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A REVIEW OF THE GENUS *ACANTHOPTEROCTETES* WITH DESCRIPTION OF A NEW SPECIES (ERIOCRANIIDAE)

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In the course of my revisionary studies on the American Incurvariidae, I recently received from Mr. James H. Baker of Baker, Oregon, two specimens of an unknown moth which superficially resembled on incurvariid. Upon dissection the true affinities of this undescribed species were recognized, and the genus *Acanthopteroctetes* was suspected as the proper placement. Through the courtesy of Dr. Annette F. Braun, I was able to examine the unique holotype of *A. tripunctata* and to confirm the generic placement of the new species collected by Baker. Because our knowledge of this genus is so meager, I thought it desirable to redescribe the taxon, which at present contains only three species, one of which remains unnamed. It is further hoped that the information contained herein will assist efforts currently being pursued by others to revise this family on a global basis.

The genus *Acanthopteroctetes* was proposed by Braun (1921) in the subfamily Eriocranianae [sic], which at that time was generally considered a subdivision of the Micropterygidae even though Busck and Böving (1914) had earlier pointed out the distinctness of the two groups. Braun accurately diagnosed the genus as not being closely related to any described taxon but stated that it was nearest *Eriocrania*. McDunnough (1939) recognized the separation of the Eriocraniidae and Micropterygidae but probably failing to note Braun's discussion of the relationships of *Acanthopteroctetes* erroneously placed the genus in the Micropterygidae. I concur with Braun's remarks, particularly in light of the structure of the female genitalia which is described herein for the first time.

I wish to express my appreciation to Mr. James H. Baker for the gift of the two specimens which initiated this study, and to Dr. Annette F. Braun for the loan of the material under her care. I am indebted to Mr. Andre Pizzini, staff artist of the Department of Entomology, Smithsonian

Institution, for the drawings and to Mr. Victor Kranz, staff photographer of the Smithsonian Institution, for the photographs.

ACANTHOPTEROCTETES Braun

Acanthopteroctetes Braun, 1921, Proc. Acad. Nat. Sci. Philadelphia, 73(1): 22; Fletcher, 1929, Mem. Dept. Agric. India, Ent. series, 11: 2; McDunnough, 1939, Mem. So. California Acad. Sci., 2(1): 110.

TYPE OF GENUS.—*Acanthopteroctetes tripunctata* Braun. Monobasic.

ADULT.—Small, slender-bodied moths; wing expanse approximately 11–16 mm.

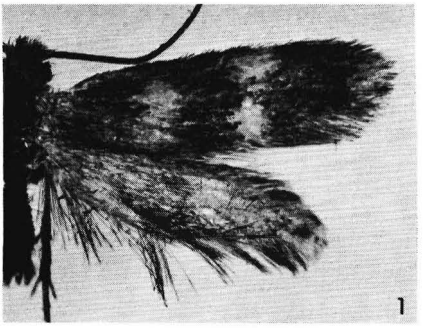
Head (figs. 3–5).—Rough, densely covered by erect, hairlike scales. Occipital region above foramen magnum raised to form a low, rounded, transverse ridge extending width of head. Lower margin of frons with a bilateral pair of shallow but prominent, cuplike excavations, each approximately one-half diameter of eye. Labrum narrow, elongate; apical margin rounded. Epipharynx small, triangular, membranous. Pilifers absent. Eyes evenly rounded, smooth. Ocelli absent. Antennae slender, simple, approximately three-fourths the length of forewing; each segment clothed with a single row of relatively narrow, flatly-appressed scales above and with scattered pubescence below; scape moderately enlarged, cylindrical, without pecten. Mandibles absent. Maxillary palpi greatly lengthened, normally folded in repose, five-segmented with fourth (penultimate) segment the longest, doubling fifth in length. Tongue naked, reduced, approximately one-half the length of maxillary palpi. Labial palpi reduced, approximately equal to first segment of maxillary palpi in length, two-segmented with apical segment about twice the length of basal one. Labial sclerite narrow, nearly twice as long as broad, roughly rectangular, lateral margins slightly concave.

