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Descriptions of and Notes on North American Geometridae (Lepidoptera), No. 2¹

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Among some Geometridae submitted for identification by Mr. Lloyd M. Martin of the Los Angeles County Museum were several species that are apparently undescribed. This material was collected by Dr. John A. Comstock, Mr. Robert J. Ford, Mr. William A. Rees, Mr. Robert H. Reid, Mr. Carl W. Kirkwood, and Mr. Lloyd M. Martin in the mountains of southern Arizona. In order that names may become available for these species, the following descriptions are given.

Also included in the present paper is a note concerning a species of *Hydriomena* from Arizona, and a synonymic note concerning one of Walker's names.

The author wishes to express his thanks to Miss Marjorie Statham for the genitalic drawings, and to Mr. Rudolph Schrammel for the photographic work included in this paper.

LARENTIINAE

Stamnodes artemis, new species

Figures 1, 2, 13, 14

MALE: Head, vertex, front, and palpi reddish, with some white scales. Thorax with upper surface concolorous with head, with an increasing number of whitish scales posteriorly; under surface red, with numerous white scales; legs with both red and white scales, tarsi becoming dark brown at posterior portions of segments, the anterior portions whitish.

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Abdomen apricot orange on top, the sides and under surface with mixed red and white scales.

UPPER SURFACE OF WINGS: Forewings, ground color apricot orange, with the cell and outer part of wing suffused with pale reddish purple; costal margin red, with scattered white and orange scales, the latter aggregated in patches to show origin of t. a., median, and t. p. lines; t. a. and median lines absent except for indication on costal margin; discal dot absent; t. p. line a curved band of ground color, showing in anterior part of wing going through reddish purple suffusion; fringe pinkish purple in basal half, grayish white distally, often dark brown opposite veins. Hind wing concolorous with forewing, the ground color becoming slightly more intense distally, lacking reddish purple suffusion of forewings; without maculation; fringe similar to that of primaries but slightly paler.

UNDER SURFACE OF WINGS: Ground color of both wings light buff; forewings with discal cell and most of wing apricot orange; costal margin of ground color, heavily overlain with red scales, as on upper surface; wing without cross lines except for indication of t. p. line in anterior part of wing; apical portion of wing of ground color, overlain with red scales; inner margin of ground color; fringe pale, reddish purple, narrowly marked with dark brown opposite veins in outer part of fringe. Hind wing of ground color, evenly suffused with red scales; no maculation except for an occasional indication of post-median line; fringe as on upper wings but slightly paler.

Length of forewings: 12 to 15 mm.; holotype, 14 mm.

MALE GENITALIA: Uncus very long, slightly swollen medially, laterally compressed at apex; valves, costa broadly sclerotized at base medially, narrowing and disappearing well before apex; sclerotized ribbons and setae from costobasal tubercle and from fold distad thereto; valvula simple, broadened apically; anellus with basal portion wide, narrowed medially, with narrow, sclerotized arm on each side connected with structure at base of valve, with tapering lateral arms near posterior end, the apical portion sharply pointed and with a rather poorly defined double row of elongate setae; aedeagus elongate, the vesica armed with a single, large, heavily sclerotized cornutus and some weakly sclerotized spine-like processes.

FEMALE: Unknown.

TYPES: Holotype, male, upper camp, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 5, 1956 (Lloyd M. Martin, John A. Comstock, and William A. Rees). Paratypes, 152 males, same data as holotype, dated July 4-9, 1956; also collected by Robert J. Ford.

Holotype in the collection of the Los Angeles County Museum; paratypes in the collection of that institution, of the American Museum of Natural History, of William A. Rees, and of Robert J. Ford.

This species is closely related to *apollo* Cassino and, in addition, was captured flying with that species. The present moth can be separated by its orange-colored wings and the darker color of the under surfaces; in *apollo*, the upper surface is more of a buff color, and the under side of the secondaries varies from creamy white to a pale pinkish buff. In the male genitalia, the anellus of *artemis* has the posterior pair of lateral projections and a sharply pointed apex, while in *apollo* there is no pair of projections and the apex is more rounded. In the vesica *artemis* has a single, heavy cornutus, while *apollo* has a pair of cornuti.

***Stamnodes lampira*, new species**

Figures 3, 4, 11, 12

MALE: Vertex and front with mixed white and pale orange-brown scales, sometimes with scattered pink scales, especially between bases of antennae; palpi concolorous with front, with some dark brown scales laterally. Thorax above very pale grayish brown, collar with mixed white and pink scales, patagia with mixed white and orange-brown scales; under surface whitish; legs pale brown, with fore coxae having scattered pinkish scales, and all legs with some brown suffusion. Abdomen very pale gray or gray-brown above, whitish below.

UPPER SURFACE OF WINGS: Forewings, ground color pale cream; costa slightly darker, buff, with scattered orange-brown scales, especially near apex; cross lines absent; a diffuse cloud of dark gray-brown and brown scales at end of cell, and again on outer portion of wing, being broad at costa and narrowing, fading out before reaching anal angle, interrupted near apex from costa to cell R_5 by an inwardly oblique series of patches of ground color; fringe of ground color, broadly interrupted at veins by dark brown, in upper portion of wing the dark brown areas becoming wider than light-colored areas. Hind wings concolorous with forewings, immaculate except for reflection of under side pattern; fringe white, narrowly darkened opposite veins.

UNDER SURFACE OF WINGS: Ground color of both wings white, or cream white; primaries with costa pale orange-brown, with scattered dark scales and strigae; cell lightly suffused with gray-black scales, terminating in broad, diffuse patch at end of cell; outer portion of wing as on upper surface, but with more orange-brown scales; fringe white, checkered as on upper surface. Hind wings suffused with black scales and strigations, together with pale orange-brown and reddish brown

scales and suffusion, the first usually concentrated basad of broad post-discal band of ground color, and with white spots along costa at base of wing and in discal cell; distal portion of wing with less black, and with indications of an obsolescent, white, s. t. line; fringe as above.

Length of forewings: 10 to 13 mm.; holotype, 12 mm.

MALE GENITALIA: Uncus elongate, with wide base, the width of base being subequal to length of broadened area, then sharply narrowed and extending to laterally compressed apex; valves broad and short; costa of even width; sacculus with patch of elongate, inwardly directed setae near base; anellus expanding from a wide base, sharply widened and then tapering posteriorly, the distal margin concave, and with about six setae on posterior part; aedeagus elongate, the vesica armed with a single, large, heavily sclerotized cornutus, with a broad base, occupying more than one-third of length of aedeagus, basad of cornutus a large, convoluted, corneous area, dorsad of cornutus an elongate patch of very many fine spines, extending posteriorly as far as, or slightly beyond, apex of cornutus.

FEMALE: Unknown.

