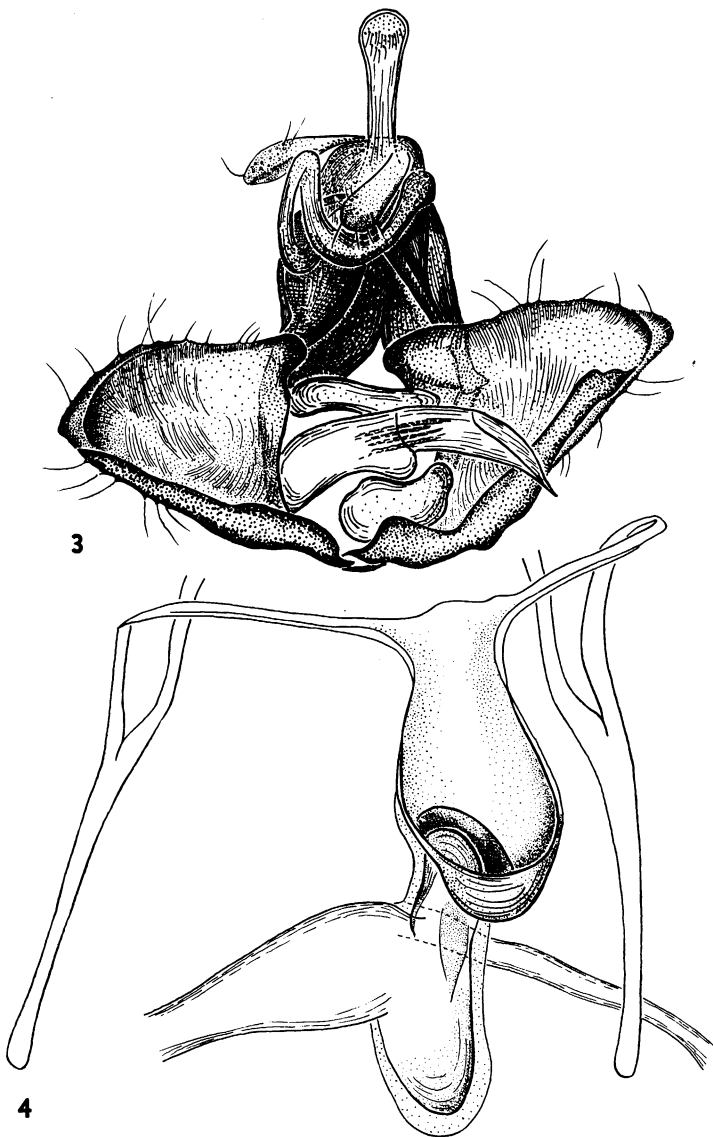
split into small, separate spots; cilia brownish gray, paler at tornus, blackish checked. Length of forewing, 12–13 mm. Hind wings dark grayish brown, in some specimens orange-yellow at apex and termen; cilia whitish, with a gray-brown dividing line, or without it.

FEMALE: Similar to male, but with all markings of forewings more orange; fasciae and spots occasionally divided into small dots. Length of forewing, 13–14 mm. Hind wings with orange-yellow color more distributed than in male.

MALE GENITALIA: Uncus elongate-spatulate distally, narrowed at middle, and somewhat lagenoid basally. Aedoeagus with a rather short, straight, or slightly upcurved tip.

FEMALE GENITALIA: Sinus vaginalis narrower caudally than cephalically. Blind portion of antrum wide, broadly rounded cephalically.

TYPE: Holotype, male (genitalia on slide, No. 5351), Mt. Shasta, Siskiyou County, California, between August 2 and September 1, 1871 (Walsingham); deposited in the British Museum (Natural History).



FIGS. 3, 4. Genitalia of *Choristoneura retiniana* (Walsingham). 3. Male, holotype. 4. Female (slide No. 473-Obr.), ostium bursae and adjacent parts.

OTHER SPECIMENS EXAMINED: *California*: One male, Anderson Springs, Lake County, June 24, 1958 (W. R. Bauer and J. S. Buckett); one

female (genitalia on slide, No. 472-Obr.), Yosemite Valley, July 1, 1919. *Oregon*: Two males and one female (genitalia on slides, Nos. 176-Obr. and 473-Obr.), Lazy T Ranch, near Joseph, Wallowa County, July 14-17, 1949 (*ex* collection of G. H. and J. L. Sperry). *New Mexico*: One female, Woffort Lookout, vicinity of Cloudcroft, Otero County, July 18, 1959 (A. B. Klots). All the above specimens are deposited in the American Museum of Natural History.

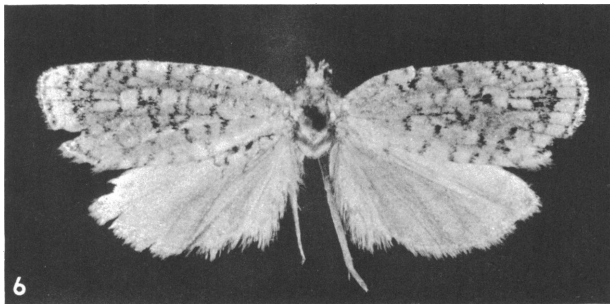
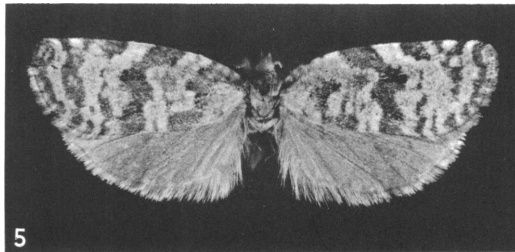
REMARKS: The only authentic data on *retiniana* in the literature are its original description and the figure, published by Walsingham (1879). Later authors merely cited these data, and Freeman (1958) was apparently the first to try to redescribe this species and to photograph a specimen, which he supposed to be *retiniana*. But the examination of the type of *retiniana* made by the present author showed the error in Freeman's identification. His "*retiniana*" appeared to be a new species, described in this paper as *subretiniana*. Such failure was unavoidable, because the description of *retiniana* was inadequate, and the original figure of this species was quite misleading, since it represented an arbitrary reproduction of wing markings of a badly denuded and damaged holotype. The present author compared some specimens with the holotype in the British Museum (Natural History) and proved that both these specimens and the holotype are conspecific. He also examined the genitalia of the *retiniana* holotype, which were unsatisfactorily pre-prepared many years ago and kept dry. It was rather difficult to relax the genitalia, clean them from the included dirt, and make a new slide. This slide became rather dark, but it was nevertheless quite adequate for examination.

In the structure of its genitalia, *retiniana* seems to be rather close to *fumiferana* but differs from it externally. The forewings of *retiniana* are less variegated, and the lower portion of the median fascia is distinctly curved dorsad, not reaching the tornus. The general coloration of *retiniana* is more orange than that of ferruginous specimens of *fumiferana*. The termen of the forewings seems to be more oblique, especially in the males. All these characters should be verified on more extensive material, which is not available at present. In a large and variable series of *fumiferana* from Kents Lake, Beaver County, Utah (deposited in the American Museum of Natural History) are some females that might be treated as intergrading with *retiniana*. They almost lack the reticulation of the forewings and have the median fascia angulated almost as in *retiniana*. The hind wings are orange-yellow, at least at the apex. But in all these females the median fascia is directed toward the tornus, not turned dorsad, as in *retiniana*.