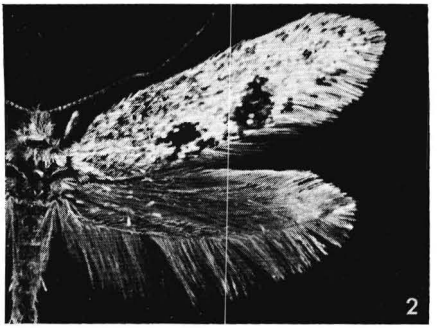
Thorax: Mostly clothed with relatively broad, appressed scales except for a lateral patch of erect, hairlike scales arising from each tegula and two similar patches arising on either side of mid-dorsal line near posterior margin of mesonotum. Wings (fig. 16) slender, lanceolate. Forewings 12-veined with vein 7 stalked to 8 and terminating on costa near apex; 6 stalked to 7+8 and arising below their separation; 10 and 11 stalked, arising from cell slightly beyond middle; base of media undivided within cell; accessory cell absent; jugum present. Hindwing 11-veined, with vein 10 (R_2) completely fused to R_1; frenulum absent; base of subcostal vein with a short costal spur; stalking of veins 6, 7 and 8 as in forewing; base of media undivided; lower half of discal cell open due to atrophy of medial-cubital crossvein between 3 and 4; fringe along hind margin elongate, equalling width of wing. Prothoracic tibiae (fig. 15) without epiphysis but with 2–3 short spines at middle and a similar number at apex; mesothoracic tibiae with a single apical spur and with spines distributed as in forelegs; metathoracic tibiae with a pair of apical spurs and a second pair of spurs situated near distal one-third, all spurs approximately equal in length, also with a single spine at middle, a scattered series of 6–8 short spines between two sets of spurs and a whorl of 2–4 apical spines.

Abdomen: Cylindrical; sclerites simple, unmodified; eighth segment of female with a single row of long, stout bristles encircling abdomen.

Male genitalia: Uncus bifid, revolute; lower margins serrulate near apex. Tegumen and vinculum broad, united to form a short cylinder; anterior margin of vinculum concave. Transtilla well developed, with a prominent, elongate, revolute, median process extending caudad; apex of process with an acute, median ridge arising dorsally; ventral margins of median process serrulate at apex; basal region of transtilla abruptly expanded and loosely articulated to bases of valvae. Juxta well developed, of various form. Valvae relatively simple, without secondary appendages except for a relatively broad, membranous fringe extending along lower (ventral) margin. Aedeagus rather complex, stout, with a prominent array of cornuti.

Female genitalia: A single genital opening (monotrysian). Ovipositor of the piercing type; apex acute, spear-shaped, dorsal edge smooth, ventral edge minutely serrulate;





Figs. 1–2. Adults: 1, *Acanthopteroctetes tripunctata* Braun, male holotype, Glacier National Park, Montana, wing expanse 11 mm; 2, *Acanthopteroctetes bimaculata* Davis, female holotype, Baker, Oregon, wing expanse 15 mm.

apophyses slender, greatly elongated; posterior apophyses extending to tip of ovipositor and forming the greater part of the shaft; anterior pair considerably shorter, terminating on eighth abdominal segment. Ductus bursae greatly dilated. Corpus bursae completely membranous and relatively small. Signum apparently absent.

Discussion.—Several features serve to distinguish this interesting genus from the other members of Eriocraniidae. Among the more noteworthy are the absence of ocelli and mandibles, the two segmented labial palpi, and the distinctly different venation. The Eriocraniidae have been partly characterized as possessing ocelli (Meyrick, 1912) and mandibles (Busck and Böving, 1914; Imms, *et al.*, 1957). Furthermore, I am unaware of any member of this group of Lepidoptera whose labial palpal segmentation is less than three. The New Zealand genus *Mnesarchaea* (Mnesarchaeidae) is interesting in that it too lacks mandibles and possesses rather slender wings. That genus, however, apparently differs from *Acanthopteroctetes* in too many other respects for the two taxa to be regarded as closely allied.

Certain structural modifications in the male genitalia present some difficulties for interpretation, the principal among these being the proper terminology for the two sclerites situated in the diaphragma. For convenience, I have adopted the term juxta for the rather broad sclerite ventrad to the aedeagus. Dorsad to the aedeagus lies another heavily sclerotized structure whose lateral-basal arms articulate with the bases of the valvae. I have referred to this element as the transtilla, even though its derivation and composition may be much more complex.