TYPES: Holotype, male, Madera Canyon, Santa Rita Mountains, Pima County, Arizona, July 28, 1949 (W. J. and J. W. Gertsch). Paratypes, 11 males, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 5-13, 1956; 15 males, upper camp, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 4-9, 1956 (Lloyd M. Martin, John A. Comstock, and William A. Rees); one male, Madera Canyon, Santa Rita Mountains, southern Arizona, July 12, 1951 (C. W. Kirkwood and R. H. Reid); one male, Desert Arboretum, Superior, Arizona, July 18-21, 1941 (A. B. Klots). Holotype in the collection of the American Museum of Natural History; paratypes in the collection of that institution, of the Los Angeles County Museum, and of C. W. Kirkwood.

This species is allied to *formosata* Strecker; it also flies with that species at the type locality. It may be distinguished from *formosata* by its slightly smaller size, the darker markings above and below, and by the absence of the bright red scalation on the under side of both wings.

In the male genitalia *formosata* has but a single cornutus in the vesica, while the present species has a more complex armament. Differences are also found in the anellus, as *formosata* has an elongate, posterior projection with a row of setae along the margin, while *lampira* lacks this extension altogether.

Hydriomena arizonata Barnes and McDunnough

Hydriomena chiricahuata SWETT, 1909, Canadian Ent., vol. 41, p. 231 (*partim*); 1918, *ibid.*, vol. 50, p. 294.

Hydriomena arizonata BARNES AND McDUNNOUGH, 1917, Contributions to the natural history of the Lepidoptera of North America, vol. 4, p. 20, pl. 3, fig. 10 (holotype), text fig. 6 (male uncus). McDUNNOUGH, 1954, Bull. Amer. Mus. Nat. Hist., vol. 104, p. 287, figs. 58, 59 (male genitalia).

McDunnough stated in his revision of this genus that this species was known to him from the three male specimens of the original type series, and that the female was unknown; the types were from Palmerlee, Huachuca Mountains, Cochise County, Arizona. Among some specimens of this genus captured in late March and April, 1956, at the Southwestern Research Station of the American Museum of Natural History, 5 miles west of Portal, Chiricahua Mountains, Cochise County, Arizona, were a series of 12 males and 14 females that belong to this species. The adults are well characterized by the original description and photographs of the type, together with the discussion in the revision. There is some variation in the cross lines and coloration of this series. Line I varies from angled, as in the type, to a rigidly oblique line, as in *obliquilinea* Barnes and McDunnough. The costal area of the primaries above has a tendency to be suffused with gray, also as in *obliquilinea*. A comparison of the palpi of the allotype male of this latter species with those of the present series shows no apparent differences.

Three male and seven female genitalic preparations have been made, and the former compared with the figures of the uncus given by both Barnes and McDunnough and McDunnough. It can be noted that these do not agree very well, but this is perhaps due to the angle at which they were mounted and studied. The three preparations before the author show the uncus to be rather deep forked, arising from a broadened base; this is much like that of the allotype of *obliquilinea* but with the base not quite so broadly swollen. The female genitalia agree almost exactly with the description and illustration as given by McDunnough for *obliquilinea*.

These studies show that *arizonata* and *obliquilinea* are very closely related, and it is possible that they may be conspecific, with the latter name being held as a Utah subspecies of *arizonata*. However, owing to a lack of adequate material from Utah, it is perhaps advisable to retain the two names as distinct species. Another point of possible difference is the time of flight, as the types of *obliquilinea* were taken in Septem-

ber and October, while *arizonata* flies in March and April. It is possible that either or both of these populations have a second brood at another time of year, but this remains to be proved.

GENUS *PSALIODES* GUENÉE

Psaliodes GUENÉE, 1957, Histoire naturelle des insectes, vol. 10, p. 480. DRUCE, 1893, Biologia Centrali-Americana, Insecta, Lepidoptera-Heterocera, vol. 2, p. 170.

Psaliodes fervescens Dyar

Figure 6

Psaliodes fervescens DYAR, 1920, Insec. Inscit. Menstr., vol. 8, p. 195.

E. L. Todd of the United States National Museum has identified an Arizona specimen as belonging to this species. The type locality was given by Dyar as near Mexico City, Mexico, the unique female type being taken in August. Hence both the genus and species must be added to the North American list, as neither has been recorded from the United States before.

Specific localities for this species are as follows: Madera Canyon, Santa Rita Mountains, southern Arizona, July 30 to August 11, 1947, August 15, 1949 (J. A. Comstock and L. M. Martin), September 7, 1948, and September 16, 1950 (C. W. Kirkwood).

ENNOMINAE

SPERRYA, NEW GENUS

Head, front flat, narrower than either eye, covered with closely appressed scales; eyes large, round; antennae of male strongly bipectinate, the pectinations arising from base of segments on ventral surface, with numerous setae on each pectination, with apex simple, of female simple; tongue present; labial palpi of both sexes minute, barely reaching front, third joint small. Thorax without tufts, patagia elongate, with scales and hair-like scales, extending posteriorly to cover base of hind wings; fore tibia with process one-half of the length of tibia; middle tibia with one pair of spurs; hind tibia with two pairs of spurs, without hair pencil, becoming slightly swollen distally. Abdomen without crests; ventral surfaces of third and eighth segments unmodified. Forewings broad, triangular, the costal and outer margins only slightly rounded, 11 veins, one areole; R_{1+2} from top of cell near end, shortly anastomosed with Sc, R_{3+5} from before end of cell, R_5 from stalk before end of areole; R_{3+4} shortly anastomosed with R_{1+2} ; M_1 from upper angle, M_2 from just above middle of dc, M_3 from lower angle; Cu_1 from before angle, Cu_2 from two-thirds of distance to angle; fovea absent.

Hind wings broad, outer margin evenly rounded; frenulum strong in both sexes; Sc with enlarged base, extending along cell to one-half of its length, then diverging; R and M_1 from before upper angle, M_3 from lower angle; Cu_1 from before lower angle, Cu_2 from just beyond one-half of distance to lower angle. Forewings and hind wings concolorous brown, cinnamon or yellow, with weak t. a. line and well-defined t. p. line extending across both wings, discal dots usually present on all wings. Beneath pale, without maculation except for discal spots.

MALE GENITALIA: Uncus elongate, tapering from broad base, the terminal portion attenuate, the apex with two points; socius absent; gnathos well developed, forming a wide ring, with medioventral portion rather broadly enlarged, with roughened surface; valves with free costal arm arising at base of valves, extending posteriorly as far as middle of uncus, the arms narrow and curving apically, the remainder of valves subtriangular, undifferentiated, with the terminal portion attenuated and curving posteriorly; transtilla represented by an anteriorly directed sclerotized projection from base of each costal arm, these being connected by a very lightly sclerotized connection that supports the aedeagus; cristae absent; anellus in the form of a transverse, sclerotized continuation of the sacculus; furca absent; tegumen with posterior margin narrower than basal portion of uncus, sharply increasing in width anteriorly, the outer margins of the tegumen concave as far as base of valves, then becoming parallel; saccus projecting beyond base of valves, becoming sharply narrowed, with concave sides, to form a bluntly pointed apex; aedeagus elongate, narrow, in length subequal to combined lengths of uncus, tegumen, and saccus, anterior end rounded, posterior end bluntly pointed; vesica armed with a single, heavy spine.