***Choristoneura spaldingiana*, new species**

Figures 6, 12, 17, 25

MALE: Antennae pale ochreous, with brownish annulation. Labial palpi, head, thorax, and forewings pale ochreous. Forewings with dark brown markings, consisting of undulating, transverse lines, crossing wing costodorsad; basal third of wing outlined externally by two of these lines, commencing separately on costa and anastomosing at level of discal cell;



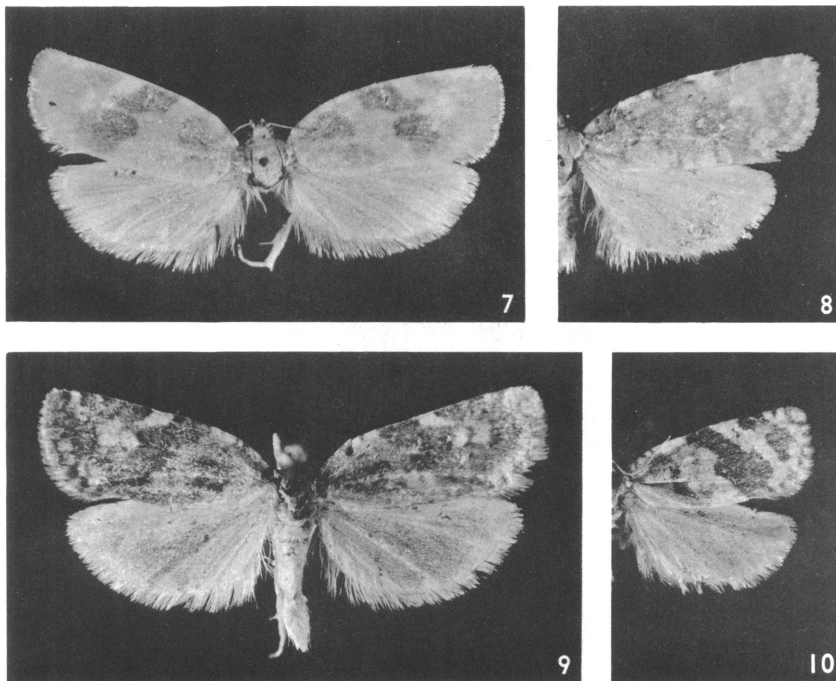
FIGS. 5, 6. Holotypes of two new *Choristoneura* species. 5. *C. subretiniana*, new species, male. 6. *C. spaldingiana*, new species, male.

three lines crossing discal cell, irregularly confluent, and forming closed cells; three similar, partly interrupted lines extending outward from discal cell; some short lines on costa, in interspaces of transverse lines; a short, longitudinal, rather thick streak before end of lower edge of discal cell; an irregular, rather large patch midway between end of discal cell and termen; a rather fine terminal line; fine lines along external veins; subterminal area forming a rather broad costodorsal band of ground color of wing, crossed only by dark veins; cilia concolorous with wing ground. Length of forewing, 11 mm. Hind wings smoky-white, a little darker dorsad; cilia whitish.

FEMALE: Unknown.

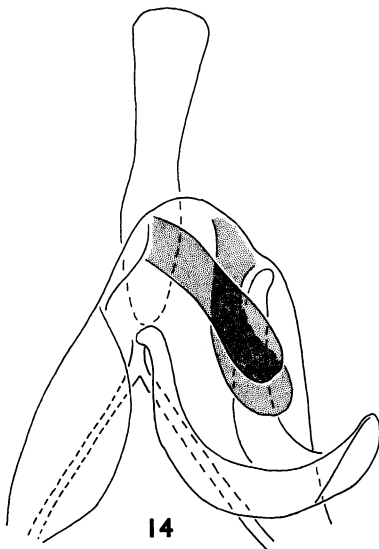
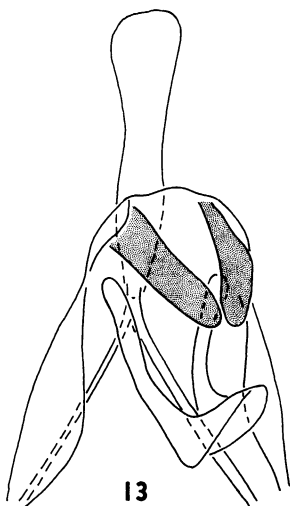
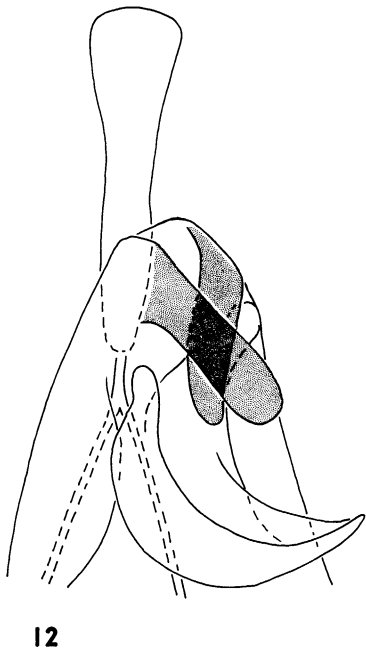
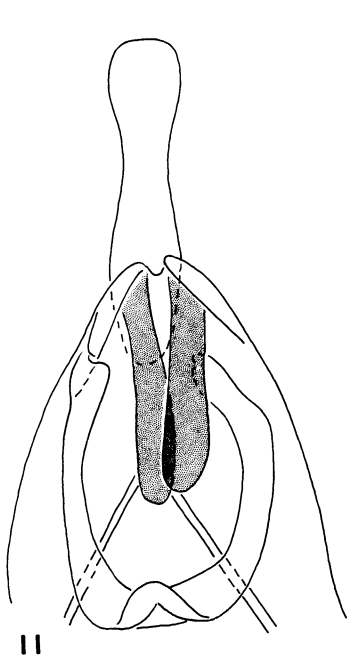
MALE GENITALIA: Uncus spatulate, dilated apicad, narrowed at middle, and slightly dilated in basal half; socii band-like, rather broad and long. Aedoeagus with a long tip slightly bent upward.

TYPE: Holotype, male (genitalia on slide, No. 175-Obr.), Provo, Utah, July 30, 1909 (T. Spalding); deposited in the American Museum of Natural History.

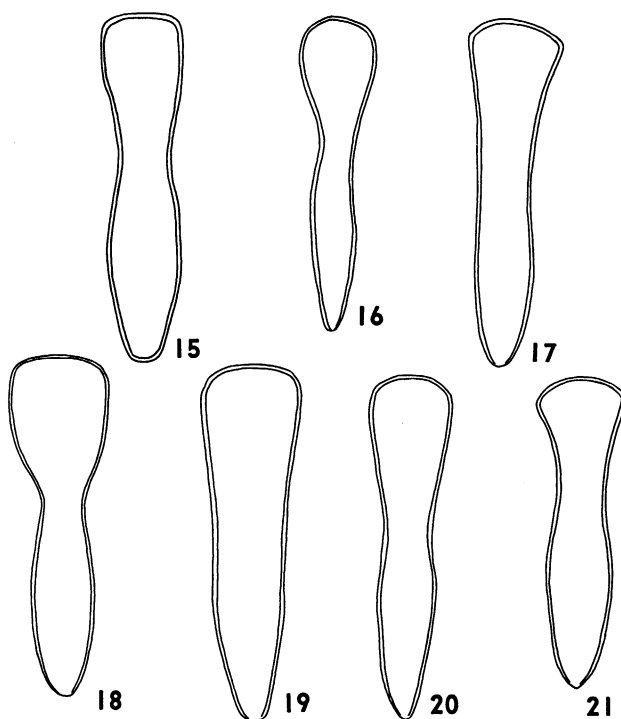


FIGS. 7-10. *Choristoneura lambertiana lambertiana* (Busck). 7. Female, Ashland, Oregon, July 3, 1914. 8. Male, same data but June 27, 1914. 9. Male, Lee Creek Camp, Montana, August 4, 1956. 10. Female, Ashland, Oregon, July 1, 1914.