Probably because of the rarity of the species involved, very little is known of the biology of this genus. The adults are apparently diurnal as observed by Braun (1921). Nothing is known concerning larval behavior, although considering the structure and probable function of the ovipositor, it is very likely that the larvae are leafminers, a habit well established throughout the small family.

KEY TO THE SPECIES OF ACANTHOPTEROCTETES

1a. Ground color of forewings fuscous, spotted with pale yellow (fig. 1) ..... *A. tripunctata* Braun

1b. Ground color of forewings paler, whitish to pale brown, not spotted as above.

2a. Vesture of head with whitish and fuscous scales equally intermixed; forewings with 2 fuscous spots (fig. 2) ..... *A. bimaculata* Davis, new species

2b. Vesture of head unicolorous, pale stramineous; (pattern of forewings obscure, apparently unicolorous) ..... *A.* species.

ACANTHOPTEROCTETES TRIPUNCTATA Braun

(Figures 1, 6–9; Map 1)

Acanthopteroctetes tripunctata Braun, 1921, Proc. Acad. Nat. Sci. Philadelphia, 73(1): 22; Fletcher, 1929, Mem. Dept. Agric. India, Ent. Series, 11: 2; McDunnough, 1939, Mem. So. California Acad. Sci., 2(1): 110 (no. 9857).

ADULT (fig. 1).—Wing expanse: ♂, 11 mm.

Head: Hairlike scales pale reddish brown, unicolorous. Antennae pale fuscous; scape more whitish. Palpi pale brown.

Thorax: Scales of dorsum fuscous; bristlelike tufts on tegulae pale fuscous; venter pale brown with slight suffusion of white. Legs fuscous. Forewings fuscous with a slight coppery luster; three large, pale yellowish spots, one at basal third of wing, two at apical third; outer pair nearly anastomosing to form an irregular and incomplete band across wing. Hindwings slightly paler, scales narrower, approximately one-half the width of those in forewings.

Abdomen: Fuscous.

Male genitalia (figs. 6–9): Uncus not deeply bilobed, ventral margin (as viewed laterally) with approximately 4 pairs of minute serrations. Tegumen relatively short, about same length as uncus. Caudal margin of vinculum with a deep V-shaped, median cleft. Median process of transtilla with 3–4 pairs of ventral serrations. Juxta elongate, exceeding length of entire transtilla, acuminate at caudal end. Valvae with ventral membranous fringe reduced; sacculus more expanded than in *A. bimaculata*. Aedeagus with two stout cornuti at apex and a series of three aligned down one side.

TYPE.—Holotype, male; in the collection of Annette F. Braun.

TYPE LOCALITY.—Glacier National Park, Montana, Canyon Creek, 5,500 feet.

HOST PLANT.—Unknown.

DISTRIBUTION (Map 1).—Presently reported only from Glacier National Park, Montana, in the Rocky Mountains.