FEMALE GENITALIA: Sterigma simple, with a small, sclerotized lamella antevaginalis; ductus bursae narrow and membranous below ostium for a short distance, then becoming an elongate, sclerotized tube, with numerous longitudinal striations; ductus seminalis arising ventroposteriorly near junction of membranous and sclerotized areas; corpus bursae a relatively small, rounded, lightly sclerotized sac; signum well defined, with prominent projections around margin; papillae anales elongate, with a well-defined ventral ridge.

TYPE SPECIES: *Sperrya cervula*, new species.

This new genus and species is quite distinct from any described North American geometrid. In general appearance the type species is similar to *Episemasia cervinaria* Packard, described from Texas, but can be distinguished by the pectinate male antennae, and by the 11

veins and the single areole of the present species; in addition, the genitalia of these two genera are very different. Closer relationships may be suggested with *Mellila* Grote or *Fernandella* Hulst, as both have 11 veins and a single areole, as well as pectinate antennae. However, the structure of the male antennae, the palpi, and the genitalia are quite different for this genus. In *Mellila* the pectinations of the male antennae arise from the posterior portion of the segments. The antennae are more like those of *Fernandella*, but this latter group has a strongly keeled front, much longer palpi, the male genitalia are smaller and more reduced, and the female genitalia are very different.

This genus is named in honor of the late John L. Sperry, who did so much for the author and the American Museum of Natural History.

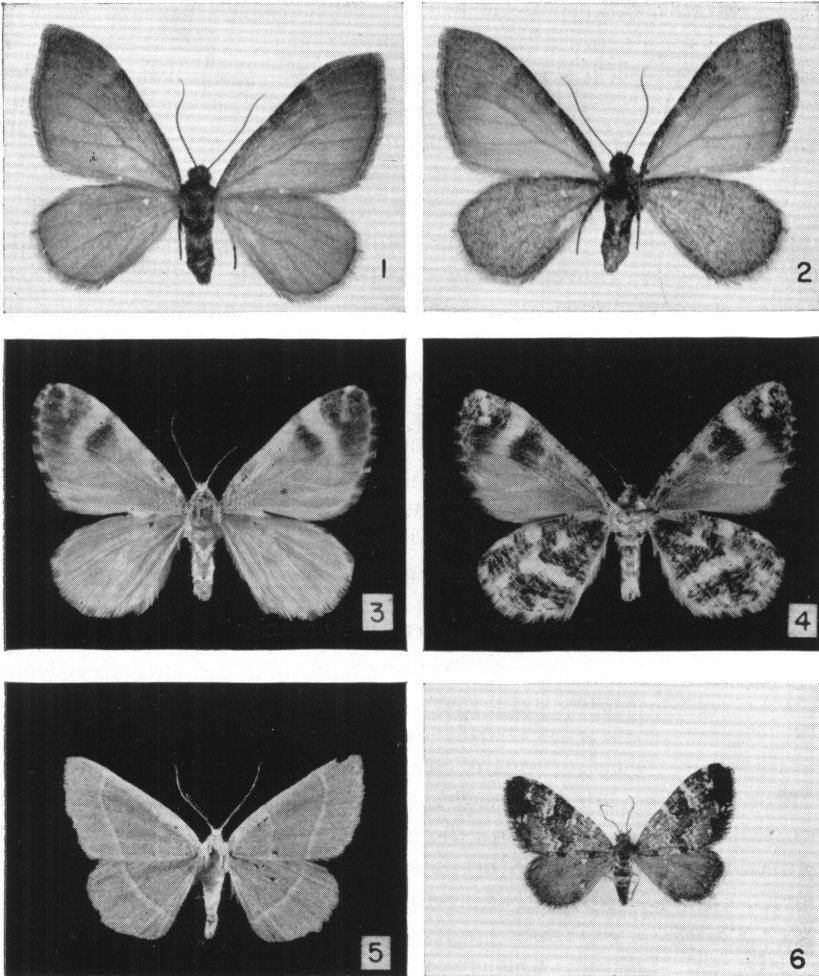
Sperrya cervula, new species

Figures 5, 15, 16, 17

MALE: Head, vertex pinkish cinnamon or cinnamon; front slightly darker, becoming paler in lower part; palpi pale, concolorous with under side of thorax. Thorax and abdomen above concolorous with wings, collar and patagia sometimes slightly lighter; under surfaces and legs slightly paler than upper side.

UPPER SURFACE OF WINGS: Forewings, ground color varying from light pinkish cinnamon, cinnamon (holotype), to ivory yellow, unicolorous except for a slightly lighter costal margin; t. a. line usually complete but sometimes rather weakly defined, consisting of a pale band shaded outwardly by a brownish band of equal width, arising on costa one-fifth or one-fourth of distance from base, going obliquely outward to radial vein, turning posteriorly and crossing wing with slightly outward bulges in discal and cubital cells, meeting inner margin one-third of distance from base; discal dot brown, rather diffuse; t. p. line complete, prominent, consisting of a cream-colored band with a narrow, brown, basal, shade line, arising on costa three-fourths of distance from base at right angle, gently curving posteriad opposite cell, and going straight to inner margin at two-thirds of distance from base; subterminal line absent; terminal line brown, very narrow; fringe slightly lighter in color than wing. Hind wing concolorous with forewings; intradiscal line absent; discal dot brown, usually present, but smaller than the one on forewings; extradiscal line appearing as continuation of t. p. line, extending completely across wing, bent below costa, then going almost straight to anal margin; terminal line and fringe as on primaries.

UNDER SURFACE OF WINGS: Ground color of both wings light buff, slightly darker along costa; without maculation except for brown discal



FIGS. 1, 2. *Stamnodes artemis*, new species, paratype male. 1. Upper side. 2. Under side.

FIGS. 3, 4. *Stamnodes lampira*, new species, paratype male. 3. Upper side. 4. Under side.

FIG. 5. *Sperrya cervula*, new species, paratype male, upper side.

FIG. 6. *Psaliodes fervescens* Dyar, upper side. Madera Canyon, Santa Rita Mountains, Arizona, August 11, 1947 (J. A. Comstock and L. M. Martin).

All figures $\times 2$.

dots and a narrow terminal line on all wings; sometimes the t. p. line of primaries faintly shows through on under surface; fringe concolorous with wings.

Length of forewings: 10 to 11 mm.; holotype, 10 mm.

FEMALE: Like male.

Length of forewings: 10 to 11 mm.; allotype, 11 mm.

MALE GENITALIA: See generic description.

FEMALE GENITALIA: See generic description.

TYPES: Holotype, male, and allotype, female, Patagonia, Santa Cruz County, Arizona, September 13, 1953 (Lloyd Martin). Paratype, seven males and 13 females, same data as holotype; one male and two females, same locality and collector, May 4, 1948; one male, Sedona, Coconino County, Arizona, "4-06-48" (N. Crickmer). Holotype and allotype in the collection of the Los Angeles County Museum; paratypes in the collection of that institution and the American Museum of Natural History.

