

A Review of the
Genus *Horama* Hübner and
Reestablishment of the
Genus *Poliopastea* Hampson
(Lepidoptera: Ctenuchidae)

ROBERT E. DIETZ IV
and W. DONALD DUCKWORTH

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ABSTRACT

Dietz, Robert E., IV, and W. Donald Duckworth. A Review of the Genus *Horama* Hübner and Reestablishment of the Genus *Poliopastea* Hampson (Lepidoptera: Ctenuchidae). *Smithsonian Contributions to Zoology*, number 215, 53 pages, 29 figures, 3 plates, 4 maps, 1976.—The ctenuchid genus *Horama* is reviewed and one new species described. A key to the species is provided. The history and classification of the genus are discussed in detail. All the species of *Horama* are reviewed regarding their taxonomic history, distribution, identity, known biology, and morphology. Distribution maps, photographs of the adults, drawings of the male and female genitalia, wing venation, and other aspects of the morphology are included. In addition, the genus *Poliopastea* is reestablished and a number of species transferred to it from other genera. The genus is characterized and included species are listed with data given regarding synonyms, type-localities, and type depositions.

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A Review of the Genus *Horama* Hübner and Reestablishment of the Genus *Poliopastea* Hampson (Lepidoptera: Ctenuchidae)

Robert E. Dietz IV
and *W. Donald Duckworth*

Introduction

Comparatively little attention has been paid by lepidopterists to the day-flying moths in the family Ctenuchidae (=Syntomidae, =Amatidae). Considering their moderate size, their remarkable mimetic patterns, and their abundance in the tropical regions of the world, it is surprising how little is known of their biologies and phyletic affinities. Most larval and pupal stages, as well as the host-plant associations, are unknown. Various observers (Seitz, 1890; Schrottky, 1909, 1911) have commented on the significance of the mimetic resemblance of many of the ctenuchids to certain Hymenoptera. Aside from the comprehensive treatments of the Palearctic genus *Amata* (Obraztsov, 1966) and the Madagascar ctenuchids (Griveaud, 1964, 1969), the majority of the taxonomic work on ctenuchids has been confined to species descriptions with generic placement often being determined by similarity in external appearance rather

than by comparative morphological and biological studies. The result has been that many genera contain species which superficially appear similar due to mimetic relationships with the same or similar hymenopteran models but which, in fact, are unrelated when more conservative characters are examined. Conversely, in some species such as *H. p. viridifusa* (Schaus), it appears that one species with two distinct morphs may represent a mimetic association with several different models.

The ctenuchids are presently divided into three subfamilies (Forbes, 1939) on the basis of differences in the venation of the hind wing. The Amatinae are limited to the Old World and except for a few African species have R and M fused in the hind wing. The Euchromiinae occur in both the Old and New Worlds and have M₂ absent or rudimentary and Cu₁ and Cu₂ stalked or united. The Ctenuchinae occur only in the New World and have M₂ fully developed and Cu₁ and Cu₂ widely separated. We have maintained these distinctions, realizing fully that venational characters are notoriously variable and that future work may find these characters not sufficiently stable for defining higher categories.

The genus *Horama* is a member of the Ctenu-

Robert E. Dietz IV, Department of Entomological Sciences, University of California, Berkeley, California 94720. W. Donald Duckworth, Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

chinae by having a strong M_2 vein present in the hind wing, but is anomalous in that Cu_1 and Cu_2 are fused except for a fork near the termen. The genus was selected for study in order to evaluate the validity of generic parameters suggested by Hampson (1898) for the entire family. It included species which were readily recognizable by the banded abdomen with lateral bullae, by the long hind legs with plumose tibia and tarsi, and by the brown and yellow color scheme exhibited by most of the species. This phenotypic similarity was presumed to indicate phyletic affinity among the included species. A comparative examination of the genitalia and venation showed this presumption to be erroneous. The differences in structure were often so distinct that it was difficult to homologize parts. The venational studies provided little information for separating species but were responsible for the discovery that *H. clavipes* (Boisduval) was missing M_2 in the hind wing and therefore was not only incorrectly placed generically but was in the wrong subfamily! This discovery, in turn, stimulated an investigation of various genera in the subfamily Euchromiinae in order to properly place *H. clavipes*. Comparative studies of the genitalia revealed *H. clavipes* to be closely related to certain species in the genus *Macrocneme* Hübner. In addition, we are now convinced that *H. clavipes* and 24 species formerly placed in *Macrocneme* are sufficiently different, both morphologically and presumably behaviorally, to warrant the establishment of a separate genus. For that purpose we have resurrected the Hampson name *Poliopastea* and provided a preliminary survey of its included taxa in the present paper.

Thus, misplaced species, like *H. clavipes*, emphasize the problems created by defining genera on the basis of adaptive (i.e., mimetic) characters in a family such as the Ctenuchidae where convergence of unrelated taxa occurs frequently.

Our study of the genus *Horama* has necessitated changes in the taxonomic status of some of the included species. These changes attempt to indicate phyletic affinities, as we perceive them, but no attempt has been made to redefine the genus at this point. Ongoing studies of the generic and higher categories throughout the ctenuchids must be completed before more precise definitions of these taxa can be made.

For the terms employed in this study we have re-

ferred to Klots in Tuxen (1970) and to Torre-Bueno (1962). The color nomenclature is from Ridgeway (1912). The dates for Hübner's works are taken from Hemming (1937) and for the Draudt names occurring in Seitz from Griffin (1936). Cramer's *Papillons Exotiques* . . . was dated from Brown (1941) and from the "Catalogue of the Library," British Museum (Natural History). References attributed to Saalmüller (1890) are based on Gundlach's notation (1891) that Saalmüller was responsible for the publication of pages 347 to 354 in Möschler's work in 1890. Apparently Saalmüller edited a systematic list from a manuscript prepared by Möschler before his death. He also added the plate and changed some of the generic names.

The usual procedure for preparing Lepidoptera genitalia was followed except that the preparations were stored in polyethylene vials (caplugs) rather than being mounted in balsam. In this manner the compact genitalia could be studied from all angles and not be distorted by a cover slip. The polyethylene vials also offered the advantage of having nonwetable sides, which prevented the glycerin from coming in contact with the stopper. The illustrations were done by the senior author with the aid of a camera lucida.

Those individuals and institutions from which material was borrowed for this study are listed below together with the appropriate abbreviation used throughout the text:

AMNH	American Museum of Natural History, New York
ANS	Academy of Natural Sciences, Philadelphia
BM(NH)	British Museum (Natural History), London
CAS	California Academy of Sciences, San Francisco
CM	Carnegie Museum, Pittsburgh
CNC	Canadian National Collection, Ottawa
CU	Cornell University, Ithaca, New York
IML	Instituto Miguel Lillo, Tucumán, Argentina
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts
NMNH	National Museum of Natural History, Smithsonian Institution
OX	Hope Department of Entomology, Oxford University, Oxford, England
PAD	Pastor Alayo D., Instituto de Biología, Habana, Cuba
SMM	Zoologische Staatssammlung, Munich, Germany
RML	Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands
UCB	University of California, Berkeley, California
UNM	Instituto de Biología, Universidad Nacional de México, México, D.F.

UCV Universidad Central de Venezuela, Maracay, Aragua, Venezuela
 USP Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil

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Classification

Hampson (1898, 1914) based his classification of 12 species of *Horama* on the hirsute scales of the hind legs. Subsequently, the names *serena* and *stoneri* were added to the genus by Schaus and Lindsey, respectively. The present review bases its classification on a comparative examination of the male and female genitalia. The result has been that eight species names have been maintained, four have been synonymized, two have been relegated to subspecies, and one new species is described. Also, *Macrocneme nigricornis* Schrottky proved to be conspecific with *H. panthalon viridifusa* (Schaus). The taxa have been separated into three groups and are discussed below:

GROUP I.—*Horama pretus*, *H. grotei*, and *H. diffissa* are grouped on the tenuous character of their habitus rather than on any specific genitalic resemblances. The group may be artificial but the general color scheme of the body and the dilated antennae give the species some semblance of phyletic affinity. The male genitalia of *H. diffissa* is notably small in the genus, and those of *H. grotei* and *H. pretus* are compact and well sclerotized.