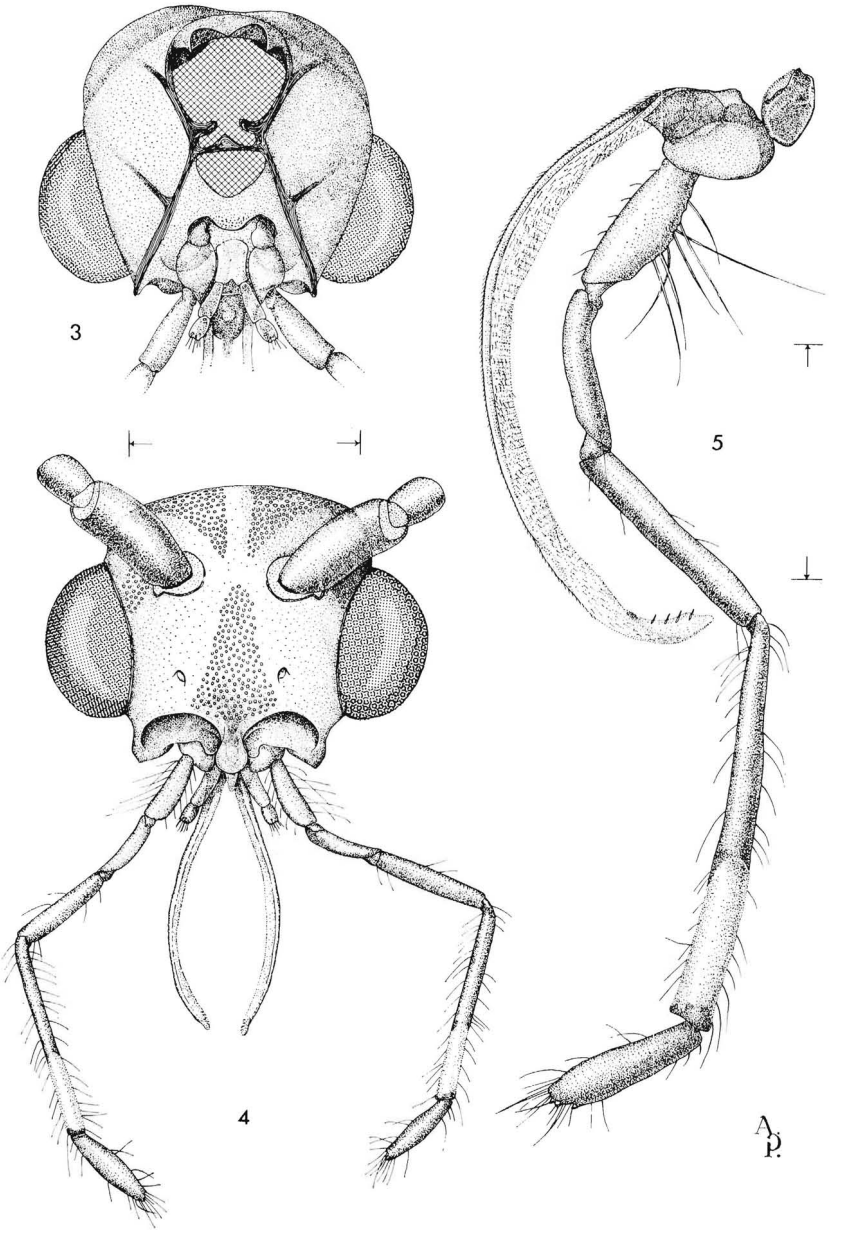
DISCUSSION.—This species is represented only by the unique holotype which was collected July 23, 1920, while flying in sunshine through an open area in the forest, by A. F. Braun.

Acanthopteroctetes bimaculata Davis, new species

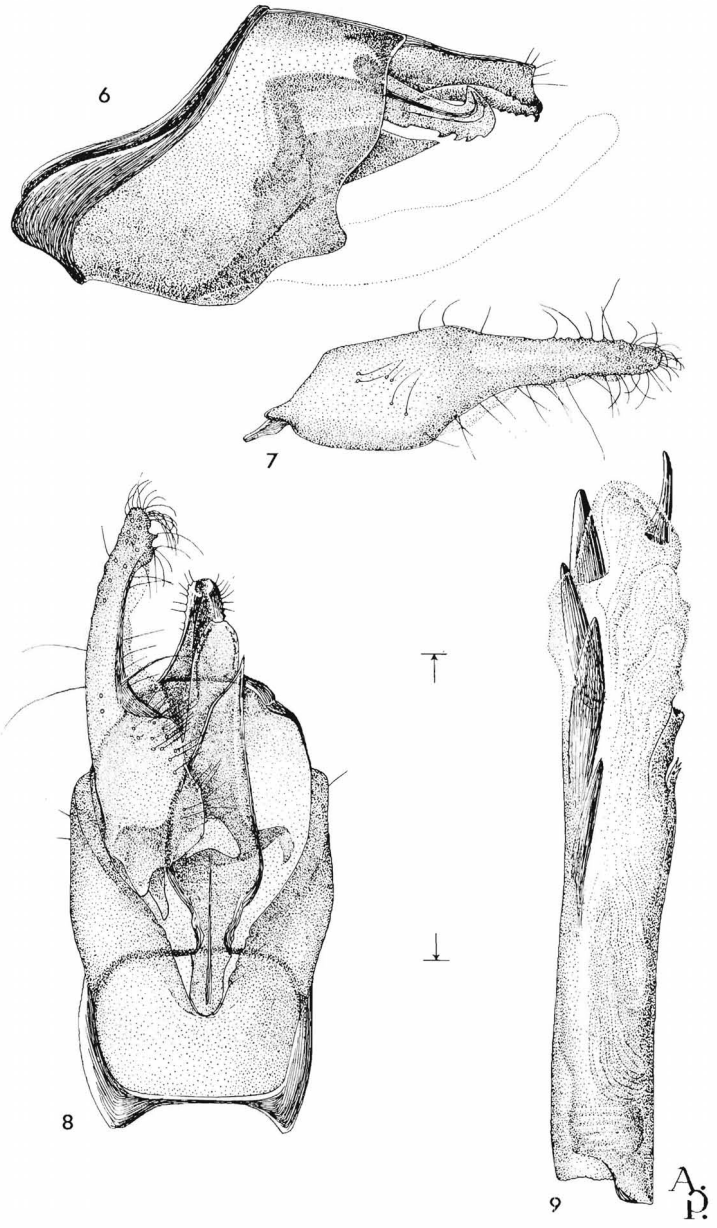
(Figures 2, 3–5, 10–16; Map 1)