REMARKS: This new species somewhat resembles pale specimens of *fumiferana*, but differs in having the hind wings almost white, and the tip of the aedoeagus long and slightly bent upward. From the *lambertiana* complex the new species differs in the forewing markings, which are formed by numerous, dark lines. One male and one female from California (Fallenleaf Lake, August 8, 1932, Keifer; genitalia on slide, prepared by A. Busck on February 18, 1933) in the United States National Museum are very similar to the holotype of *spaldingiana*, but both are in



FIGS. 11-14. Dorsal portions of male genitalia of *Choristoneura* species, socii dotted. 11. *C. retiniana* (Walsingham) (slide No. 176-Obr.). 12. *C. spaldingiana*, new species, holotype. 13. *C. subretiniana*, new species, paratype (slide prepared by A. Busck on April 13, 1921). 14. *C. lambertiana lambertiana* (Busck) (slide No. 468-Obr.).



FIGS. 15-21. Modifications of uncus form in *Choristoneura* species. 15. *C. retiniana* (Walsingham) (slide No. 176-Obr.). 16. *C. subretiniana*, new species, paratype (slide prepared by A. Busck on April 13, 1921). 17. *C. spaldingiana*, new species, holotype. 18, 19. *C. lambertiana lambertiana* (Busck). 18. Slide No. 174-Obr. 19. Slide No. 173-Obr. 20, 21. *C. lambertiana lindseyana*, new subspecies, paratypes (slides by A. Busck). 20. Slide of June 20, 1925. 21. Slide of June 24, 1925.

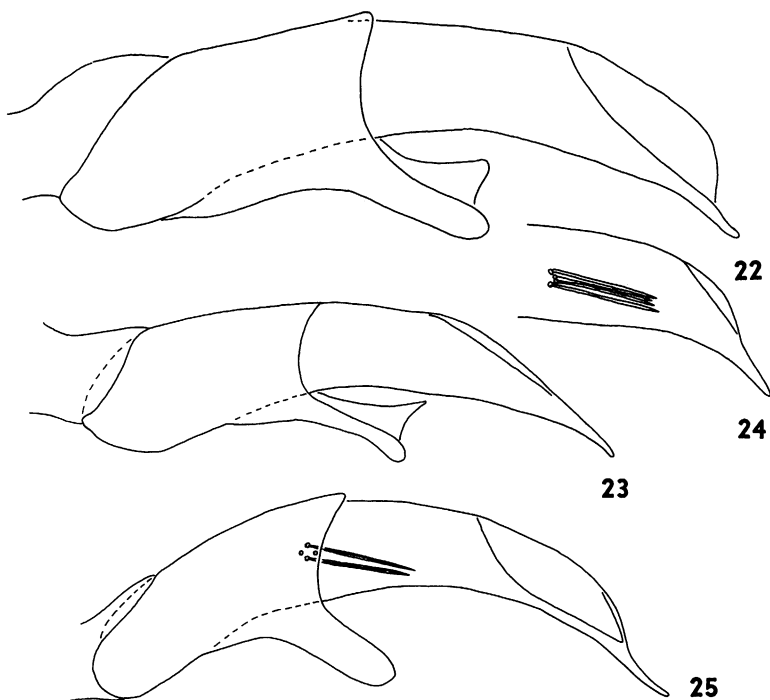
rather poor condition, and there is no certitude of their conspecificity.

***Choristoneura subretiniana*, new species**

Figures 5, 13, 16, 23, 24

Choristoneura retiniana, FREEMAN (not Walsingham), 1958, Canadian Ent., vol. 90, suppl. 7, p. 36, figs. 33, 159.

MALE: Head and labial palpi pale brown; antennae concolorous, finely whitish annulated. Forewings silvery grayish white to bluish gray, with markings brown, arranged as follows; basal area one-quarter long, rather pale, outlined externad by an angulate, darker fascia; a second angulate, broader fascia from slightly before middle of costa to about three-



FIGS. 22-25. Modifications of aedeagus form in *Choristoneura* species. 22. *C. retiniana* (Walsingham) (slide No. 176-Obr.). 23, 24. *C. subretiniana*, new species, paratypes (slides by A. Busck). 23. Aedeagus without cornuti, prepared on April 13, 1921. 24. Tip of aedeagus with cornuti, prepared on May 8, 1922. 25. *C. spaldingiana*, new species, holotype.

quarters of dorsum; a rather narrow, sometimes interrupted, subterminal fascia arched externad, and originating from two costal dots before wing apex; a row of small terminal dots, partly confluent; a rather large costal patch between second and subterminal fasciae; some fine, incomplete lines in interspaces of fasciae; cilia whitish and brownish checked. Length of forewing, 9-10 mm. Hind wings pale gray, with somewhat paler cilia.

FEMALE: Unknown.

MALE GENITALIA: Uncus spoon-like apicad, narrowed at middle, somewhat dilated but rather narrow in basal portion; socii moderately long, band-like. Valvae rotundate-subtriangular; sacculus rather narrow. Aedeagus with a long, narrow, somewhat reclinate tip; four moderately long cornuti.

TYPE: Holotype, male (genitalia on slide, prepared by A. Busck on

May 6, 1922), Monachee, Tulare County, California, 8000 feet, July 16–23; 17 male paratypes (genitalia of three of them on slides, prepared by A. Busck on October 6, 1920; April 3, 1922; and May 8, 1922), the same data; three male paratypes (genitalia of one on slide, prepared by A. Busck on April 13, 1921), the same data but July 8–14; one male paratype, the same data but July 24–31; four male paratypes (genitalia of one on slide, prepared by A. Busck on October 10, 1919), the same data but August 8–15; all types are deposited in the United States National Museum.

OTHER SPECIMEN EXAMINED: One male (genitalia on slide, prepared by A. Busck on October 6, 1936), Lake Maru, Mono County, California, July 28, 1933 (M. L. Walton); deposited in the United States National Museum.

REMARKS: This species reminds one of some sharply marked specimens of the nominate form of *lambertiana*, but the markings of the forewings are very contrasting and more numerous than in that species. The median fascia of the forewings is distinctly geniculate, narrower than in *lambertiana*, and directed not tornad, as in this species, but distinctly dorsad. The male genitalia are also very like those of *lambertiana*, but the socii are somewhat shorter, the basal portion of the uncus is narrower, and the cornuti are shorter. In the literature, this new species has been mistaken for *retiniana* Walsingham.

Choristoneura lambertiana lambertiana (Busck), new status

Figures 7–10, 14, 18, 19, 26, 29

Tortrix (*Cacoecia*) *lambertiana* BUSCK, 1915, Proc. Ent. Soc. Washington, vol. 17, p. 86.

Cacoecia lambertiana, BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of Boreal America, p. 177, no. 7355, 1.

Cacoecia fumiferana lambertiana, BALCH, 1930, Forest Worker, U. S. Dept. Agr. Forest Surv. Bimon., p. 14.

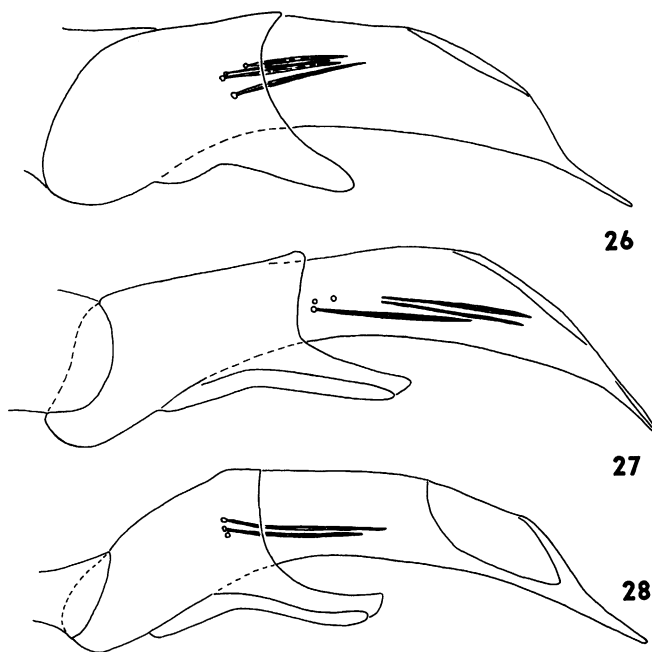
Tortrix lambertianae, KEEN, 1938, U. S. Dept. Agr. Misc. Publ., no. 273, p. 82, fig. 40.