The series of specimens is very homogeneous, both in size and maculation. The only noticeable difference occurs in the color of the upper surface, as it varies from a yellowish to a dark brown. From the dates it would appear that this species has at least two broods a year; the spring specimens are lighter in color than are the ones captured in the fall.

***Galenara olivacea*, new species**

Figures 8, 21, 22, 23

MALE: Head, vertex light gray or gray, front darker, gray-brown, paler below; palpi short, barely extending beyond front, light gray basally, with last two segments gray-brown. Thorax concolorous with vertex above; beneath grayish white; legs grayish white, forelegs shaded with black on tibia and tarsus, the terminal margins of segments light; hind tibia without groove or hair pencil. Abdomen grayish brown above, terminal segment tending to be lighter, under surface pale.

UPPER SURFACE OF WINGS: Forewings, ground color light gray, heavily overlain with dark gray and gray-black scales, the over-all appearance thus becoming dark gray, with a slight suggestion of olivaceous; t. a. line arising on costa about one-fifth of distance from base, crossing costa, then sharply angled outward in cell, turning and going across wing to inner margin about one-fifth of distance from base, with basal angles on cubital and anal veins, the line being of ground color, with an outward shade line of black, the latter being widest on the costa; median shade line often absent, when present arising about one-third of distance from base, curving across cell and becoming obsolete in lower half of wing, remaining well separated from both t. a. and t. p. lines; discal spot small, black, the area between it and t. p. line of ground color; t. p. line arising on costa about two-thirds of distance

from base, in general course outwardly curving around cell, becoming subparallel with outer margin until anal vein, then outwardly curving to meet margin, strongly concave between veins, the line being of ground color, the entire basal side and the distal side in upper portion of wing black, this being widest near costal margin; subterminal area sometimes slightly darker than median area, with faint brown suffusion starting at t. p. line in cells M_1 and M_2 , and again in Cu_2 ; s. t. line extending across wing as a series of intravenular patches of ground color, strengthened by some white scales, shaded basally by black, and sometimes distally also; terminal area concolorous with subterminal area, with black, intravenular marks along outer margin; terminal line gray-black, sometimes lacking; fringe dark gray, tending to be lighter opposite veins. Hind wings light gray, suffused with dark gray scales, especially distally; discal spot small, gray-black; traces of two extradiscal bands at anal angle and shortly above on anal margin; terminal line gray-black, widened in cells; fringe concolorous with wing.

UNDER SURFACE OF WINGS: Ground color of both wings light gray, more or less heavily suffused with dark gray scales; forewings with costa grayish brown, without maculation except for dark gray mark on costa near apex, a small discal dot that sometimes is obsolescent, and four gray-black intravenular dots along outer margin; hind wings slightly lighter in color than primaries, without maculation except for prominent discal spot and for terminal line with intravenular dots.

Length of forewings: 15 to 19 mm.; holotype, 18 mm.

FEMALE: As far as can be determined from the two somewhat rubbed specimens, like male.

Length of forewings: 15 (allotype) to 17 mm.

MALE GENITALIA: Uncus with lateral margins evenly concave, the apex with small, ventrolateral projections, being concave between these; gnathos with elongate median enlargement, width of latter less than width of base of uncus, the surface very rough; valves with costa having a median swelling, harpe ovate, in width subequal to width of adjacent sclerotized costal region, with a variable number of spines, sacculus with inner margin angled; aedeagus slightly longer than combined lengths of uncus, tegumen, and saccus, posterior end terminating in a broadly rounded, sclerotized projection; vesica armed with a series of many fine spines of more or less equal length, the spines occupying between one-fourth and three-tenths of length of the aedeagus. Eighth segment with lateral organs; third segment without row of bristles.

FEMALE GENITALIA: Sterigma membranous; ductus bursae short, sclerotized, slightly longer than wide, then abruptly widened dorsally,

forming a broad, sclerotized curve, terminating in the rounded membranous area of the corpus bursae; ductus seminalis arising from ventral surface just before the dorsal loop begins; posteroventral area of corpus bursae with a poorly defined band of small, sclerotized granules.

Types: Holotype, male, upper camp, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 4, 1956 (Lloyd M. Martin, John A. Comstock, William A. Rees); allotype, female, same data, July 5, 1956. Paratypes, 15 males and one female, same data as types, July 4, 6, 8, 9, 1956, also collected by Robert J. Ford; 16 males, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 3, 9, 12, 1956 (C. W. Kirkwood and R. H. Reid). Holotype and allotype in the collection of the Los Angeles County Museum; paratypes in the collection of that institution, of the American Museum of Natural History, and of C. W. Kirkwood, R. J. Ford, and R. H. Reid.

In general appearance and in the female genitalia this species is rather unlike the other known species in this genus. The color of the primaries is more of a light gray or a seeming grayish green than in the other species. It can also be distinguished by the minute discal spots, by the faint patches of brown in the subterminal area, when the latter are present, and by the obsolescent nature of the median shade line.

The male genitalia are associated with *lixaria*, *lixarioides*, and *stenomacra* as regards the armament of the vesica. The present species appears closest to the last-named in having numerous fine spines of equal length, but the series in *stenomacra* are much longer. In addition, the shape of the uncus is distinctive, as the present species has the sides evenly concave, while they are more or less straight, with an attenuate apex, in *stenomacra*.

The female genitalia are distinct from those of any species known to the author, and the description and illustration should serve to distinguish them. It should be noted that both *errantaria* McDunnough and *consimilis* Heinrich are not represented by females in the collection of the American Museum of Natural History, so no comparisons can be made with these species. However, according to Heinrich's figure of the female genitalia of *consimilis*, it cannot be confused with the present species.

***Galenara stenomacra*, new species**

Figures 9, 24, 25, 26

MALE: Head, vertex light gray; front darker gray or gray-black, with closely appressed scales; palpi very short, extending only as far as front, gray. Thorax gray above; beneath light gray; legs light gray, becoming

grayish brown and brown distally; hind tibia without groove or hair pencil. Abdomen light brown above and below, with scattered gray scales, the latter tending to be concentrated on pleural regions.

UPPER SURFACE OF WINGS: Forewings, ground color light to medium gray, more or less heavily overlain with dark gray, gray-brown, and black scales, the over-all appearance thus becoming a dark gray, with maculation tending to be rather indistinct; t. a. line arising on costa about one-fourth of distance from base, going sharply outwardly oblique to middle of cell, curving sharply basad to cubital vein, with another sharp outward loop in cubital cell, meeting inner margin about one-fourth of distance from base; a wide, diffuse, blackish, median shade, sharply defined basally, fading out distally, crossing wing, sometimes contiguous with distal portions of loops of t. a. line; discal dash black, elongate, extending almost the full width of end of cell; t. p. line arising on costa near discal dash, crenulate, of ground color, being bordered on both sides by blackish areas, the latter tending to be extended distally in upper half of wing, especially along veins, the t. p. line becoming obsolescent near discal dash except for blackish areas, continued posteriorly from base of discal dash, concave between veins, meeting inner margin about two-thirds of distance from base; subterminal area of ground color, but tending to be suffused in costal half of wing by black margin of t. p. line; s. t. line of ground color, bordered on both sides by diffuse black areas, extending across wing subparallel to outer margin; terminal area dark gray, with black, intravenular marks along outer margin; terminal line narrow, black; fringe dark gray, becoming lighter distally, tending to be lighter opposite veins. Hind wings light gray, with a faint brownish cast, becoming slightly darker along outer margin, immaculate except for weak discal dot and an indistinct extradiscal band near anal angle; terminal line gray-black in upper part of wing, fading out posteriorly; fringe concolorous with wing.