GROUP II.—*Horama panthalon*, *H. tarsalis*, and *H. zapata* are the only species which resemble each other in both the male and female genitalia. In the males the hoodlike uncus and the presence of a membranous lobe on the clasper of the valva coincides with the resemblance of the corpora bursae, the signa, and the origin of the ductus seminalis in the females. No accessory bursae is present and the ostium bursae is preceded dorsocaudally by a medial papilla. Both *H. tarsalis* and *H. zapata* differ from *H. panthalon* in having sclerotized rods laterad of the aedeagus and pectinate antennae.

We were not able to distinguish between the genitalia of the *H. panthalon* races and have concluded:

1. Those populations from the Lesser Antilles (*H. stoneri*) and from mainland South America (*H. serena*) are to be considered color forms of *H. panthalon*.
2. Those populations from Mexico and the southern United States (*H. panthalon tex-*

ana) are obviously closely related to the Caribbean *panthalon* but the nonoverlapping range and the larger-sized individuals and tibial tufts suggest sufficient genetic differentiation to warrant subspecific status.

3. Those populations from southern South America (*H. panthalon viridifusa*) represent a widely disjunct race of *H. panthalon* that has evolved two distinct morphs through geographic isolation.

GROUP III.—*Horama plumipes*, *H. pennipes*, and *H. oedippus* are grouped on the basis of the anellar plate occupying most of the diaphragma and completely enclosing the aedeagus. *H. oedippus* and *H. pennipes* have a bifurcated uncus and a pair of medial processes forming the gnathos. *Horama plumipes* has a simple uncus and a small U-shaped sclerite in the area of the gnathos.

These groupings (especially Groups II and III) suggest to us that *Horama* is not a natural group of species. Presently they are held together by the tenuous venational character of a strong M_2 and a long stalked Cu_1 and Cu_2 in the hind wing. The mimetic resemblance of the adults to Hymenoptera, especially in the long, plumose hindlegs, does not appear to correlate well with structural similarities in the genitalia of either sex. The phenotypic resemblances may ultimately prove to be the result of convergence from separate phyletic lines. In the interest of stability we are maintaining the polyphyletic grouping of *Horama* until such time as studies on related groups are completed and our understanding of the ctenuchid genera is more complete.

Checklist for *Horama* Species

Horama Hübner

- = *Mastigocera* Harris
- = *Phylloecia* Guérin
- = *Callicarus* Grote
- = *Drucea* Kirby
- 1. *H. pretus* (Cramer)
 - = *Zygaena eunolphus* Fabricius
 - = *Mastigocera vespina* Harris
- 2. *H. grotei* Butler
- 3. *H. diffissa* Grote
 - = *Horamia* [sic] *pretellus* Herrich-Schäffer
- 4. *H. panthalon panthalon* (Fabricius)
 - = *Mastigocera tibialis* Butler
 - = *Horama serena* Schaus [new synonymy]
 - = *Horama stoneri* Lindsey [new synonymy]

- 5. *H. panthalon texana* (Grote) [new status]
- 6. *H. panthalon viridifusa* (Schaus) [new combination, new status]
 - = *Horama castrensis* Jones [new synonymy]
 - = *Macrocneme nigricornis* Schrottky [new synonymy]
 - = *Horama flavata* Jones [new synonymy]
 - = *Horama fulvitaris* Schrottky
- 7. *H. tarsalis* Walker
- 8. *H. zapata* Dietz and Duckworth [new species]
- 9. *H. pennipes* (Grote)
 - = *Horamia* [sic] *plumosa* Herrich-Schäffer
- 10. *H. plumipes* (Drury)
 - = *Phylloecia punctata* Guérin
 - = *Horama jalapensis* Neumoegen
- 11. *H. oedippus* (Boisduval)

Genus *Horama* Hübner

- Horama* Hübner, 1819:125.—Grote, 1866:179.—Stahl, 1882:92.—Kirby, 1892:130.—Hampson, 1898:417.—Zerny, 1912:121.—Draudt in Seitz, 1916:143.—Forbes, 1930:25; 1939:100.—Fleming, 1959:94. [Type-species: *Sphinx pretus* Cramer, 1777, by monotypy.]
- Mastigocera* Harris, 1839:289, 315. [Type-species: *Mastigocera vespina* Harris, by subsequent designation by Grote, 1866:180 (now considered synonym of *H. pretus* Cramer).]
- Phylloecia* Guérin, 1844:504.—Kirby, 1892:129. [Type-species: *Phylloecia punctata* Guérin, by subsequent designation by Kirby, 1892:129 (now considered synonym of *H. plumipes*).]
- Horamia* [sic] Walker, 1854:251 [as *Euchromia* species].—Clemens in Morris, 1862:275 [incorrect original spelling].
- Callicarus* Grote, 1866:182.—Saalmüller in Möschler, 1890:349. [Type-species: *Callicarus pennipes* Grote, by subsequent designation by Hampson, 1898:417.]
- Callicorus* [sic] Kirby, 1892:129 [as a synonym of *Phylloecia*].—Neumoegen and Dyar, 1893:100 [incorrect subsequent spelling].
- Drucea* Kirby, 1892:130. [Type-species: *Drucea oedippus* (Boisduval), by original designation.]

Horama is not an easily characterized genus. The included species exhibit a wide range of variation in external appearance and in the genitalia (see illustrations). The genus is held together by a hind wing venational character that has M_2 strong and Cu_1 and Cu_2 united or long stalked with a fork at the termen.

Horama pretus (Cramer)

FIGURES 1a,b, 13; PLATE 1: FIGURE 1; MAP 3

- Sphinx pretus* Cramer, 1777, vol. 2: 121, 150 [index], pl. 175: figs. F, F.
- Horama pretus*.—Geyer in Hübner [1828], 3: pl. [35]: figs. 1-4.—Dewitz, 1877:94.—Stahl, 1882:191.—Möschler, 1890:

Key to Species of *Horama*

1. Both wings with semi-hyaline streak running through cell and below 2
Both wings fully scaled 3
2. Both wings black, antennae serrate, abdomen with dorsal series of white spots
H. pennipes (Grote)
Both wings dull grayish brown, antennae pectinate, abdomen without dorsal series of spots
H. zapata, new species
3. Both wings black, all thoracic markings white, never yellow or orange 4
Both wings brown, or a shade thereof, thoracic markings never white (except *pretus*), usually yellow or orange 5
4. Thoracic disc immaculate, first abdominal tergite with 2 white spots (morph I)
H. panthalon viridifusa (Schaus)
Thoracic disc with 4 white spots, first abdominal tergite with 3 white spots
H. plumipes (Drury)
5. Hind tibiae with distal end broadly banded with long hirsute scales (black only) 6
Hind tibiae with distal end narrowly banded with short hirsute scales (brown or black) 7
6. First abdominal tergite divided by transverse white stripe *H. oedippus* (Boisduval)
First abdominal tergite not so divided, white confined to area between lateral bullae
H. panthalon texana (Grote)
7. Hind wing with basal half yellow, apex and termen brown 8
Hind wing with no yellow, same color as forewing 11
8. First abdominal tergite with two white subdorsal spots (morph II)
H. panthalon viridifusa (Schaus)
First abdominal tergite without two distinct subdorsal spots 9
9. Thoracic disc immaculate, 2nd and 3rd abdominal tergites dark brown, spotted dorsally and laterally with ochreous yellow *H. diffissa* Grote
Thoracic disc with 4 yellow spots, 2nd and 3rd tergites not dark brown but banded bluish black on foremargin, ochreous yellow on hind margin 10
10. Hind wing pale yellow at base, brown at apex and termen
H. panthalon panthalon (Fabricius)
Hind wing mostly ochreous orange, suffused brown at apex only (color variant)
H. panthalon panthalon (Fabricius)
11. Antennae pectinate, thoracic disc and abdominal pleura spotted with orange
H. tarsalis Walker
Antennae serrate, thoracic disc immaculate, abdominal pleura not spotted with orange 12
12. Tegulae tawny and immaculate, 2nd abdominal tergite with paired white subdorsal spots
H. pretus (Cramer)
Tegulae gray with yellow longitudinal stripe, 2nd abdominal tergite without subdorsal spots
H. grotei Butler

113.—Saalmüller in Möschler 1890:349.—Gundlach, 1891: 153.—Kirby, 1892:130.—Hampson, 1898:422, fig. 222.—Kirby, 1908:120, pl. 473: figs. 1–4.—Zerny, 1912:122.—Draudt in Seitz, 1916:144, pl. 21: row i.—Wolcott, 1923[1924]:157.—Forbes, 1930:25, pl. II: fig. 1.—Zerny, 1931:19.—Wolcott, 1936:413; 1941:125.—Martorell, 1945[1948]:177, 499.—Wolcott, 1948[1951]:575.