ADULT (fig. 2).—Wing expanse: ♂, 16 mm; ♀, 15 mm.

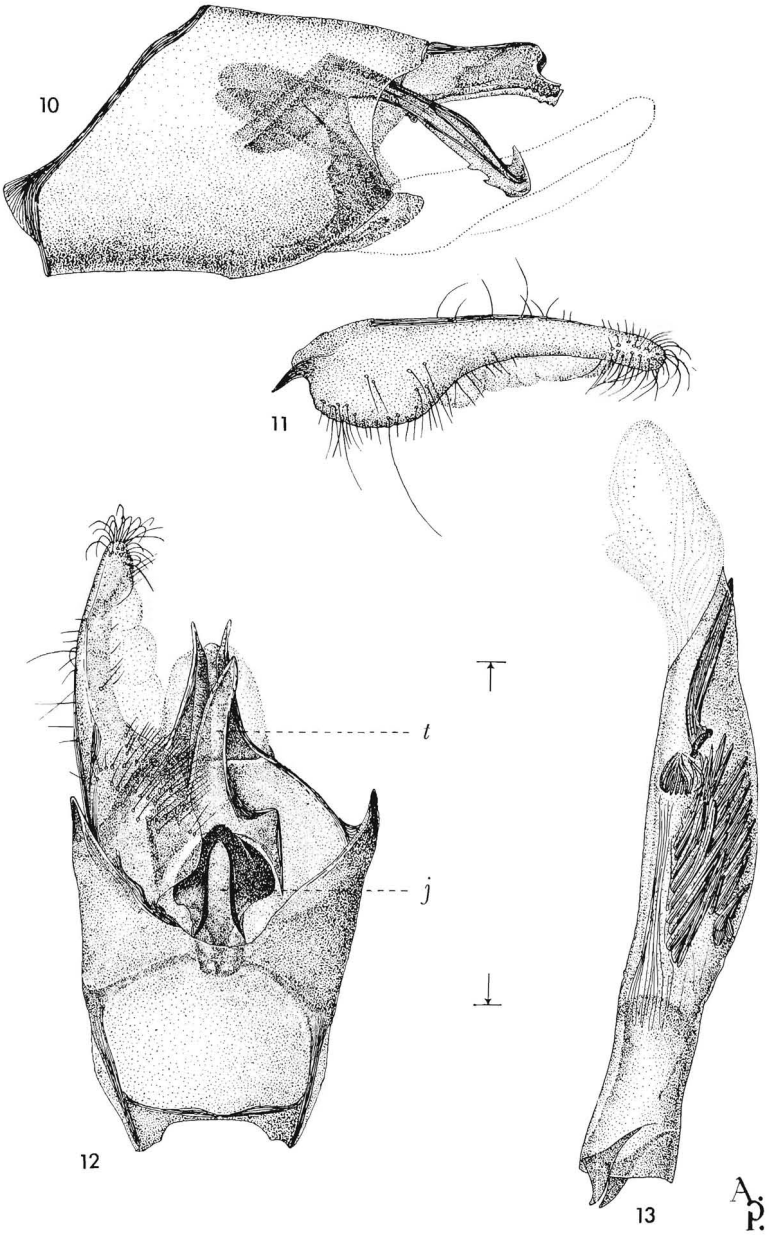
Head (figs. 3–5): Clothed with a scattered mixture of white and fuscous, hairlike scales. Antennae banded along proximal half of flagellum, with scales of each segment brownish fuscous at base, white at apex; distal half of flagellum mostly fuscous;



Figs. 3–5. Head structure of *Acanthopteroctetes bimaculata* Davis: 3, ventral view of head; 4, frontal view of head; 5, maxilla. (Scale of figs. 3–4 = 0.5 mm; of fig. 5 = 0.25 mm).