UNDER SURFACE OF WINGS: Ground color of both wings light gray, with faint brownish cast, especially along costal margin of forewings and on veins; maculation absent except for discal spots on all wings; terminal lines gray-brown, with small intradiscal dashes on primaries, fading out posteriorly; fringe concolorous with wings.

Length of forewings: 16 to 20 mm.; holotype, 20 mm.

FEMALE: Like male, perhaps slightly more suffused with dark gray and black scales, and with secondaries slightly darker.

Length of forewings: 16 to 18 mm.; allotype, 18 mm.

MALE GENITALIA: Uncus subtriangular, the apex attenuated, with

small, ventrolateral projections; gnathos with wide median enlargement, width of latter less than width of base of uncus; valves with costa straight, harpe rounded or with anterior margin slightly flattened, in width slightly wider than adjacent sclerotized costal region, with a variable number of spines, sacculus with inner margin angled; aedeagus subequal in length to combined lengths of uncus, tegumen, and saccus, posterior end terminating in a narrow, rounded, sclerotized projection; vesica armed with an elongate series of many fine spines of more or less equal length, the spines occupying almost one-half of the length of the aedeagus. Eighth segment with lateral organs; third segment without row of bristles.

FEMALE GENITALIA: Sterigma membranous; ductus bursae short, sclerotized, tubular, slightly longer than wide, then abruptly widened on left side to twice the width of posterior region, the surface of these areas thickly covered by minute sclerotized granules; corpus bursae very long, enlarged distally, the enlarged area with a broad, incomplete, poorly defined band of small, sclerotized granules.

TYPES: Holotype, male, Coulters Ranch Camp, south fork of the Little Colorado River, White Mountains, Apache County, Arizona, June 27, 1947 (G. H. and J. L. Sperry); allotype, female, upper camp, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 8, 1956 (Lloyd M. Martin, John A. Comstock, William A. Rees). Paratypes, three males, same data as holotype, June 26, 27, 1947; six males, same data as allotype, July 4, 8, 9, 1956, June 27, 1955 (William A. Rees); four males and two females, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 2, 8, 9, 1956 (C. W. Kirkwood and R. H. Reid); one male, Greer, White Mountains, Apache County, Arizona, July 17, 1953 (C. W. Kirkwood); one male, Graham Mountains, Graham County, Arizona, July 6, 1955 (E. Ordway and M. Statham); three males, 16 miles east of Taos, Taos County, New Mexico, June 30, 1935 (G. H. and J. L. Sperry). Holotype in the collection of the American Museum of Natural History, allotype in the collection of the Los Angeles County Museum; paratypes in the collection of the American Museum of Natural History, of the Los Angeles County Museum, and of Carl W. Kirkwood, R. H. Reid, and William A. Rees.

This moth is similar in general appearance to other species of *Gal-enara*, although it is one of the smaller species. It can be recognized by its very short palpi, the lack of the hair pencil on the hind tibia of the male, the broadly curved t. a. line, the elongate and prominent discal dash, and the generally dull and indistinct nature of the maculation. It resembles *glaucaria* Grossbeck in some of these characters, but the lat-

ter can be separated by the longer pectinations of the male antennae, the presence of the tibial hair pencil in the male, and by the more bluish gray coloration of the forewings. From *lixaria* Grote and *lixarioides* McDunnough the present species can be separated, in addition to the above characters, by the course of the median shade line; in the first two species this parallels the t. p. line, while in *stenomacra* it goes more or less straight across the wing.

The male genitalia show relationships to both *lixaria* and *lixarioides* as regards the armament of the vesica; in *stenomacra* this consists of an elongate series of fine spines of more or less equal length, while in the other two species the individual spines are longer, thicker, and form a row that is not so long. The shape of the uncus is somewhat intermediate between the broad, squat nature of that of *lixaria* and *lixarioides* and the slender, elongate shape found in *lallata* and *glaucaria*.

The female genitalia seem to be closely similar to those of the other species in the genus. More material is needed before accurate comparisons can be made. It would seem that the present species can be distinguished from the others by the configuration of the ductus bursae, as it abruptly becomes enlarged on the left without any noticeable enlargement on the right side.

GENUS *CARPHOIDES* MCDUNNOUGH

Carphoides MCDUNNOUGH, 1920, Canadian Dept. Agric., Tech. Bull., no. 18, p. 15.

In the original description McDunnough says, "very similar to *Gal-enara* but lacking the lateral abdominal organ in the male." An examination of the three mounted male abdomens of *lineata* Hulst, the type species, shows that the lateral organ is not lacking but is merely reduced. A well-defined sclerotized base is present on each side of the midline of the body, and from this the elongate setae arise. The latter are thin and only very slightly expanded distally, rather than being large and prominent as in some of the species of *Gal-enara*. In addition, they appear to be somewhat deciduous, as in some cases they are not completely present. This also holds true for the three dissections of *inconspicuaria* Barnes and McDunnough before the author. No males of *incopriaria* Hulst are in the American Museum collection, so nothing can be stated about this species.

In addition, the original description also calls for vein 9 of the secondaries to be present. The author has been unable to find this vein on any of the specimens of the three known species before him. It is

probable that this is a variable character, so it apparently cannot be relied on as being of generic value.

One of the Arizona species sent in for identification has male genitalia very similar to those of *lineata* and *inconspicua*, but has a strongly developed lateral organ on the eighth segment. In general appearance it is quite unlike the other species, but it apparently should be placed here on the basis of the genitalia and other characters.

***Carphoides setigera*, new species**

Figures 10, 27, 28, 29

MALE: Head, vertex and front pale gray, the latter sometimes with incomplete transverse cross line across top; palpi gray-black. Thorax pale gray above, collar and patagia with mixed gray-green and black scales, the former with posterior margin black; beneath pale gray; legs

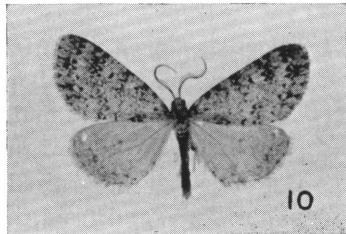
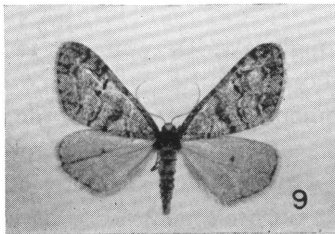
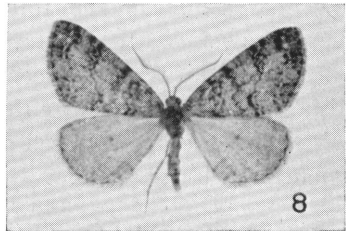
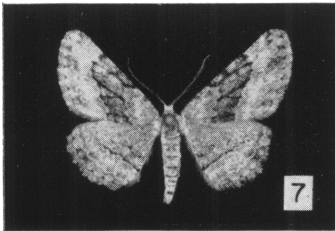


FIG. 7. *Stenoporpia mediatra*, new species, paratype male.