Euchromia (Horamia) pretus.—Walker, 1854:252.—Clemens, 1860:546.—Clemens [in part] in Morris, 1862:276.

Zygaena eunolphus Fabricius, 1782:505 [appendix]. [Type-locality: not stated. Type: lost.]

Mastigocera vespina Harris, 1839:315.—Clemens in Morris, 1862:278. [Type-locality: St. Thomas, West Indies. Type: lost.]

MALE (Plate 1: figure 1).—Head black. Palpi cream, tips black, obliquely upturned and reaching vertex, third segment short and porrect. Antennae

serrate, dilated beyond middle; black dorsally with recurved, naked yellow tips preceded by white spot; ventrally, entirely yellow, naked, black band beyond middle. Patagia creamish white. Tegulae tawny, anterior margins black. Thoracic disc tawny with black anterior margin. Pectus black with yellow patch beneath hind wing and white spots above coxae. Abdomen ochreous tawny; first tergite white, occasionally suffused with cream-colored scales; second tergite with bluish-black foremargin and two small white dots on hind margin; first sternite bluish black; second sternite white with the scaling extending dorsally onto third tergite; third and apical sternites bluish black. Legs bluish black, variously spotted with cream yellow; tarsi

entirely cream yellow; hind tibiae with black band of two rows of short, hirsute scales between spurs; hind tarsi with single row of dorsal, hirsute scales. Wings immaculate except for white spot at humeral angle of forewing, dark tawny to russet; hind wing with costal margin cream. Underside: both wings similar to upperside but inner margin of forewing cream colored. Venation (Figure 22). Alar expanse 36–38 mm.

MALE GENITALIA (Figure 1a,b).—Heavily sclerotized, compact; uncus bifurcate at tip, immovably attached to tegumen at base; small triangular sclerites laterad of tegumen represent the gnathos; ventral plate of anellus firmly united with valves.

FEMALE.—Similar to male but slightly larger. Female easily distinguished by small, cream-colored spots on upper third of forecoxae, remainder is bluish black. Forecoxae in the male are entirely cream colored. Alar expanse 37–40 mm.

FEMALE GENITALIA (Figure 13).—Genital plate with lamella antevaginalis modified into medial periostial projection with a pair of lateral arms cephalodorsad of opening; ductus bursae lightly sclerotized for half its length, becoming membranous before entering corpus bursae. Bursa copulatrix is covered by a saddle-like patch of signa composed of numerous inwardly directed spines, regularly arranged. Ductus seminalis enters on corpus bursae opposite to ductus bursae. A single accessory bursa extends from distal end of bursa copulatrix.

LARVA.—The only recorded description for any member of the genus, made by Wolcott (1923), reads as follows:

Fully-grown larvae are about 15 mm. long and 7 mm. wide, bright reddish-orange, reddest on thorax and head, shining. Body clothed with numerous spreading tufts of grey and white hairs, curved towards their tips. On the seven anterior abdominal segments dorsally are four compressed tufts of black hair in pairs, bending towards each other, the anterior pair of each segment closer together and touching at apex.

Cocoon of thin grey silk with the longer hairs from the larva entangled in it. Pupa bright reddish brown.

Martorell (1948) notes that the caterpillar is a leaf-webber and that it is gregarious with eight to ten larvae occurring in one web. The larvae seem to prefer the tender foliage of the terminal branches of the lowland host tree, *Elaeodendron xylocarpum*.

TYPE.—The Rijksmuseum van Natuurlijke Historie in Leiden contains two Cramer specimens,

one, the male lectotype, here designated and the other, the allolectotype.

TYPE-LOCALITY.—Isle of St. Thomas (West Indies).

HOST PLANTS.—Larvae on "cocorrón," *Elaeodendron xylocarpum* (Celastraceae). Adult on *Tournefortia* sp. and *Heliotropum indicum* (Boraginaceae).

DISTRIBUTION (Map 3).—Greater and Lesser Antilles.

REMARKS.—The island populations, except for that on St. Kitts, maintain a consistent phenotypic pattern. The specimens from St. Kitts lack the yellow patch beneath the hind wing and the legs, especially the femora and midcoxae, are always black. The male and female genitalia of the St. Kitts specimens are indistinguishable from those examined from other islands. We feel the color variations in the St. Kitts population are merely local differences which, lacking biological evidence to the contrary, do not warrant formal taxonomic recognition. The Lesser Antilles have been poorly collected and we suspect that with future sampling the differences exhibited by the St. Kitts specimens may appear in other island populations or in some combination closer to the typical form from St. Thomas.

SPECIMENS EXAMINED (30 males, 28 females).—CUBA: Cuba, BM (NH).

PUERTO RICO: Guánica, 28 Oct., NMNH; Maricao, 26 Jan., MCZ; Mayagüez, 5 Mar., NMNH; Pico del Este, El Yunque Radar Station, 1000 m, 5–6 Jan., NMNH; San Germán, Mar., CU; San Juan, 11–14 Feb., Mar., 21 Sept., NMNH, AMNH; "Porto Rico," NMNH, MCZ.

CULEBRA ISLAND: 6 July, NMNH.

ST. THOMAS: 22 Feb., 24 Feb., 12 Mar., AMNH. No date, BM (NH).

ST. JOHN: 6 Mar., 11 Mar., one pair in copulo, 20 Mar., AMNH. Gallows Point, 4–11 July, NMNH.

TORTOLA: One pair in copulo, NMNH; 29 Mar., AMNH.

VIRGIN GORDA ISLAND: Virgin Peak, 15 April, NMNH.

ST. KITTS: Frigate Bay, 12 April, NMNH.

"ANTILLES": No date, CAS.

Horama grotei Butler

FIGURES 2a–c, 14; PLATE 1: FIGURE 2; MAP 3

Horama grotei Butler, 1876:374.—Kirby, 1892:131.—Hampson, 1898:421, fig. 221.—Zerny, 1912:121.—Draudt in Seitz, 1916:144, pl. 21: row i.

MALE.—Head yellow, black spot between anten-

nae. Palpi upturned with second segment reaching vertex, third segment long and obliquely porrect; black with scattered yellow scales on first and second segments. Antennae serrate, yellow with black band beyond middle, naked except for a few scattered scales, tips recurved. Patagia yellow with anterior margin black mixed with bluish-violet iridescence, obscured above by downy, light gray hairs; a white spot beneath each tegula and a transverse yellow patch on metathorax. Pectus downy, gray, with white spots above coxae and yellow tufts below wings and patagia. Abdomen with first tergite slate with bluish-violet iridescence fading posteriorly into tawny; remaining tergites tawny with hind margins of second and third narrowly pale yellow; anterior half of first and second sternites slate with dark bluish-violet iridescence, posteriorly pale yellow. Legs yellow, femora blackish-violet gray, hind tibiae with black band between spurs. Forewing russet, tawny toward base; hind wing russet with costal margin pale yellow. Underside of forewing russet, inner margin pale yellow; hind wing russet with costa ochreous orange. Venation (Figure 23). Alar expanse 36–41 mm.

MALE GENITALIA (Figure 2a–c).—Valvae noticeably reduced and closely united to vinculum. Sacculus long and club-shaped. Uncus straight, undivided. Gnathos consisting of paired comma-shaped sclerites located medioventral to the base of the tegumen. Ventral anellal plate (=juxta) fused laterad to valvae and dominated by a prominent medial hook. Aedeagus gently curved at zone, phallobase triangular.