Archips lambertiana, McDUNNOUGH, 1939, Mem. Southern California Acad. Sci., vol. 2, p. 56, no. 7395.

Choristoneura fumiferana var. *lambertianae*, KEEN, 1952, U. S. Dept. Agr. Misc. Publ., no. 273, p. 105, fig. 45.

Choristoneura lambertiana, FREEMAN, 1958, Canadian Ent., vol. 90, suppl. 7, p. 36, figs. 31, 74, 158.

Head, labial palpi, and thorax light ochreous to pale brown or chocolate-brown. Forewings pale ochreous to silvery ochreous or white, with markings more or less developed, concolorous with thorax or darker, to



FIGS. 26–28. Modifications of aedeagus form in *Choristoneura* species. 26. *C. lambertiana lambertiana* (Busck) (slide No. 173-Obr.). 27, 28. *C. lambertiana lindseyana*, new subspecies, paratypes (slides by A. Busck). 27. Slide prepared on June 24, 1925. 28. Slide prepared on June 20, 1925.

slightly more orange-brown or chocolate-brown, arranged as follows: a basal area about one-quarter of wing length; an oblique, angulate median fascia from middle of costa to inner portion of tornus; some larger spots between this fascia and wing apex; some minute terminal dots; some inconstant, usually obliterate, interrupted, transverse lines in interspaces, or all markings widened and confluent, or markings reduced; often a round dot or spot of ground color at end of discal cell; cilia pale ochreous, in some females brown checked. Length of forewing, 8–13 mm. Hind wings white, grayish white, or whitish ochreous to (especially in females) pale orange; cilia white.

TYPE: Holotype, male (genitalia on slide, prepared by A. Busck on December 1, 1925), Ashland [not Oakland!], Oregon, reared from *Pinus lambertiana*, June 27, 1914 (P. D. Sergeant; “Hopk. U. S. No. 1255a, catalogue No. 19235”); deposited in the United States National Museum.

OTHER SPECIMENS EXAMINED: *Oregon*: Two males (genitalia of one on slide, prepared by C. Heinrich on January 19, 1917) and two females

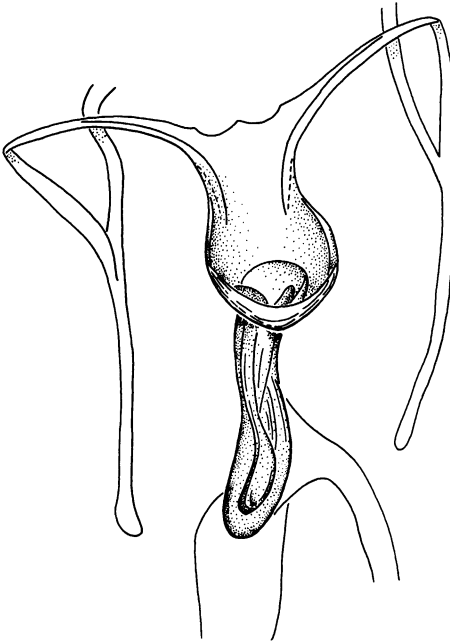


FIG. 29. *Choristoneura lambertiana lambertiana* (Busck), ostium bursae and adjacent parts (slide No. 271-Obr.).

(genitalia on slides, prepared by A. Busck on February 17, 1923, and December 4, 1925), Ashland, June 27 to July 6, 1914 (P. D. Sergeant), deposited in the United States National Museum. One male (genitalia on slide, No. 173-Obr.), the same data but July 2, 1914; four males and one female (female genitalia on slide, No. 271-Obr.), Lazy T Ranch, near Joseph, Wallowa County, July 15–17, 1949 (*ex* collection G. H. and J. L. Sperry). *Montana*: One male, Lee Creek Camp, 1 mile south of Lolo Hot Springs, 4000 feet, Missoula County, August 4, 1956 (F. and P. Rindge). *Idaho*: Seven males (genitalia of one on slide, No. 468-Obr.), Alturas Lake, 7000 feet, Blaine County, July 26–27, 1956 (F. and P. Rindge); four males, Twin Creek Camp, 5 miles north of Gibbonsville, 5200 feet, Lemhi County, July 30, 1956 (F. and P. Rindge). *Wyoming*: Four males (genitalia of one on slide, No. 174-Obr.), Sacajawea Camp, 8400 feet, Middle Piney Creek, Sublette County, August 13–14, 1953 (F. and P. Rindge); 54 males, Lake Creek Camp, 6900 feet, Park County, southeast of Cooke City, Montana, July 23–26, 1959 (F., P., and B. Rindge). All the above-mentioned 71 specimens from Oregon, Montana,

Idaho, and Wyoming are deposited in the American Museum of Natural History. Nine males and one female, Bechler River, Yellowstone Park, August, 1929, reared from *Pinus contorta* (R. E. Balch), deposited in the United States National Museum. *New Mexico*: One female, Wofford Lookout, vicinity of Cloudcroft, Otero County, July 18, 1959 (A. B. Klots), deposited in the American Museum of Natural History.

FOOD PLANTS: *Pinus lambertiana* and *Juniperus* (Freeman, 1958). In Wyoming, some moths were reared from the larvae found on *Pinus contorta*. Dr. F. H. Rindge told the present author that in Montana, Idaho, and Wyoming, where he collected *lambertiana*, *Pinus contorta* was common; other conifers (*Pinus ponderosa*, Douglas fir, and spruce) were observed rarely.

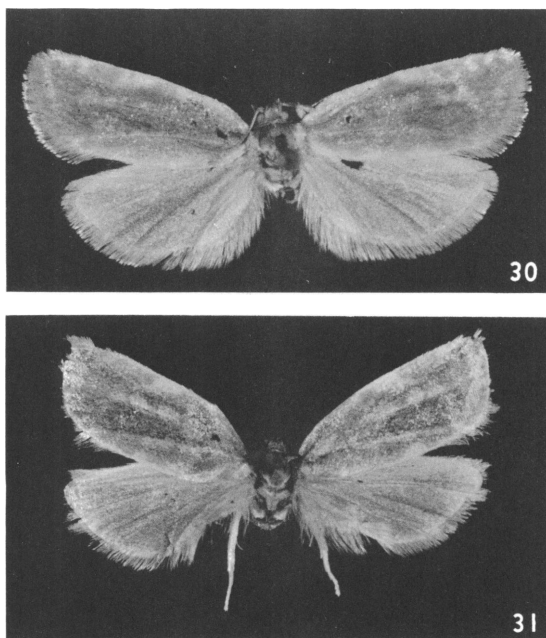
REMARKS: As the type locality of *lambertiana*, Busck named "Oakland, Oregon." The original label of the holotype, and the labels of other specimens collected with it, read quite distinctly "Ashland, Oregon." The Hopkins' label, "No. 12522a," confirms the correctness of this latter locality name, as it has been verified in the Hopkins' file in the United States National Museum. For this information, the present author is obliged to Mr. Jerry A. Powell (Berkeley, California). Some of the specimens from Ashland, in the collection of the United States National Museum, are labeled as cotypes of *lambertiana*, but in the original description of this species Busck mentioned a single specimen, the holotype.