FIG. 8. *Galenara olivacea*, new species, paratype male.

FIG. 9. *Galenara stenomacra*, new species, paratype male.

FIG. 10. *Carphoides setigera*, new species, paratype male.

pale gray, with gray-brown and black scaling, especially on outer surfaces, forelegs and all tarsi tending to have alternate bands of light and dark; hind tibia without groove or hair pencil. Abdomen light gray-brown above and below, with scattered dark scales.

UPPER SURFACE OF WINGS: Forewings usually with vein R_1 short stalked with R_2 , although in two specimens R_1 and R_2 are free, and

arise close together, rarely with weak cross vein to R_{3+5} near branching of R_5 ; ground color a unicolorous gray-green, with scattered gray-black and black scales, these often numerous enough partially to mask the cross lines; basal line black, rather broad, absent in lower part of wing; t. a. line arising from black patch on costa slightly less than one-fourth of distance from base, going strongly obliquely outward to top of cell; then sharply angled posteriorly, with basal bends on cubital and anal veins, meeting inner margin about one-third of distance from base, the line sometimes being double, with the basal section weaker and straighter; median line arising from black patch on costa about two-fifths of distance from base, going outwardly to radial vein, then proceeding across wing in a series of loops, with the sharp points directed outward on veins and in discal and cubital cells, meeting inner margin about one-half of distance from base; discal spot black, often slightly curved; t. p. line arising from black patch on costa three-fifths of distance from base, obliquely outward to radial vein, then proceeding across wing similar to median line, meeting inner margin about seven-tenths of distance from base, this line completely or partially double, with the outer line weaker, but usually arising from a patch on costa separated by its own width from the previous costal patch, the area between grayish; s. t. line consisting of a series of small, grayish white, intravenular dots shaded basally by black marks and subparallel to outer margin, these markings double in cubital cell; outer margin with incomplete terminal line, broken at veins, with intravenular, black marginal spots, these extending to meet s. t. line in cells M_1 and M_2 ; fringe checkered, lighter than wing but gray-black opposite marginal spots. Hind wings light gray, with scattered dark gray and gray-black scales, these becoming more numerous distally; discal spot present, small; extradiscal band subparalleling outer margin, becoming weaker in costal portion of wing, gray-black, being strongest in cells; terminal line black, widened in cells, narrowly broken at veins; fringe lighter than wings, not checkered.

UNDER SURFACE OF WINGS: Both wings light gray, the primaries with the black scaling of the upper surface showing through; forewings with costa light grayish brown, with gray-black scalation; discal dots and terminal lines present on all wings; other maculation absent except that showing through from upper surface.

Length of forewings: 15 to 18 mm.; holotype, 18 mm.

FEMALE: Similar to male, but with less black scaling on forewings.

Length of forewings: Allotype, 19 mm.

MALE GENITALIA: Uncus subtriangular, the apex attenuated, shal-

lowly bifurcate; gnathos with median portion elongate, bluntly pointed; valves broad, widest opposite spine patch of sacculus; harpe semi-circular, in length more than one-half of the width of valve, the inner surface having numerous spines; sacculus an elongate, sclerotized band extending to just beyond harpe, apex with numerous appressed spines; aedeagus relatively broad, the width about one-fifth of the length, posterior end terminating in an elongate, sclerotized band. Eighth segment with strong lateral organs; third segment without row of bristles.

FEMALE GENITALIA: Sterigma with sclerotized lateral plates, their surfaces convoluted, and with small, curved, sclerotized median piece; ductus bursae sclerotized, short, slightly longer than wide, narrowed anteriorly before joining corpus bursae; the latter very long, slender, posterior portion narrowly sclerotized, extending to left of ductus bursae, the anterior end slightly swollen and with an indistinct band of sclerotized spinules.

TYPES: Holotype, male, upper camp, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 5, 1956 (Lloyd M. Martin, John A. Comstock, William A. Rees); allotype, female, same data, July 6, 1956. Paratypes, six males, same data as types, July 5, 6, 7, 8, 9, 1956; five males, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 3, 7, 8, 14, 1956 (C. W. Kirkwood); one male, Portal, Cochise County, Arizona, June 20, 1955 (M. Cazier). Holotype and allotype in the collection of the Los Angeles County Museum; paratypes in the collection of that institution, of the American Museum of Natural History, and of C. W. Kirkwood.

Carphoides setigera is very distinct in facies from the other known species in the genus, resembling, instead, *Vinemina perdita* Guedet. It can be distinguished from the latter by the absence of the tibial hair pencil and by the presence of the lateral organ on the eighth segment in the male, and by the greener color of the primaries.

The male genitalia are quite similar to those of the type species, *lineata*. The present species can be separated by the elongate, semicircular harpe and by the almost completely unarmed vesica.

The female genitalia of *setigera* are also closely similar to those found in *lineata*. The new species has a wider and more quadrate ductus bursae, the area of sclerotization at the posterior end of the corpus bursae is shorter, while the area of spinules at the anterior end is broader than in *lineata*.

Glena cognataria (Hübner)

Anagoga cognataria HÜBNER, "1825" [1827-1831], *Zuträge zur Sammlung exotischer Schmettlinge*, vol. 3, p. 34, figs. 549, 550.

Aspilates acidaliaria WALKER, 1862, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 26, p. 1684.

Aspilates infixaria WALKER, 1862, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 26, p. 1685.

Diastictis crassata HULST, 1896, Trans. Amer. Ent. Soc., vol. 23, p. 333.

Selidosema muricolor HULST, 1896, Trans. Amer. Ent. Soc., vol. 23, p. 355.

Anisodes umatillaria STRECKER, 1899, Lepidoptera Rhopalocera and Heterocera, suppl. no. 2, p. 9.

Selidosema insaria DYAR, 1909, Proc. Ent. Soc. Washington, vol. 11, p. 27.

D. S. Fletcher, of the British Museum (Natural History) has examined the genitalia of the male types of both *acidaliaria* and *infixaria*, and has found that they are correctly placed here. Hence once again it becomes necessary to add *acidaliaria* to our North American list, as it apparently has not appeared since it was correctly listed as a synonym of *cognataria* by Dyar ("1902" [1903], Bull. U. S. Natl. Mus., no. 52, p. 327).