FEMALE (Plate 1: figure 2).—Similar to male except slightly larger. Alar expanse 41–46 mm.

FEMALE GENITALIA (Figure 14).—Ostium bursae a triangular pouch formed by the lamella antevaginalis. Ostium located immediately dorsad to pouch. Basal half of corpus bursae covered by inwardly directed spines of varying lengths. Two accessory bursae present, one enters on cervix bursae, the second attaches laterally on corpus bursae proper. Ductus bursae completely sclerotized; inception of ductus seminalis on cervix bursae.

TYPE.—Lectotype male, here designated, British Museum (Natural History).

TYPE-LOCALITY.—Jamaica.

HOST PLANTS.—None recorded.

DISTRIBUTION (Map 3).—Jamaica.

REMARKS.—This species, apparently endemic to the island of Jamaica, most closely resembles *H. pretus* in both the compact structuring of the male genitalia and the general similarity in color pattern and size.

SPECIMENS EXAMINED (54 males, 21 females).—JAMAICA: Constant Spring, St. Andrew, 6 May, AMNH; Hardware Gap, Greenhills, April, CM; 1 mi N Hardware Gap, Portland Parish, 12–20 Nov., NMNH; 4 mi S Hartford [SW of Long Bay], 850 ft, 26–27 April, NMNH; Newcastle, Greenhills, 16–20 Feb., MCZ, BM(NH); Rose Hill, Runaway Bay, 900 ft, St. Ann Parish, 29 April–2 May, NMNH; St. Ann, BM(NH); Mt. Diablo, Hollymount, 2754 ft, St. Catharine Parish, 21–24 April, NMNH; Mason River Station, 4 mi NW Kellits, 2100 ft, Clarendon Parish, 16–19 April, NMNH; Cinchona, 26–28 Feb., AMNH; no specific locality, 3 Aug., BM(NH), NMNH, MCZ.

Horama panthalon panthalon (Fabricius)

FIGURES 3a–b, 15; PLATE 1: FIGURES 3–5; MAP 1

Zygaena panthalon Fabricius, 1793:405.

Horama panthalon.—Dewitz, 1877:94.—Kirby, 1879:19.—Möschler, 1890:113.—Saalmüller in Möschler, 1890:349.—Gundlach, 1891:153.—Kirby, 1892:131.—Hampson, 1898:417, pl. 15: fig. 9.—Draudt in Seitz, 1916:143, pl. 21: row h.—Wolcott, 1923[1924]:157.—Forbes, 1930:25, pl. 2: fig. 4.—Forbes, 1931:341.—Wolcott, 1936:413; 1941:125; [1951]:575.

Horama pantalon [sic].—Zerny, 1912:121.

†*Horamia* [sic] *pretus* [not Cramer, 1777], Walker, 1856:1632 [in part]. [Varieties listed as beta, gamma, and delta are misidentified.]

Matigocera tibialis Butler, 1876:373. [Type-locality: Haiti, male holotype in BM(NH).]

Drucea tibialis.—Kirby, 1892:130.

Horama serena Schaus, 1924:12. [Type-locality: Canal Zone, Panama, male holotype in NMNH. New synonymy.]

Horama stoneri Lindsey, 1926:34. [Type-locality: Antigua, female holotype in NMNH. New synonymy.]

MALE (Plate 1: figures 3, 5).—Head black with bluish tinge. Frons with central black stripe, lateral ochreous-yellow spots and one ochreous-yellow spot between antennae. Palpi yellow, upturned not reaching vertex; first segment rough, third segment short and smooth. Antennae black, apices yellow, pectinate becoming serrate at tips. Patagia bluish black with creamish-white spots laterally and two confluent spots in the center. Tegulae bluish black with central yellow stripe. Thoracic disc bluish black with four distinct ochreous-yellow spots. Pectus bluish black with yellow patches beneath each wing and at base of patagia; white spots above each coxa, the prothoracic spot being smaller than

posterior spots. Abdomen, banded, anterior margin bluish black, hind margin, ochreous yellow; first tergite, bulbous laterally, center with anterior white patch separated by bluish black line from posterior, ochreous-yellow hind margin; first sternite with white band visible dorsally on second tergite. Legs, variously colored with ochreous yellow and bluish black; coxae, usually bluish black with ochreous-yellow patch; trochanters and femora, usually bluish black; tibiae and tarsi of fore and midlegs yellow, occasionally with black scaling at extremities on tibiae; hind tibiae, bluish black with basal yellow band and black, hirsute band between spurs; hind tarsi, ochreous yellow. Forewing dark brown, white spot at humeral angle; hind wing pale yellow on basal half, buff along costa, apex with dark brown band widest at costa and tapering irregularly to tornus. Underside: both wings light brown to fulvous with basal area of hindwing ochreous yellow. Venation (Figure 24a) shows some variation (Figures 24b,c). Occasionally R_2 does not anastomose with stalk of R_{3-5} to form accessory cell. Occasionally $Cu_1 + Cu_2$ completely united or fork of Cu_2 extremely weak. Alar expanse 32–35 mm.

MALE GENITALIA (Figures 3a,b).—Strongly sclerotized with hoodlike uncus, wide at base with concave, ovoid sclerites (=gnathos) laterally. Valva with two processes, the dorsal club-shaped, sclerotized, with inner surface rough; the ventral membranous with scattered setae. Shape of the dorsal club varies slightly, apex sometimes rounder or narrowly truncate. Saccus short. Diaphragma around aedeagus occasionally sclerotized at point of attachment. Ventral anellar plate (= juxta) a simple, domelike process between the valvae.

FEMALE (Plate 1: figure 4).—Similar to male. Alar expanse 31–35 mm.

FEMALE GENITALIA (Figure 15).—Lamella postvaginalis a broad, medial papilla. Lamella antevaginalis a smaller papilla with ostium opening at apex. Ductus bursae wholly sclerotized, distal end sharply bent, followed by a series of short, dentate spines to where ductus seminalis enters; bursae copulatrix with a single accessory bursa and signa consisting of a row of heavy, inwardly directed spines, additional, irregular spines scattered to one side. Distal end of bursa with a sculptured granular appearance from small sclerotized dots.

TYPE.—According to Hampson (1898) and Zim-

sen (1964), two syntypes of *Zygaena panthalon* Fabricius are in the Zoologisk Museum, Copenhagen, Denmark.

TYPE-LOCALITY.—West Indies.

HOST PLANTS.—None recorded. Adults have been collected resting on *Waltheria indica* L. [Sterculiaceae]. Common name, "malvavisco" (Wolcott, 1951).