Figs. 6–9. Male genitalia of *Acanthopteroctetes tripunctella* Braun: 6, lateral view (valvae removed); 7, right valva, meso-lateral view; 8, ventral view, right valva removed; 9, aedeagus. (Scale = 0.5 mm).



Figs. 10–13. Male genitalia of *Acanthopteroctetes bimaculata* Davis: 10, lateral view (valvae removed); 11, right valva, meso-lateral view; 12, ventral view, right valva removed, *t* = transtilla, *j* = juxta; 13, aedeagus. (Scale = 0.5 mm).

scape mostly whitish with pale suffusion of brown. Palpi sparsely covered with pale brown and whitish scales.

Thorax: Dorsum clothed with a scattered mixture of white and pale brownish scales; bristlelike scale tufts on tegulae and rear portion of mesonotum fuscous; venter mostly whitish. Legs (fig. 15) fuscous. Forewings mostly white, with a somewhat irregular suffusion of pale brown to fuscous; two irregularly shaped but very distinct spots of fuscous located along hind margin near proximal third and distal third of wing; fringe whitish along outer margin, becoming pale brown along hind margin. Hindwings thinly scaled; scales very slender, hairlike, less than one-fourth the width of those in primaries, pale brownish; fringe unicolorous, brownish.

Abdomen: Pale fuscous.

Male genitalia (figs. 10–13): Uncus rather deeply bilobed; lower margins with approximately 5 pairs of minute serrations. Tegumen relatively long, exceeding length of uncus. Caudal margin of vinculum less deeply excavated than in *A. tripunctata*. Median process of transtilla with 3–4 pairs of ventral serrations. Juxta short, broad, length less than that of transtilla; caudal end broad and bluntly pointed. Valvae with ventral membranous fringe prominent; sacculus less expanded than in *A. tripunctata*. Armature of aedeagus complex, with a single, large, apical spine and two rows of approximately 10–12 stout cornuti at middle.

Female genitalia (fig. 14): Apex of ovipositor with approximately 10 minute serrations along ventral margin. Caudal margin of eighth segment with a series of about 9 pairs of stout, elongate, sensory setae encircling abdomen; the longest setae originating dorsally, with series gradually decreasing in length toward venter and arising from rather large, well defined pits. Ductus bursae swollen toward caudal end; a dark, funnel-shaped sclerotization present in inflated portion. Corpus bursae relatively small, ovoid.

HOLOTYPE FEMALE: Oregon, Spring Creek, Baker, [Baker County], May 17, 1962, coll. by J. H. Baker; in the United States National Museum, no. 69929.