***Stenoporpia mediatra*, new species**

Figures 7, 18, 19, 20

MALE: Head, vertex light gray, with a mixture of brown and black scales, and a faint indication of a brown line between bases of antennae; front light gray, with most of upper one-half black or black-brown, sometimes with a narrow, vertical, median band of light gray; palpi black-brown. Thorax light gray above, with many scales becoming gray-black at apex, these latter often forming an indistinct metathoracic band; under surface light gray; legs light gray, more or less heavily suffused with brown-black scales, especially on outer surface of prothoracic and mesothoracic legs. Abdomen light gray, more or less heavily suffused above with brown scales, especially on anterior portions of segments, and with black posterior margins to all segments except the first visible one; under surface light gray, with scattered brown scales.

UPPER SURFACE OF WINGS: Forewings, ground color light gray, with variable, often heavy, suffusion of gray-brown and black scales, this last concentrated in median area of the wing and on the veins therein, forming a median black band; basal line absent; t. a. line usually indistinct and indicated by beginning of black median area, when present arising on costa about two-fifths of distance from base, running obliquely outward to radial vein, then angled sharply posteriad and curving across wing to meet inner margin at one-fourth of distance from base, the line itself sometimes partially obscured by a diffuse gray-brown shade basad of median area; median area black, with scattered scales of ground color, especially in discal cell, the veins in this area

black and contrasting; discal dot usually not present; t. p. line usually indicated more by ending of black median area than by an actual line, when present arising on costa about three-fifths of distance from base, swinging outward through cell and then subparalleling outer margin to inner margin, with basal indentations in the cells; subterminal area of ground color, with an indistinct, broad band of gray-brown distad of median band; subterminal line light gray, usually complete, formed of a series of outward-pointing arcs; terminal area variably suffused with gray-brown and gray-black scales; terminal line consisting of cellular black dots, connected by a narrow black line; fringe light gray, darkened medially and opposite dots of terminal line. Hind wing concolorous with forewing, without broad, black, median area; intradiscal line absent; discal dot usually present, small, black; extradiscal line black, extending straight across wing from radial vein to anal margin, slightly concave between veins, and usually broadly shaded basally with gray-black scales, especially in posterior portion of wing; remainder of wing and fringe as on primaries.

UNDER SURFACE OF WINGS: Ground color of both wings light gray, the forewings evenly suffused with gray-brown scales; maculation absent except for discal dots and terminal line, although the median area of the forewings may slightly show through from the upper surface.

Length of forewings: 16 to 19 mm.; holotype, 19 mm.

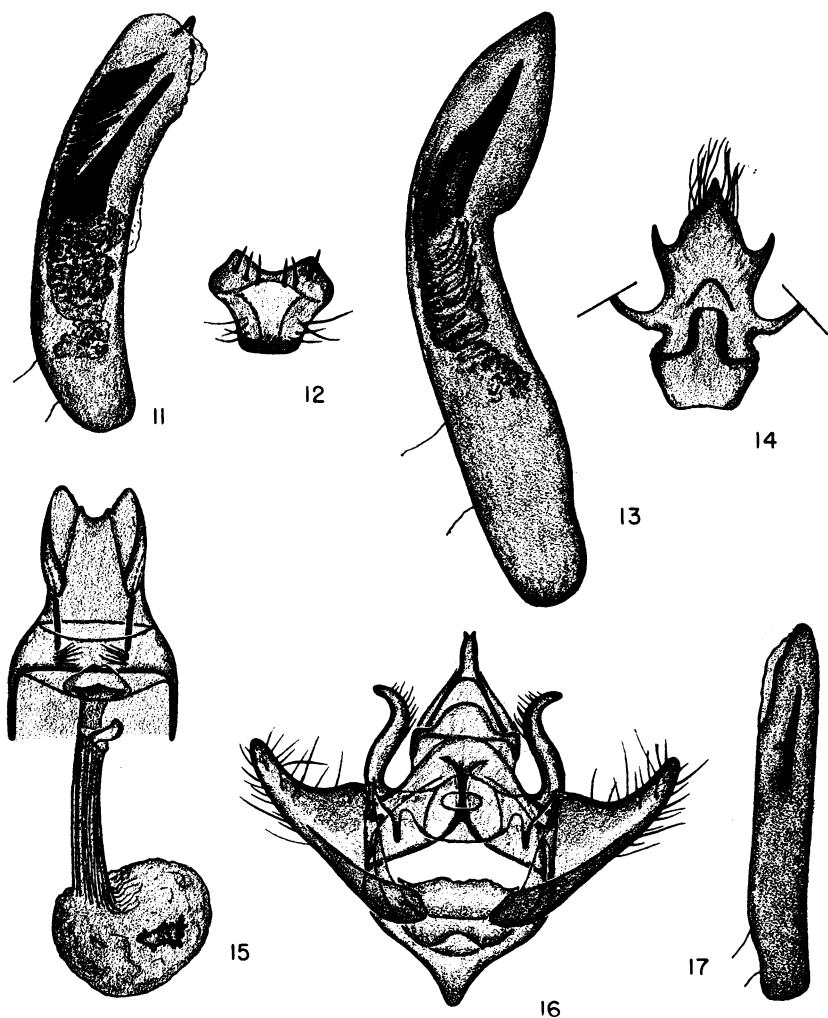
FEMALE: Like male.

Length of forewings: Allotype, 19 mm.

MALE GENITALIA: Uncus sharply narrowed and curved ventrad, terminating in two fine points; gnathos well developed, with prominent median enlargement; valves with costa thickened, narrowed apically, terminating before apex of valve, the apex of costa with a rather broad group of short, thickly set spines; length of aedeagus equal to combined lengths of tegumen and saccus; vesica often with a small, sclerotized piece.

FEMALE GENITALIA: Sterigma membranous; ductus bursae very short, narrow, with a slender sclerotized ring; corpus bursae membranous, with a broadly enlarged anterior sac; signum an elongate oval, with anterior margin angled and having a few blunt projections.

TYPES: Holotype, male, and allotype, female, upper camp, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, June 26, 1955 (Lloyd Martin). Paratypes, 12 males, same data as types, June 26, 27, 1955 (Lloyd Martin and William A. Rees), July 4, 5, 8, 1956 (Lloyd Martin, John A. Comstock, and William A. Rees); four males, Pinery Canyon, Chiricahua Mountains, Cochise County, Arizona, July 3, 4, 6, 1956 (R. H. Reid and C. W. Kirkwood); one male, Pine Crest, Mt. Gra-