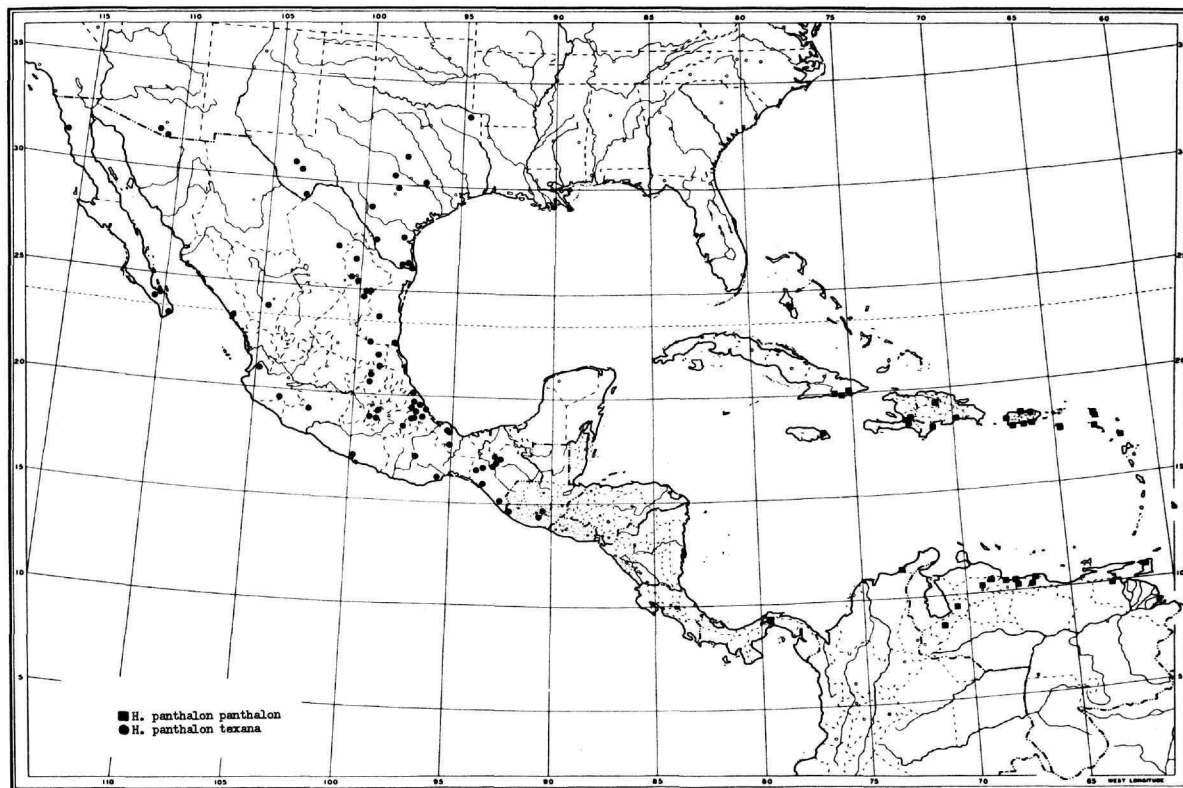
DISTRIBUTION (Map 1).—Throughout the Antilles from Cuba in the west to the isles of St. Eustatius and St. Maarten in the east; also in Venezuela, Colombia, and Panama.

REMARKS.—A comparative examination of specimens and their genitalia for the taxa described as *panthalon* Fabricius, *stoneri* Lindsey, and *serena* Schaus has convinced us that these phenotypes represent color forms of a single species. Previously, Forbes (1931) noted the variability in color and size within *stoneri* and *serena* populations and considered them "minor races" of *panthalon*. Our studies indicate that *serena* is not entirely allopatric, occurring with the typical *panthalon* in the Greater Antilles, and that *stoneri* is an oranger form of *panthalon* from the Lesser Antilles. The distinctions are largely ones of color and are not, in our opinion, of sufficient magnitude to continue their formal taxonomic recognition.

In contrast, the phenotypes described as *texana* and *viridifusa* also represent populations closely related to *panthalon* but with geographic distributions and phenotypic characters that do not overlap with the forms of *panthalon* occurring in a circum-Caribbean distribution. In the absence of biological information to the contrary, we feel justified in formally recognizing these phenotypes as subspecies of *panthalon*. Their phyletic affinity with the Caribbean form is thereby suggested.

The orange hind wing populations of *p. panthalon* (= *stoneri* Lindsey) (Plate 1: figure 4) can be distinguished from the other populations of *p. panthalon* by a uniformly cinnamon-brown forewing and an ochreous-orange hind wing that fades to brown at the apex. The underside of the forewing is uniformly ochreous tawny and the hind wings are ochreous orange with slightly darker scaling toward the termen. The alar expanse and tufts of the hind tibiae are similar in size to *p. panthalon* occurring in the Greater Antilles and Venezuela.

The occurrence of the orange hind wing popu-



MAP 1.—Distribution of *Horama panthalon panthalon* (Fabricius) and *H. panthalon texana* (Grote).

lations on predominantly arid islands suggests that the color variation is a phenotypic response to a dry habitat. All the specimens from St. Croix, Antigua, Anguilla, St. Martin, and St. Eustatius have the orange hind wing. An occasional specimen from the arid lowlands of Puerto Rico (San Germán) shows the orange hind wing.

The populations of *p. panthalon* from Colombia, Venezuela, and Panama have a yellower appearance than those from the West Indies. Schaus based his description of *serena* on a unique specimen (Plate 1: figure 5) from the Canal Zone, Panama. The slight differences in color and in tarsal tufting of the holotype are due to its poor condition. Several fresh specimens from Madden Dam, Canal Zone, have been examined and agree well with the usual yellow form of *p. panthalon* from Colombia and Venezuela.

The yellow populations of *p. panthalon*

(= *serena* Schaus) (Plate 1: figure 3) differ from the typical *p. panthalon* by the following: head, including the frons, is usually entirely yellow instead of black; the patagia are entirely yellow rather than black, although the hind margin and the paired spots may be faintly indicated; the tegulae and pectus are predominately yellow; the white spots above the coxae are ringed with black; the medial transverse black stripe of the first abdominal tergite is usually absent or only slightly marked; the remaining abdominal segments and legs are more ochreous yellow than the typical *p. panthalon* with only narrow bands on the abdominal segment foremargins; the femora and the distal half of the hind tibiae are black.

The yellow form of *p. panthalon* shows considerable variation within populations. The color pattern of the patagia and first abdominal tergite is the most variable. Specimens from San Esteban

and Aroa, Venezuela, have entirely yellow patagia and others are black with creamish-yellow spots resembling the typical *p. panthalon*. Specimens from El Cují, Venezuela, occur with both a thoracic disc that is mostly yellow and one that is black with small, yellow spots resembling the typical *p. panthalon*. The coloring of the legs varies with the hind femora occasionally scaled with yellow and the fore and midtibiae and tarsi banded with black. The brown of the fore and hind wings varies in hue depending on the freshness of the specimen.

The genitalia of the typical, the yellow and the orange, forms of *p. panthalon* are indistinguishable. The only apparent difference between the forms is in the amount of yellow and orange color present. Both the yellow and orange forms show some geographical restriction, yet within individual populations there is a variation in color pattern that also occurs in *p. panthalon* populations from the Antilles.

Figures 3 and 4 show the two forms of *p. panthalon* from Venezuela and St. Croix. The most typical form of *p. panthalon* is intermediate and resembles Figure 4 with the wing pattern of Figure 3.

SPECIMENS EXAMINED (126 males, 91 females).—CUBA: Oriente: Guantanamo, 20 July, NMNH; 25 May, PAD; Loma del Gato, Sierra Maestra, 2500 ft, July-Aug., BM(NH); Santiago, NMNH; 19 July, PAD; Siboney, 7 Dec., PAD; "Eastern Cuba," CU; "Cuba," NMNH.

JAMAICA: Hardware Gap, 4800 ft, 13-15 July, AMNH; "Jamaica," BM(NH), NMNH.

HAITI: Manneville, 16-17 Nov., MCZ; Petionville, 30 June, CU; Port-au-Prince, about 300 ft, 19-28 Feb., 21-29 March, 15-21 April, AMNH; 21 May, MCZ; "Haiti," BM(NH).

DOMINICAN REPUBLIC: La Vega Province, Constanza, 1164 m, Hotel Neuva Suiza, 29 May, NMNH; 10 km NE Jarabacoa, Hotel Montaña, ca. 520 m, 28 May, NMNH; near Barahona, 800 ft, 26 Nov., NMNH; St. Domingo, BM(NH).

PUERTO RICO: Aguirre Center, 2 June, CU; Boquerón, 9 Jan., NMNH; Coamo Springs, 5-7 June, Sept., AMNH; Nov. MCZ; Manatí, 27-29 June AMNH; Mayagüez, 30 Oct., MCZ; Palmas Abajas (near Guayama), 1900 ft, 15 Nov., CU; San Germán, 9 Jan., 16-17 April, CU; San Juan, CU; "Porto Rico," Jan., NMNH.

ST. CROIX: Christiansted, 19 Nov., NMNH; Kingshill, Oct.-Dec., CU; Mt. Eagle, 6-16 July, NMNH; Mt. Washington, 22 Dec., NMNH; Mt. Washington and Union, 28 Dec., NMNH; Orangegrove, W end, 6-16 July, 21 Dec., NMNH; Rust Up Twist, 6-16 July, 21 and 28 Dec., NMNH.