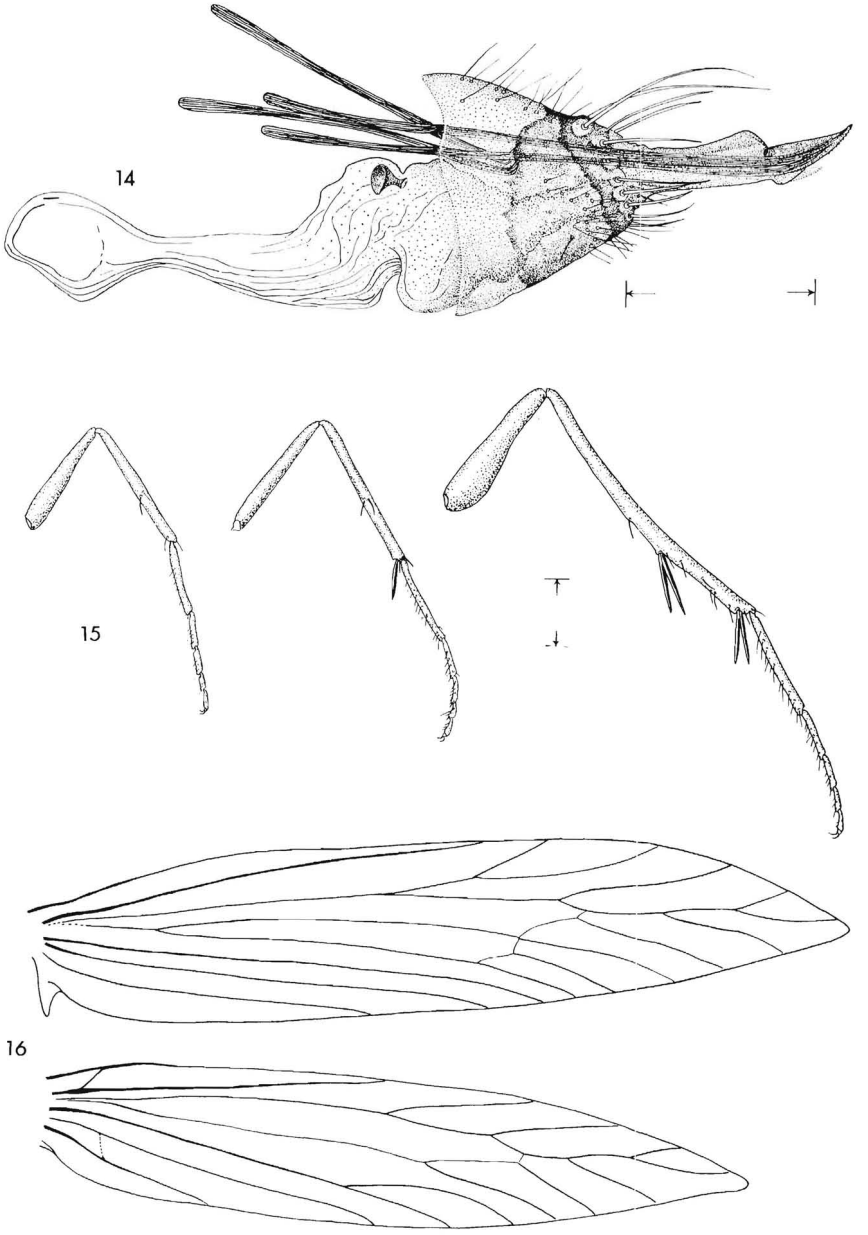
PARATYPES: *California*: Tulare Co.: Monache (misspelled on label as Monacbee) Meadows, 8,000 ft., 1 ♀, July 8–14, (USNM). *Oregon*: Baker Co.: Baker, Spring Creek, 1 ♂, May 7, 1962, coll. by J. H. Baker, (USNM).

HOST.—Unknown.

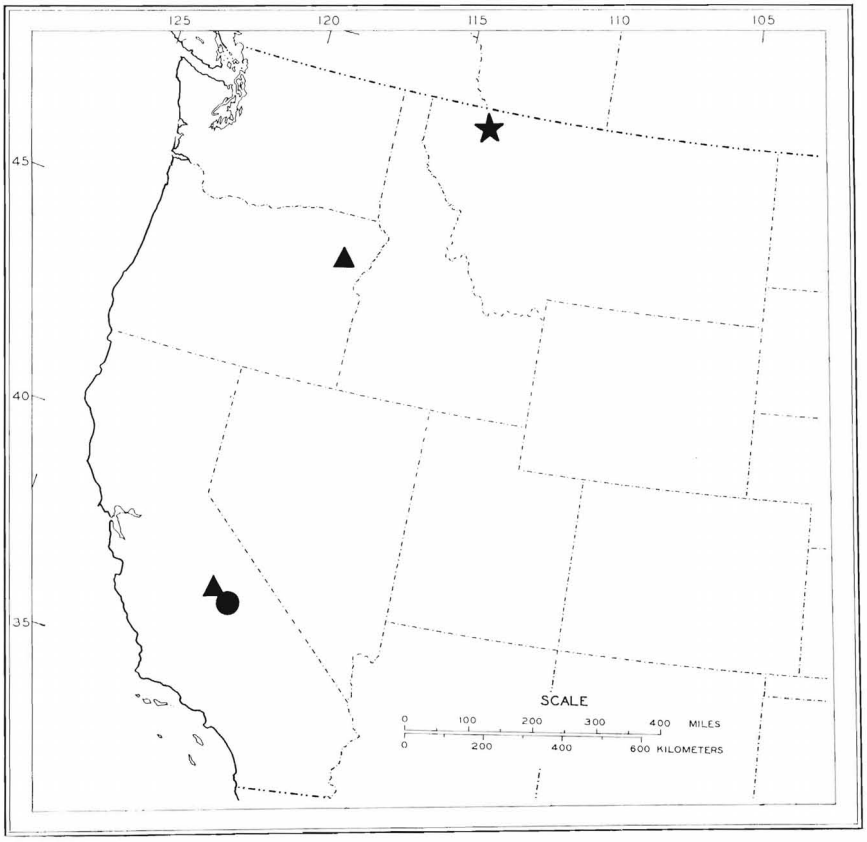
DISTRIBUTION (map 1).—Known from the Blue Mountains-Wallowa Mountains section of the Columbia Plateau in northeastern Oregon south to the southern Sierra Nevada of east-central California.