***Choristoneura lambertiana ponderosana*, new subspecies**

Figures 30, 31

Choristoneura fumiferana complex (in part), FREEMAN, 1958, Canadian Ent., vol. 90, suppl. 7, p. 36, figs. 155, 156.

Head, labial palpi, and thorax ferruginous. Forewings with a silvery white ground; rather indistinct, ferruginous markings, occasionally suffused with gray, distributed and confluent, suppressing ground color and leaving it as obliterate lines and spots on a ferruginous surface; an indistinct, ferruginous basal area, separated by a silvery interspace from a similarly indistinct, rather broad, ferruginous median fascia; a row of indistinct, ferruginous subterminal spots, separated from median fascia and ferruginous terminal spots in a similar way as basal area separated from median fascia; costa pale, with some indistinct, ferruginous patches; two indistinct, longitudinal, silvery lines, distributed on some places, and narrowed or interrupted on others; one of these lines along discal cell, the other below vein A_{2+3} ; all markings very variable. Length of forewing, 9–10 mm. Hind wings grayish white.



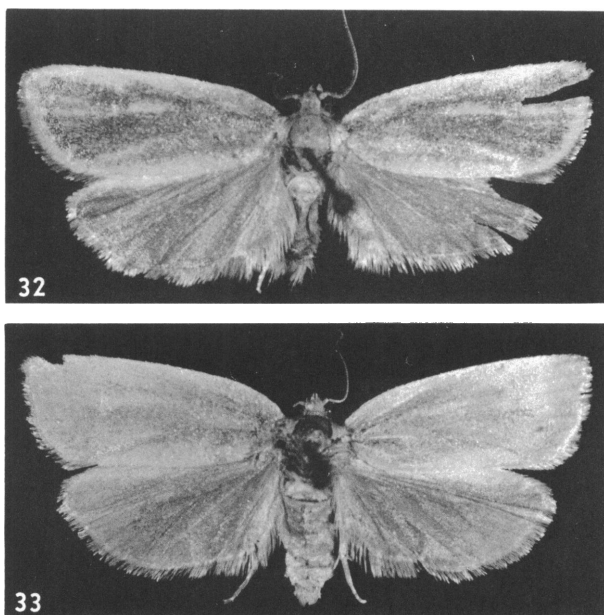
FIGS. 30, 31. *Choristoneura lambertiana ponderosana*, new subspecies. 30. Male, holotype. 31. Female, allotype.

TYPES: Holotype, male (genitalia on slide, No. 2-Obr., 3/13, 1959), Sugar Loaf, Colorado, July 8, 1937 (J. A. Beal); allotype, female (genitalia on slide, No. 1-Obr., 3/13, 1959), the same data; five male and four female paratypes (genitalia of one male and one female on slides, prepared by A. Busck on August 9, 1939), the same data. All types are deposited in the United States National Museum.

OTHER SPECIMENS EXAMINED: *Colorado:* One female, Fort Collins, September 1, 1934; four males and five females (genitalia of one male and two females on slides, Nos. 304-Obr., 70-Obr., and 467-Obr.), Chimney Gulch, Golden, July 1-30, 1907 (Oslar); one male (genitalia on slide, prepared by A. B. Klots on January 23, 1938), Rocky Mountain National Park, August 15, 1937 (A. B. Klots). All the above specimens are deposited in the American Museum of Natural History.

FOOD PLANT: All the type specimens were reared from *Pinus ponderosa*.

REMARKS: The name for this new subspecies was proposed, but never published, by A. Busck. This subspecies differs from the nominate subspecies of *lambertiana* in having the markings of the forewings rather indistinct and confluent, and the ground of the forewings usually reduced



FIGS. 32, 33. *Choristoneura lambertiana lindseyana*, new subspecies. 32. Male, holotype. 33. Female, allotype.

to narrow, silvery lines. In some specimens the markings of the nominate subspecies are quite recognizable, but the silvery lines of the ground color of the forewings are also present.

***Choristoneura lambertiana lindseyana*, new subspecies**

Figures 20, 21, 27, 28, 32, 33

Choristoneura fumiferana complex (in part), FREEMAN, 1958, Canadian Ent., vol. 90, suppl. 7, p. 36, fig. 157.

MALE: Head and labial palpi pale ochreous to slightly brownish. Thorax concolorous with head, or more grayish. Forewings ochreous, with broad, diffuse, gray or brownish, longitudinal strokes, not reaching termen, and located above and beneath discal cell, below vein A_{2+3} , and in subterminal area; some violet-gray, transverse, obliterate lines. Length of forewing, 11.5–12.0 mm. Hind wings dark gray.

FEMALE: Similar to male but forewings almost without longitudinal strokes or lines, with a very fine, ochreous reticulation on a paler, slightly silvery reflecting ground, seen as small dots in cells of reticulation. Length

of forewing, 10–13 mm. Hind wings paler than those of male, yellowish apicad.

TYPES: Holotype, male, Warner Mountains, 5500 feet, 3 miles east of Davis Creek, Modoc County, California, July 15–23, 1922 (A. W. Lindsey); allotype, female, the same data but July 24–31, 1922; paratypes, six males and six females (genitalia of three males and two females on slides, prepared by A. Busck on June 22, 1923, and June 20, 24, and 25, 1925), the same data but July 8–31, 1922; the entire type series is deposited in the United States National Museum.

OTHER SPECIMENS EXAMINED: One male (genitalia on slide, prepared by A. Busck on February 19, 1933), Fallenleaf Lake, California, August 8, 1932 (Keifer); one male, the same data but August 11, 1932; both of these specimens are deposited in the United States National Museum.

REMARKS: This subspecies had been treated by A. Busck as a separate species, with the manuscript name *lindseyana*. It is similar to the subspecies *ponderosana* described in the present paper, but differs from it in having the forewing ground ochreous in the male, and the forewing much paler and slightly reticulated in the female. Any transverse markings of the forewings typical of *ponderosana* and the nominate subspecies *lambertiana* are lacking in *lindseyana*.

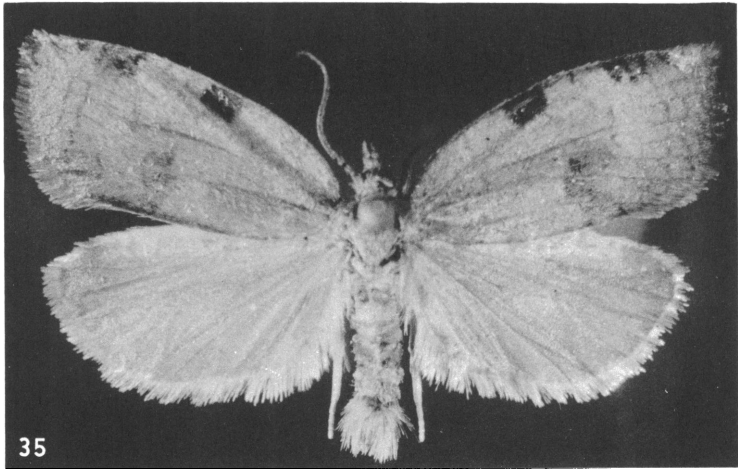
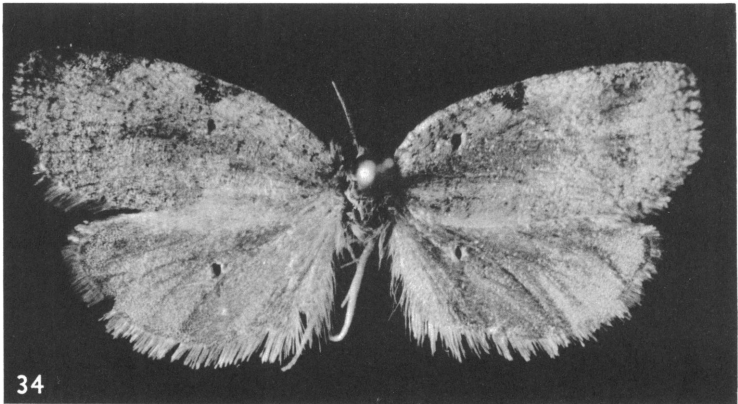
***Lozotaenia rindgei*, new species**

Figures 34, 36, 37

MALE: Antennae, head, and thorax brownish gray. Labial palpi concolorous with head, grayish brown dorsad. Forewings brownish gray, with a slight pinkish reflection; numerous dark brownish gray, fine, interrupted, transverse lines, some of them forming inconstant, irregular circles around discoidals; basal area of forewing slightly darker than ground; closely before middle of costa a black-brown triangular spot; another, less distinguishable, somewhat paler, slightly larger costal spot before wing apex; both of these spots slightly paler at middle costad; cilia concolorous with wing surface. Length of forewing, 11–12 mm. Hind wings gray, with a fine, blackish terminal line; cilia slightly paler than wing surface, with a fine, whitish basal line.