ANTIGUA: Antigua Beach Hotel, 13 June, RML; no specific locality [*stonei* holotype], 24 June, NMNH.

ANGUILLA: Rendez-Vous Bay, July, RML; Rendez-Vous Point, RML.

SINT MAARTEN: Cul de Sac Reward, July, RML.

SINT EUSTATIUS: NWI, The Quill, June, RML.

GAUDELLOUPE: Anse à L'Eau, 4-6 Feb., NMNH.

VENEZUELA: Anzoategui: Clarines, 6 kms N, 28 August, UCV. Aragua: Maracay, 22 July, UCV; Nov.-Dec., SMM; El Limón [Maracay], 450 m, 2 April, 24 June, UCV; Rancho Grande, 1100 m, 18-25 May, 5-20 June, 3-25 July, 5 Oct., 6 Dec., UCV; 8, 12 June, 9, 26 July, NMNH; Carretera Maracay-Choroni, 1500 m, 27 May, UCV. Carabobo: Alto de Yuma 22 July, UCV; San Esteban, June, BM(NH); Las Quiguas, San Esteban Valley, Nov.-10 March, CM; BM(NH); San Juan [mountain ridge between San Esteban and Borburata], 24 Dec., CU. Distrito Federal: Caracas, BM(NH); Caracas, Berg Avila, June-July, SMM; Caracas, Los Venados, June-July, SMM. Falcón: Sabaneta, 4 kms S, 15 August, UCV. Lara: Barquisimeto, 3 Aug., UCV; El Cují, 7 kms N Barquisimeto, 29 June-1 July, NMNH. Mérida: Mérida, NMNH; BM(NH). Miranda: Nucleo "El Laurel," 19 May, UCV; San Antonio de los Altos, 19-21 Oct., UCV; Los Teques, 100 m, 5 June, UCV. Monagas: Caripito, 15 March, 3 June, 7-15 July, AMNH. Trujillo: Carvajal, 15 June, UCV; Valera, NMNH. Yaracuy: Aroa, NMNH. Zulia: Maracaibo, 19 June, UCV. "Venezuela," CM; BM(NH); NMNH.

COLOMBIA: Don Amo, [Magdalena, 11°14'N, 73°52'W], 2000 ft, June, July, BM(NH).

PANAMA: Canal Zone [*serena* type], 8 May, NMNH; Madden Dam, Canal Zone, 14 June, MCZ.

Horama panthalon texana (Grote), new status

PLATE 1: FIGURE 6; MAP 1

Euchromia plumipes.—Clemens [not Drury 1773], 1860:546.

†*Euchromia pretus*.—Clemens [not Cramer 1777], in Morris, 1862:276. [Listed as "Var." under *E. pretus*.]

Callicarus texanus Grote, 1866:184.—Butler, 1876:372.—Druce, 1884:49; 1897:338.

Horama texana Grote, 1868:116.—Grote and Robinson, 1868:vi.—Hampson, 1898:418, fig. 217.—Dyar, 1902[1903]:77.—Holland 1903:100, pl. 13: fig. 9.—Zerny, 1912:122.—Draudt in Seitz, 1916:143, pl. 21: row h.—Barnes and McDunnough, 1917:29.—McDunnough, 1938:44.

Phylloccia texanus.—Kirby, 1892:129.

Phylloccia texana.—Neumoegen and Dyar, 1893:100.

MALE.—Similar to the typical *p. panthalon* phenotype except for the following: base of second palpal segment usually banded with black scales; fore and midlegs bluish black, distal half of hind tibiae banded with long black hirsute scales; hind tarsi ochreous orange with two rows of short, hirsute scales; both wings dark brown except for some buff yellow scales along costa of hind wing. Under-side: both wings lighter brown with bright ochreous-orange patch at base of hind wing along

costa. Venation almost identical to *panthalon* (Figure 24a) but with several variations (Figure 24b, c). Alar expanse 34–37 mm.

MALE GENITALIA.—Not distinguishable from that of the typical *panthalon* (Figure 3a,b).

FEMALE (Plate 1: figure 6).—Same as the male except slightly larger. Alar expanse 35–38 mm.

FEMALE GENITALIA (cf. Figure 15).—Similar to that of the typical *panthalon*.

TYPE.—Lost. Apparently without seeing Clemens' specimens, Grote (1866) established *Calli-carus texanus* by quoting verbatim Clemens' (1860) description for *Euchromia plumipes*. The only type information given by Clemens is "Texas. Coll. Capt. Pope. Smithsonian Institution." We have been unable to locate any specimens in the national collection that fit this information nor does the Philadelphia Academy of Sciences, which has some Clemens material, have any record of it (Emsley in litt.). There are four specimens in the national collection with the identical label "Tex." but each has a different collection label (C. V. Riley, E. L. Graef, or H. G. Dyar). There are no specimens specifically labeled from the Pope collection.

TYPE-LOCALITY.—Texas.

HOST PLANTS.—None recorded. Adult has been collected at *Wislizenia refracta* var. *mamillata* [Capparidaceae].

DISTRIBUTION (Map 1).—Southern Texas, Florida, and Arizona, Mexico and Guatemala.

REMARKS.—This race is closely related to the typical *panthalon* from the Caribbean. Its geographic distribution is distinct, and its phenotypic differences are sufficiently consistent throughout its range for a stabilized genetic composition to be inferred. Contrary to our suggestion that the orange hind wing form of *panthalon* from the Lesser Antilles was a climatic variant, *texana* is apparently unaffected by climate. Its hind wings remain uniformly brown even though it has been collected in both humid coastal plains (Veracruz) and in desert areas (Monclova and La Paz) of Mexico.

The specimen sizes for the *texana* populations are consistently larger than those of the Caribbean populations of *p. panthalon*. The hind tibial tufts are more pronounced, resembling those of *oedippus*, and the hind wings are entirely brown. The genitalia of *p. panthalon* and *p. texana* are indistinguishable.

SPECIMENS EXAMINED (208 males, 135 females).—UNITED STATES: Arizona: Baboquivari Mts., 27 April, NMNH; Nogales, 5 July, 26 July, BM (NH). Florida: no specific locality, CM. Texas: Alpine, 30 June, CAS; "Bastrop Co.," NMNH; Brownsville, 11 June, NMNH; Aug. CNC; 23 Oct., CAS; 10 and 20 Nov., NMNH; 14 Dec., CAS; St. Thomas, Brownsville, NMNH; Ft. Davis, 26 June, AMNH; Gatesville, 13 Nov., AMNH; Kerrville, NMNH; Kingsville, CU; Lake Brown [=Brownwood Lake?] St. Pk., 15 Sept. AMNH; Laredo, 21 Oct., NMNH; Mercedes (Hidalgo), 5 Oct., 14 Nov., 1 Dec., AMNH; New Boston, Bowie Co., 18 Sept., NMNH; Oak Spring, Big Bend Nat. Pk., 30 June, AMNH; Pharr, 12 March, AMNH; Shovel Mt. [Burnet Co.], NMNH; Uvalde, MCZ, 12 Oct., NMNH; "Texas," NMNH; BM (NH).