DISCUSSION.—This species may be easily distinguished from the only other described member of the genus, *A. tripunctata*, by its distinctly different maculation and by certain features of the male genitalia, the aedeagus in particular. With regard to maculation, these two species are nearly exact opposites with the ground color of *A. bimaculata* whitish to light gray and that of *A. tripunctata* fuscous. In addition, the aedeagus of the former with its double row of cornuti is much more heavily armed than that of *A. tripunctata*.

In the inflated portion of the female reproductive tract, which I have interpreted as the ductus bursae since it seems to be anterior to the junction of the common oviduct, is a peculiar, funnel-shaped sclerotization whose homology remains uncertain. Possibly this tract actually repre-



Figs. 14–16. *Acanthopteroctetes bimaculata*: 14, female genitalia, lateral view; 15, legs; 16, wings. (Scales = 0.5 mm).



Map 1. Distribution of *Acanthopteroctetes*. Star: *A. tripunctata* Braum; triangles: *A. bimaculata* Davis; closed circle: *A.* species.

sents a portion of the corpus brusae and the sclerotization is a signum. It should be possible to resolve this uncertainty as soon as additional females are collected and studied.

A single specimen of this species has been collected at Monache Meadows, Tulare County, California. Its origin strongly suggests that it and the following species may be conspecific; however, the former specimen, although in rather poor condition, clearly exhibits the wing pattern of typical *A. bimaculata*. Furthermore, the funnel-shaped structure in the bursa of this specimen is identical to that of the type from Baker, Oregon and differs markedly from that of the second specimen from California, which may be briefly treated as follows.

ACANTHOPTEROCTETES species
Map 1

A third member of this genus occurs in the southern Sierra Nevada of California. Braun (1921) refrained from naming this insect because it is represented by a single female in poor condition, and I likewise will characterize it briefly.

The specimen measures approximately 13 mm across the wings, and, although its present condition makes this difficult to ascertain, it seems to have been a relatively pale, uniformly colored moth. The vesture of the head is largely intact, however, and differs from that of either of the two known species in being a uniform, pale stramineous. The female genitalia closely resembles that of *A. bimaculata*, except for the distinctly different signa-like structure in the bursa. In this species the structure is more elongate and cylindrical and less sclerotized.

The specimen was collected at Monache Meadows, Tulare County, California, at an elevation of 8,000 feet, July 10, 1917. It is deposited in the collection of A. F. Braun.

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BOOK REVIEW

ON THE TYPES OF SOUTH AFRICAN MICROLEPIDOPTERA DESCRIBED BY THE LATE EDWARD MEYRICK AND PRESERVED IN THE TRANSVAAL MUSEUM, PRETORIA, AND THE SOUTH AFRICAN MUSEUM, CAPE TOWN; VOLUME 1, TINEIDAE; by A. J. T. Janse. Transvaal Mus., Pretoria, Memoir No. 16, 127 pp. + 118 plates in black and white. 1968. 8.50 Rand ($11.90), paper covers.

The enormous chore of illustrating the types of the 15,000-plus species described by E. Meyrick, begun by J. F. G. Clarke on specimens in the British Museum, is being continued by Janse. Although the majority of Meyrick's types were placed in