FEMALE: Unknown.

MALE GENITALIA: Uncus broad, spatulate, of almost equal width along its entire length; middle process of gnathos subtriangular, with a rotundate tip; fultura superior complete, incurved dorsoventrad, serrate along its upper margin, especially laterad, with lateral angles pointed. Valvae broad, finely rugose; sacculus broad. Fultura inferior subcordate, rotun-

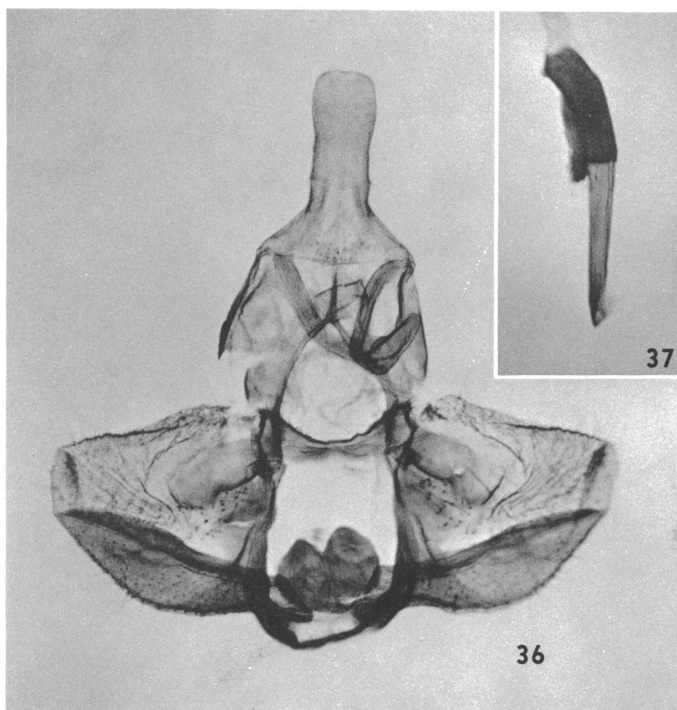


FIGS. 34, 35. *Lozotaenia* species. 34. *L. rindgei*, new species, male, holotype. 35. *L. forsterana* (Fabricius), Brighton, Sussex, England, A. C. Vine; the American Museum of Natural History.

date. Aedocagus slender, rather straight, slightly reclinate at coecum penis, acutely pointed distad.

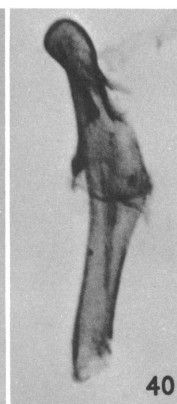
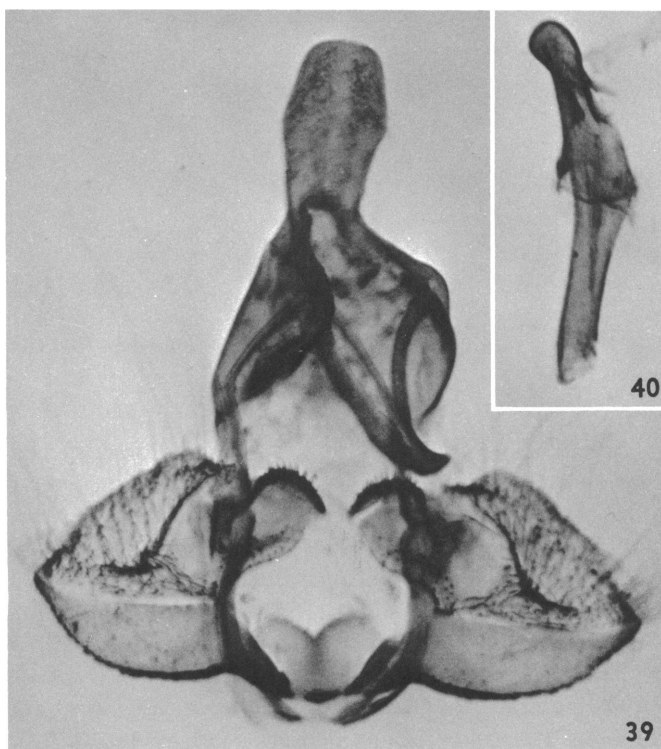
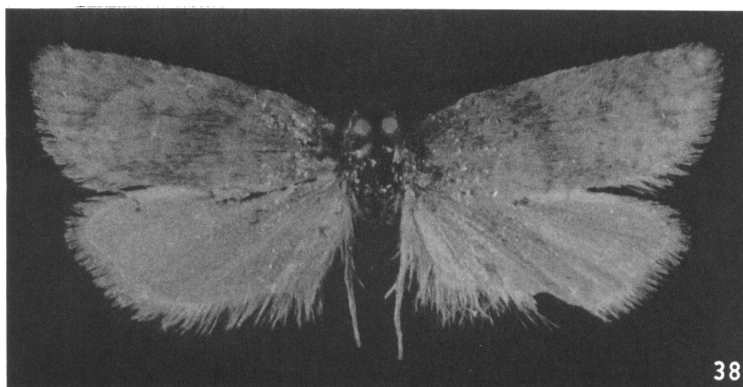
TYPES: Holotype, male (genitalia on slide, No. 120-Obr.), Lower Green River Lake, 8000 feet, Wind River Range, Sublette County, Wyoming, July 19, 1956 (F. and P. Rindge); one male paratype, the same data; both of the types are deposited in the American Museum of Natural History.

REMARKS: In the earlier North American literature the generic name



FIGS. 36, 37. Male genitalia of *Lozotaenia rindgei*, holotype. 36. Caudal view. 37. Aedoeagus.

Lozotaenia Stephens was erroneously applied to some species placed recently in the genera *Archips* Hübner, *Choristoneura* Lederer, *Syndemis* Hübner, and others. In the new concept that was proposed by the present author (Obraztsov, 1954, pp. 204–205; 1955, pp. 221–222), the genus *Lozotaenia* has been known only from the Palearctic Region. The new species *rindgei*, described above, is a new record of the genus in the Nearctic Region. It is rather similar to the Palearctic *Lozotaenia forsterana* (Fabricius), the type of the genus, but differs from it in having the first costal spot of the forewings triangular (in *forsterana* this spot is squarish), no dark shadow above the pretornal portion of the dorsum of the forewings, and slightly darker cilia of the hind wings. In the male genitalia of *forsterana* the uncus is dilated distad, the middle process of the gnathos is abruptly narrowed apically, the lateral angles of the fultura superior are rather rotundate, and the aedoeagus has a longer, pointed tip. All these genitalic parts are quite distinct in *rindgei*. J. A. Powell (Berkeley,



FIGS. 38–40. *Clepsia kearfotti*, new species, holotype, male. 38. Moth. 39. Caudal view of genitalia. 40. Aedeagus.