MEXICO: Baja California Sur: Arroyo Seco, 6 Oct., CAS; La Paz, Guaycura Hotel grounds, 5 Nov., CM; La Paz, 2 mi S, 6 Aug. UCB; La Paz, 25 mi W, 30 Aug., CAS; San José del Cabo, AMNH; San Venancia [S. Benancio?], 8 Oct., CAS. Chiapas: Cardenia, 10 Aug., CNC; Chiapa del Corzo, 4 Aug., CNC; Cintalapa, 2 Aug., CNC; Huixtla, 20–25 mi N, 1–4 June, CNC; near Ixtapa, 11 June, CNC; junction Hwys. 190–195, 6 June, CNC; Ocozacoatlá, 2700 ft, 1 Aug., CNC; 26–28 Sept., CAS; Simojovel, 9 June, CNC; Santo Domingo, 15 mi SE Simojovel, 8–15 June, UCB; Tonalá, 5 June, CNC. Coahuila: Monclova, 24 mi N, 12 Aug., CNC. Colima: Esperanza, 28 Oct., NMNH. Durango: 10 mi SW Durango on Hwy. 40, 16 June, NMNH. Guerrero: Acapulco, 29 July, NMNH. Hidalgo: Guerrero Mill, 9000 ft, NMNH; Jacala, 4592 ft, 10 July, MCZ; Zimapán, 3 mi E, 6400 ft, 31 July–1 Aug., NMNH. Jalisco: Volcan Colima, July, Aug., Oct., SMM. Mexico: Popocatepetl Park, 8000 ft, June, NMNH. Michoacán: Apatzingán, 5 Dec., NMNH. Morelos: Cuernavaca, June, NMNH; Zacualpam [Zacualpan?], July, AMNH. Nayarit: Tepic, 17 mi NW, 23 Nov., CAS. Nuevo Leon: 20 mi S Sabinas Hidalgo, 7 July, UCB; Mesa de Chipinque, 1365 m, 16–18 July, CU; 23 July, CNC; 10 Aug., NMNH; Galeana, 3 mi E, 5000 ft, 7–9 Aug., NMNH; Huasteca Canyon near Monterrey, 11 July, CNC; 4 Nov., NMNH; Linares, 20 mi W, 8 Nov., CAS; 10 mi S Linares, 24 Dec., CAS; Oaxaca: "Ticaltapec" 28 July, CM; "Oaxaca," NMNH. Puebla: La Ceiba, 30 Oct., UNM; Estación de Bombeo, San Diego, July, 31 Oct., UNM; Tehuacán, 11 Aug., NMNH. San Luis Potosí: Tamazunchale, 29 March, UCB; 2 mi N, 400 ft, 16–18 July, NMNH; El Salto Falls (4 mi W Antigua Morelos), 2000 ft, 11–14 July, NMNH; El Bañito, 7 m S Ciudad Valles, 300 ft, 20 Dec., CAS; Sinaloa: Mazatlán, 5 mi N, 1 July–15 Aug., UCB, CNC; San Carlos Bay, 10 Aug., CAS; Tamaulipas: 4 mi SW Ciudad Victoria, 1100 ft, 10 July, NMNH; Tampico, 8 June, AMNH; July, NMNH. Veracruz: Dos Amates, Catemaco, 27 April, UNM; Coatepec, NMNH; Cotaxtla Exp. Station, 22 July, UCB; Córdoba, April, May, 9 June, July, NMNH; May, CM; 6 July, UCB; 3 Aug., NMNH; El Camaron, 5 mi W, CNC; Huatuxco [Huatusco], BM (NH); Jalapa, BM (NH), NMNH; April, (BM (NH)); Jalapa del Marquez, 16 Aug., CNC; Estación Biológica, Los Tuxtlas, 22 June, UNM; Misantla, May, AMNH. Orizaba, May, BM (NH); July, NMNH; AMNH; 10 Sept., CAS; Paso San Juan, 9 July, NMNH; Rinconada, 6 mi SE, 21 June, UCB; Cerro El Vigie, Santiago Tuxtla, May–June, UNM; Santa Rosa, May, NMNH; "Vera Cruz," CAS;

NMNH. Specific locality not identified: Milpas, 5900 ft, BM (NH); "Sierra Madre," 29 June, CM; "Southern Mexico," CM; "Mexico," BM (NH); CU; SMM.

GUATEMALA: Escuintla, July, NMNH. San Marcos: Puente Ixben, 6 July, NMNH; "Ciudad de Guatemala," BM (NH).

Horama panthalon viridifusa (Schaus),
new combination, new status

PLATE 2: FIGURES 7,8; MAP 2

Macrocneme viridifusa Schaus, 1904:135.—Zerny, 1912:96.—Hampson, 1914:206, pl. XI: fig. 6.—Draudt in Seitz, 1916:106, pl. 28: row g.

Horama castrensis Jones, 1908:144.—Zerny, 1912:121.—Hampson, 1914:267, pl. XIV: fig. 30.—Draudt in Seitz, 1916:143, pl. 21: row i.—Travassos, 1940:272.—Biezanko, et al, 1957:75. [Type-locality: Castro, Parana, Brazil. Type: Holotype male in BM(NH). New synonymy.]

Horama flavata Jones 1908:144.—Zerny, 1912:121.—Hampson, 1914:266, pl. XIV: fig. 29.—Draudt in Seitz, 1916:143, pl. 21: row i.—Travassos, 1940:273. [Type-locality: Castro, Parana, Brazil. Type: Holotype male in BM(NH). New synonymy.]

Macrocneme nigricornis Schrottky, 1912:166.—Hampson, 1914:209, pl. XI: fig. 13.—Draudt in Seitz, 1916:103, pl. 28: row f. [Type-locality: Bompland, Misiones, Argentina. Type: Destroyed. New synonymy.]

Horama fulvitaris Schrottky, 1912:166. [Type-locality: Bompland, Misiones, Argentina. Type: Destroyed.]

MORPH I MALE (Plate 2: figure 7).—Had brownish black. Palpi black, upturned reaching middle of frons. Antennae black, pectinate becoming serrate at tips, tips slightly recurved. Thorax, abdomen, and wings brownish black. Patagia with paired lateral and subdorsal white spots. Pectus with single white spot on each epimeron. Forewing with white spot at base. Abdomen with paired, white subdorsal spots on first tergite and on pleura caudad of lateral bullae; first and second sternites with single medial spot. Legs brownish black with two rows of plumose scales along tibia to midtarsus. Alar expanse 26–36 mm.

MORPH II MALE [= *flavata* Jones] (Plate 2: figure 8).—Head brownish-black. Frons with ochreous-yellow spots bordering eyes and between antennae. Palpi yellow, upturned, first segment rough, second segment smooth and black. Antennae black, pectinate becoming serrate at tips. Patagia brownish black with white spots laterally and subdorsally. Tegulae brownish black with medial longitudinal ochreous-yellow stripe. Thoracic disc

brownish black with four ochreous-yellow spots. Pectus brownish black; ochreous-orange patches below each wing and at base of patagia; white spots on each epimeron, the most cephalad being slightly smaller than those caudad. Abdomen blackish brown, hind margins faintly banded with ochreous brown. First tergite slightly bulbous laterally, basal half ochreous yellow; center with two white subdorsal spots separated from yellow by blackish-brown stripe. White spots on pleura of first and second segments and at midventer; remaining sternites fringed or spotted with ochreous-orange. Legs brownish black with ochreous-orange spots; hind legs with two rows of black, hirsute scales on basal half of tibiae; forewing dark brown with white spot at humeral angle and yellow spot on radius near base; hind wing ochreous yellow, broadly suffused with dark brown at apex, termen, and along veins. Underside: forewing light brown, costa with ochreous-yellow scales at base, buff along dorsum; hindwing mostly bright ochreous yellow suffused with dark brown at apex and termen. Alar expanse 32–34 mm.

MALE GENITALIA (cf. Figure 3a,b).—There are no apparent and consistent differences to separate the genitalia of *viridifusa* from those of northern races *panthalon panthalon* and *panthalon texana* or from the sympatric black and ochreous-yellow morph described as *flavata* and herein synonymized.

FEMALE.—Similar to the male except slightly larger.

FEMALE GENITALIA (cf. Figure 15).—The same comments apply as noted for the male genitalia above.