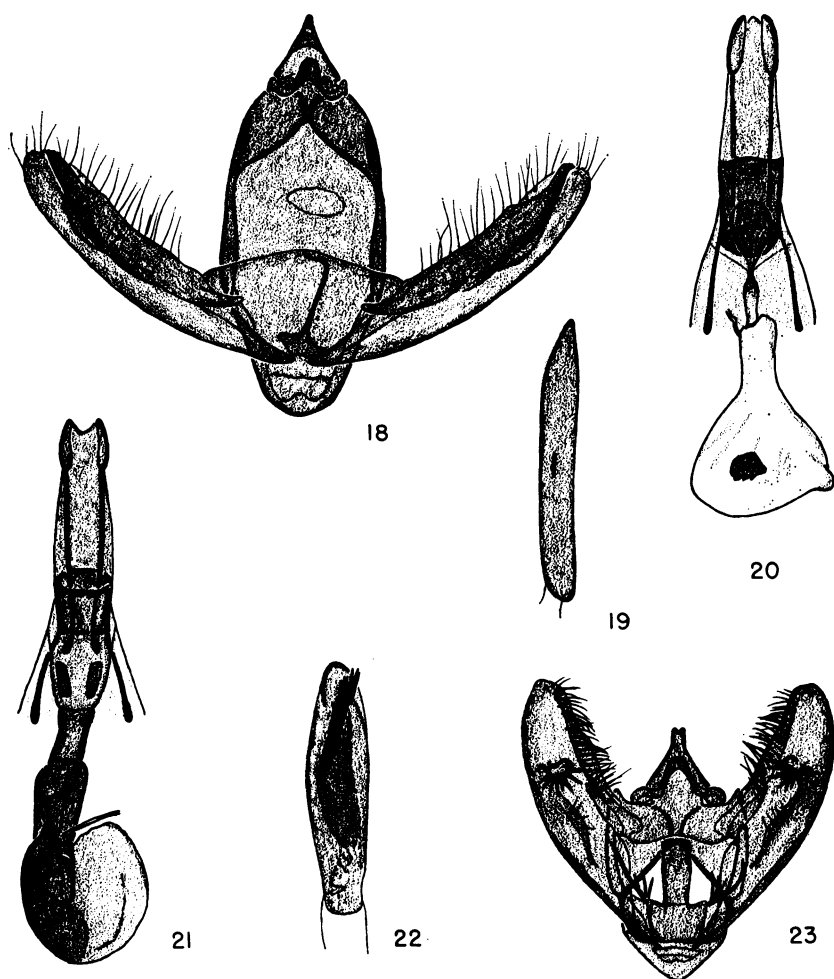


FIGS. 11-14. Male genitalia of *Stamnodes*. 11, 12. *S. lampra*, new species. 11. Aedeagus of paratype. 12. Anellus of holotype. 13, 14. *S. artemis*, new species, paratypes. 13. Aedeagus. 14. Anellus.

FIGS. 15-17. Genitalia of *Sperrya cervula*, new species. 15. Female, paratype. 16. Male, holotype. 17. Aedeagus of holotype.

ham, Pinaleno Mountains, Graham County, Arizona, elevation 7300 feet, June 28, 1955 (Lloyd Martin). Holotype and allotype in the collection of the Los Angeles County Museum; paratypes in the collection of that institution, of the American Museum of Natural History, and of Carl W. Kirkwood, William A. Rees, and R. H. Reid.

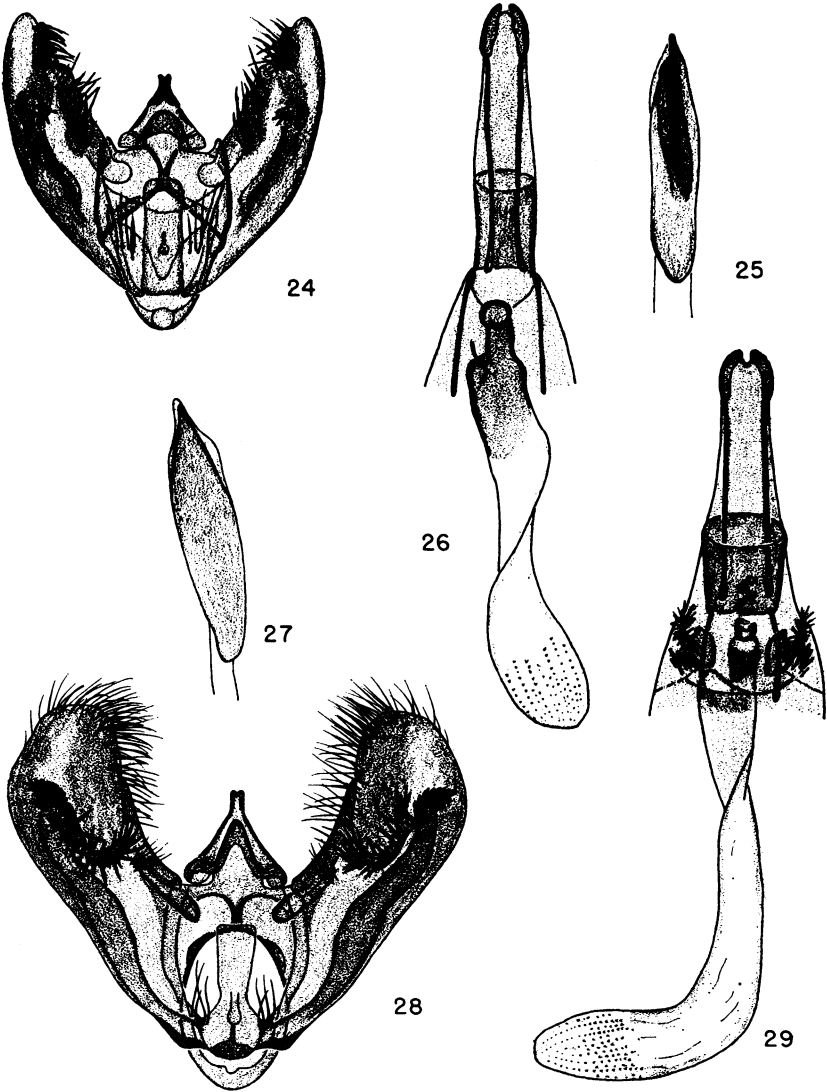
This species is closely allied to *anastomosaria* Grossbeck. In appear-



FIGS. 18-20. Genitalia of *Stenoporpia mediatra*, new species. 18. Male, paratype. 19. Aedeagus of same. 20. Female, allotype.

FIGS. 21-23. Genitalia of *Galenara olivacea*, new species. 21. Female, allotype. 22. Aedeagus of paratype. 23. Male, holotype.

ance the two species are very similar, but *mediatra* may be at once recognized by the median area of the forewings, and the veins therein, which are suffused with black. The genitalia of the two species are also closely similar, but the male of the new species has a more sharply hooked uncus, with two terminal points, a more strongly developed median enlargement of the gnathos, a slightly shorter costal sclerotized area, with a thicker terminal group of spines, and a slightly shorter



FIGS. 24-26. Genitalia of *Galenara stenomacra*, new species. 24. Male, paratype. 25. Aedeagus of paratype. 26. Female, paratype.
FIGS. 27-29. Genitalia of *Carphoides setigera*, new species. 27. Aedeagus of holotype. 28. Male, holotype. 29. Female, allotype.

aedeagus. The female of *mediatra* has a smaller sclerotized ring of the ductus bursae, and the signum has a series of projections on the anterior margin.