California) has some specimens of another new *Lozotaenia* species, from the Yukon and Alaska, which he will describe in the *Canadian Entomologist*. It is remarkable that both of these new Nearctic *Lozotaenia* species show a closer relationship to *forsterana* than any known Palearctic species of this genus.

***Clepsis kearfotti*, new species**

Figures 38-40

MALE: Antennae dark gray, slightly serrate, densely ciliated. Labial palpi, head, thorax, and abdomen smoky-gray, with a slight brownish tinge. Forewings elongate, moderately broad, somewhat paler than body; costa gently arched; apex rotundate; termen oblique; no costal fold; markings somewhat obliterated, darker gray than wing ground, arranged as follows: basal area almost one-fifth as long as wing; a slightly oblique, transverse fascia from close before middle of costa to middle of dorsum; a spot on discoidals; an undulating line with short, external projections along veins, arising at three-quarters of costa and ending at upper portion of tornus; some dashes on costa and dorsum; terminal line fine, whitish; cilia concolorous with wing ground; reverse unicolorous, gray. Length of forewing, 8 mm. Hind wings pale gray, with a fine, whitish terminal line; cilia concolorous with wing ground, slightly darker basad.

FEMALE: Unknown.

MALE GENITALIA: Uncus broad, spatulate, rather subtrapezoidal externad; socii short, papilliform; gnathos with a rather short, spatulate middle process. Valvae broad, rather short, distally with a short, weak cucullus; sacculus broad, tapering externad; processus basales dilated, with upper edge serrate, strongly sclerotized. Fultura inferior low, subcordate. Aedoeagus rather thick, slightly curved, gibbous at middle, narrowed before rounded, slightly capitate coecum penis; cornuti (?five) shaped like thin needles.

TYPE: Holotype, male (genitalia on slide, No. 299-Obr.), Mt. Piran, Alberta, August 17 (*ex* Kearfott collection); deposited in the American Museum of Natural History.

REMARKS: This new species has no external resemblance to any of the known *Clepsis* species, and, because of its general grayish coloring, could perhaps be compared only with *Clepsis moeschleriana* (Wocke), which, however, has distinct markings of the forewings and completely distinct genitalia. In the structure of the male genitalia *kearfotti* is undoubtedly related to *Clepsis fucana* (Walsingham), differing very much from it externally. The processus basales of the valvae are, in *kearfotti*, almost as

broad as those of *fucana*, even somewhat broader than in some specimens of the latter species. The uncus of *kearfotti* is rather trapezoidal, less rotundate distally than in *fucana*. The aedoeagus is distinctly gibbous.

***Clepsis forbesi*, new species**

Figures 41, 42, 46, 47, 49

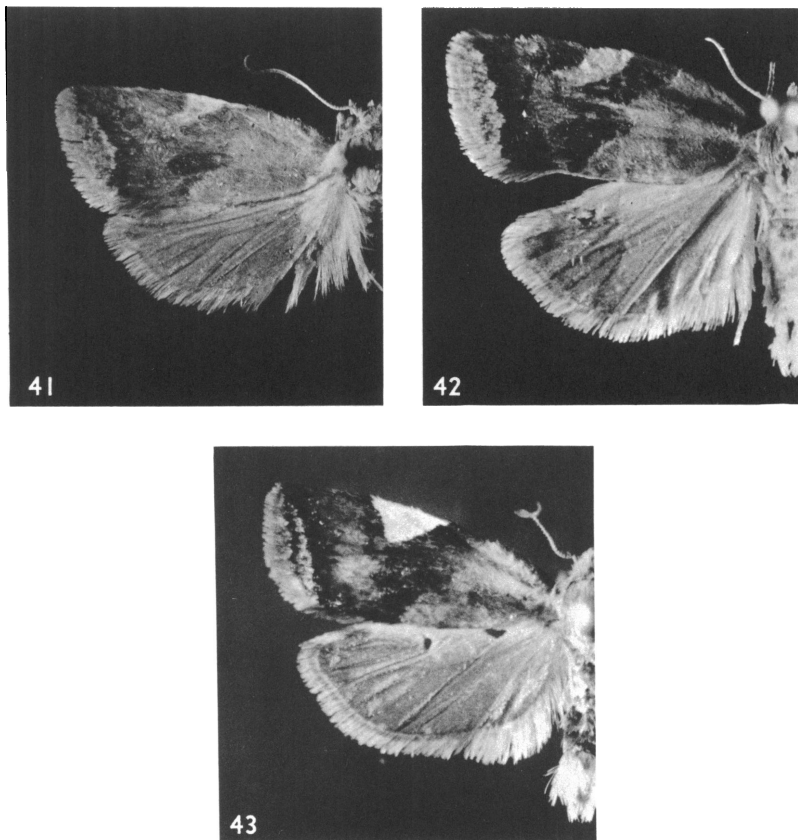
Archips persicana (in part), FORBES, "1923" [1924], Mem. Cornell Univ. Agr. Exp. Sta., no. 68, p. 497. MUNROE, 1951, Lepidopterists' News, vol. 5, p. 29.

Clepsis persicana (in part), FREEMAN, 1958, Canadian Ent., vol. 90, suppl. 7, p. 60, figs. 49, 183.

Antennae cream-white, brownish annulated; under surface ferruginous brown; scapus orange-ferruginous, cream-white on under side. Head and thorax orange-ochreous; tegulae more orange-ferruginous. Labial palpi cream-white, on outside suffused with orange-ferruginous. Forewings orange-ochreous; in male with costal fold; basal area, somewhat less than one-third of wing length, orange-ferruginous, occasionally outlined by a brownish orange line arched externad; an oblique, brownish orange band from about middle of costa to dorsum slightly before tornus; a similar band, in some specimens darkened dorsad, originating at costa close to wing apex, and meeting former band near dorsum; a concolorous costal spot before second band; between this spot and first band, a white or cream-white, rather narrow, not always distinct costal streak, reaching level of lower vein of discal cell; interspace between first and second bands, suffused by bluish violet, not always distinctly; terminal area of forewings with a cream-white stripe, brownish orange reticulated, spotted, or striated; cilia cream-white, directly touching this stripe; under surface of forewings grayish, ochreous externad and orange-ferruginous costad. Length of forewing, 8–11 mm. Hind wings dark cinereous; cilia whitish, with basal, gray, dividing line.

MALE GENITALIA: Uncus broadly ovate-spatulate, connected to tegumen by means of a broad neck; tegumen very broad; socii short, somewhat dilated; gnathos with a large, strong middle process, tapering apicad. Valva inversely trapezoidal, broad, rounded externally; costa rather straight; sacculus reaching to about middle of valva length; processus basales long, rather narrow, with spinose heads. Aedoeagus straight in external portion, bearing a laterodorsal thorn before apex; coecum penis elongate, slightly narrowed at middle, rounded cephalically, directed obliquely ventrad from external portion of aedoeagus; cornuti 3–5 long, straight, deciduous needles.

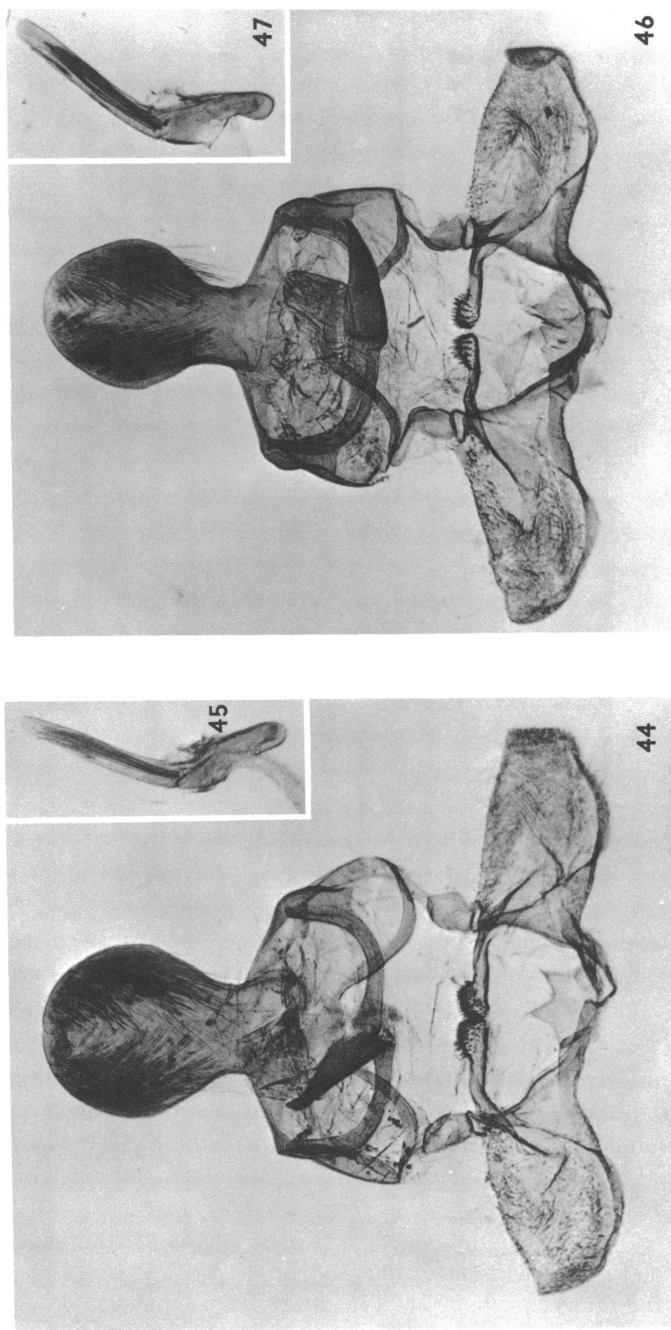
FEMALE GENITALIA: Papillae anales rather large, dilated caudad. Ostium bursae wide; lamella antevaginalis somewhat dilated laterally,



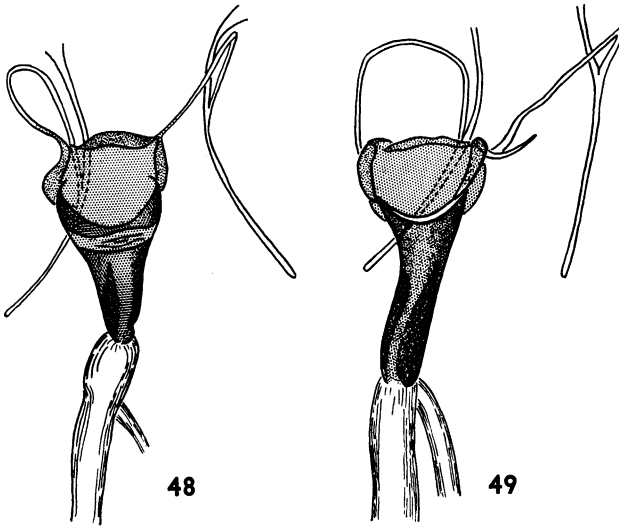
FIGS. 41-43. *Clepsis* species. 41, 42. *C. forbesi*, new species. 41. Holotype, male. 42. Allotype, female. 43. *C. persicana* (Fitch), male, Enfield, Penobscot County, Maine, June 15, 1953, L. P. Grey, the American Museum of Natural History.

embracing ostium bursae laterally and cephalically. Antrum oblong, infundibuliform, with long, broad colliculi; ductus seminalis joined to ductus bursae immediately cephalad of antrum. Cephalic half of cervix bursae with a band-like cestum. Corpus bursae rotundate; signum with a capitulum and thorn.

Types: Holotype, male (genitalia on slide, No. 261-Obr.), Wellington, British Columbia, June (T. Bryant); allotype, female (genitalia on slide, No. 676-Obr.), the same data but July 17; paratypes, 15 males and one female, the same data but June. All types are deposited in the American Museum of Natural History.



FIGS. 44-47. Male genitalia of two *Clepsius* species. 44, 45. *C. persiana* (Fitch) (slide No. 260-Obr.; Sprague's, Rocky Mountain National Park, Colorado, July 28, 1933, ex collection of G. H. and J. L. Sperry; the American Museum of Natural History. 46, 47. *C. forbesi*, new species, holotype. 44, 46. Caudal view. 45, 47. Lateral view of aedeagus.



FIGS. 48, 49. Female genitalia, ostium bursae and adjacent parts of two *Clepsid* species. 48. *C. persicana* (Fitch) (slide No. 82-Obr.; Rangeley, Maine, June 23, 1936, V. H. dos Passos; the American Museum of Natural History). 49. *C. forbesi*, new species, allotype.

OTHER SPECIMENS EXAMINED: *British Columbia*: One female, Arrowhead Lake, July 1, 1903 (Kearfott collection). *Wyoming*: One female, Moran, July 30, 1935 (*ex* collection G. H. and J. L. Sperry). *Utah*: One male, 17 miles east of Mayfield, Sanpete County, 10,200 feet, August 5, 1958 (F., P., and J. Rindge); one male (genitalia on slide, No. 517-Obr.), along road from Kamas, Summit County, to Mirror Lake, Duchesne County, 9500 feet, July 16, 1936; seven males and 10 females; Loop Camp, southwest of Grantville, Tooele County, 7400 feet, July 16–19, 1958 (F., P., and J. Rindge); eight males, the same data but July 1–7, 1960 (F., P., and B. Rindge). *Nevada*: Alfred, June 25, 1934, 6900 feet, from larva (*ex* collection G. H. and J. L. Sperry). *California*: One female, Castello, July 26, 1953 (W. J. and J. W. Gertsch); two males and one female, Miami Ranger Station, Mariposa County, July 1–6, 1946 (F. H. Rindge). All the above specimens are deposited in the American Museum of Natural History. Also some specimens from Alberta, Washington State, and Idaho, deposited in the United States National Museum.

REMARKS: This new species is named for William T. M. Forbes, who first recorded it as distinct from the nominate *Clepsid persicana* (Fitch) and treated it as an unnamed “race with a smaller silver spot” (Forbes,

"1923" [1924], p. 497). The recording of this form with *persicana*, in Wyoming and Utah, aroused the suspicion of the present author as to the conspecificity of *persicana* and *forbesi*. The examination of the genitalia showed that these are two distinct species.

The male genitalia are rather similar in both of these species, but the uncus of *forbesi* is distinctly somewhat oblong and has a longer base, while that of *persicana* is more rotundate and has a shorter base. The processus basales of the valvae are somewhat narrower, in *forbesi*, and have smaller serrate heads than in *persicana*. Especially distinct are the female genitalia. The antrum of *forbesi* is much longer than that of *persicana*, has well-developed colliculi, and the sculpture around the ostium bursae is quite distinct from that in *persicana*. Moreover, the ductus seminalis is joined to the ductus bursae immediately cephalad of the antrum in *forbesi*, and is remote from it in *persicana*.

The forewings of *forbesi* are more intensively reddish than those of *persicana*. The middle fascia is almost or completely without brownish darkening, more richly colored than the forewing ground, and usually not (or indistinctly) separated from the external fascia by the bluish violet scaling. The white costal spot is much smaller than that of *persicana*. In some specimens of *forbesi* it is reduced or almost unrecognizable.

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