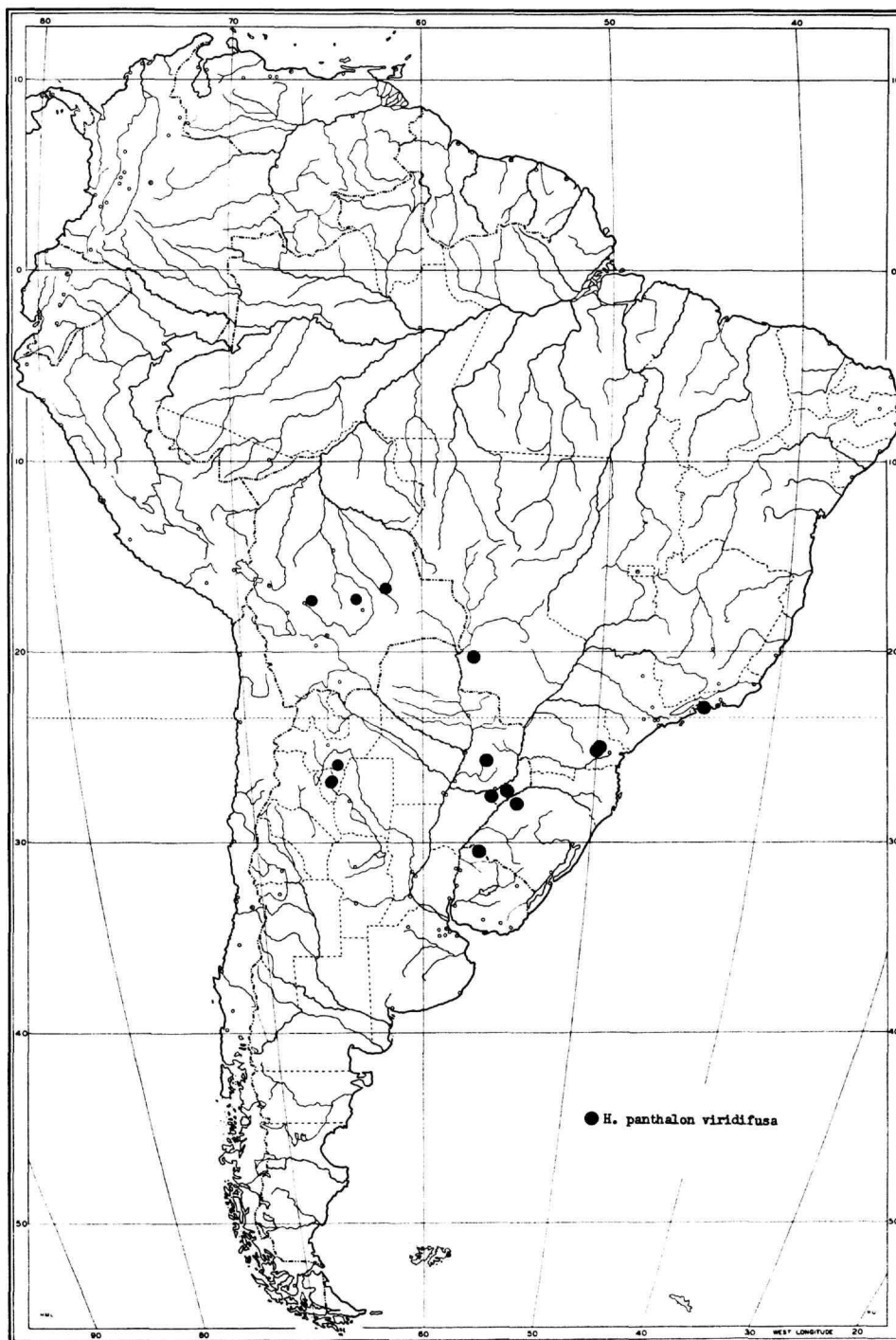
TYPE.—Holotype female. NMNH, Smithsonian Institution.

TYPE-LOCALITY.—Castro, Parana [Brazil].

HOST PLANTS.—None recorded.

DISTRIBUTION (Map 2).—Southern Brazil, Northern Argentina, Paraguay, and Bolivia.

REMARKS.—On the basis of almost identical geographical distribution and genitalic similarity, we are suggesting by our synonymy in this species that the southern South American populations of *viridifusa* are a distinct race of *panthalon* and are comprised of two morphs, one black and the other yellow. Jones (1908) described both morphs (*castrensis* and *flavata*) from Castro, Parana. Likewise, Schrottky (1912) described both morphs (*nigricornis* and *fulvitaris*) from Bompland,



MAP 2.—Distribution of *Horama panthalon viridifusa* (Schaus).

Misiones. Schaus' name *viridifusa* prevails by priority for both morphs. If, at a future date, the yellow morph proves to be a valid species, the name *flavata* Jones would apply.

We cannot be certain the two morphs are conspecific until breeding experiments are performed. All evidence presently available to us strongly supports our suggestion. The white markings of the black morph are identical to those found in the yellow morph. The absence of the yellow markings in the black morph might possibly be attributed to a single gene mutation. We have compared localities and dates of both morphs and found specimens with identical data from Bompland, Tucumán, and Villa Nougues (Tucumán), Argentina; from Cochabamba and San Julian, Bolivia, and from Guaraní, Salobra, Ponta Grossa, and Castro, Brazil.

The venation of both morphs is identical except that $Cu_1 + Cu_2$ is sometimes forked in the hind wing of the black morph and is usually united in the yellow morph. Judging from the variability in wing venation throughout the genus, we suspect the $Cu_1 + Cu_2$ variation is an artifact of the small sample size.

SPECIMENS EXAMINED (56 males, 30 females).—ARGENTINA: Bompland, 5 May, BM(NH); Tucumán, NMNH, BM(NH); May, IML; Villa Nougues (Tucumán), Jan., March, IML; San Pablo, Quinta Mendez, May, IML; Salta, Rosario de la Frontera, El Morenillo. Feb., March, IML.

BOLIVIA: Chiquitos, S. Julian, 400 m, May, BM(NH); Cochabamba, 2600 m, 14 Dec., 3, 11 Jan., SMM; Prov. del Sara, July, CM; Rio Burmejo to R. Pilcomayo, Dec. BM(NH).

BRAZIL: Matto Grosso, Salobra, 20–23 July, 24 Aug.–6 Sept., 18–29 Oct., USP; Parana, Castro, NMNH; Ponta Grossa, 25 Nov., 18–23 Dec., USP; Rio de Janeiro, Angra dos Reis, Faz. Japuhya, 31 Oct., USP; Rio Grande do Sul, Guaraní, 7, 11, 29 April, CU.

PARAGUAY: Dept. Guaira, Col. Independencia, 23 Oct., SMM; Puerto Cantera, 10 Oct., BM(NH).

Horama tarsalis Walker

FIGURES 4a,b, 16; PLATE 2: FIGURE 9; MAP 3

Horamia [sic] *tarsalis* Walker, 1856:1633.

Mastigocera tarsalis.—Butler, 1876:373.

Drucea tarsalis.—Kirby, 1892:130.

Horama tarsalis.—Hampson, 1898:420, fig. 220.—Zerny, 1912:122.—Draudt in Seitz, 1916:144, pl. 21: row h.

MALE (Plate 2: figure 9).—Head olive brown. Frons with ochreous-orange spot. Palpi obliquely upturned not reaching vertex; third segment

slightly porrect; first segment rough ochreous orange; second and third segments smooth, olive brown. Antennae dark olive brown with blue tinge, long basal and mesal pectinations becoming slightly serrate at tips; tips orange and naked. Patagia olive brown with ochreous-orange spots laterally and subdorsally. Tegulae olive brown. Thoracic disc olive brown with four ochreous-orange spots. Pectus olive brown with ochreous-orange spots above midcoxa. Abdomen dark olive brown with two rows of ochreous spots on lateral edges of all segments; first tergite bulbous laterally with ochreous-orange spots on medial margins and below. Legs olive brown, coxae with ochreous-orange spot laterally. Hind tibiae with olive brown, hirsute scales from spurs to middle of tarsi, tips ochreous orange. Forewing olive brown suffused with dusky slate blue scales at anal angle; ochreous-orange spots at humeral angle and on radius at base; hind wing dusky slate blue with scattering of brown scales, costal margin brown, dorsum of hind wing with white fringe. Under-side: both wings olive brown mixed with dusky slate blue. Venation (Figure 25). Alar expanse 33 mm.

MALE GENITALIA (Figure 4a,b).—Similar to *panthalon* (cf. Figure 3a,b). Uncus broader, saccus longer, anellus with dorsal pair of sclerotized rods. Ventral convex plate (= juxta) thinly sclerotized laterally. Valva with dorsal process broader and ventral process membranous and shorter than in *panthalon*. Sacculus of valva with thickened setae.

FEMALE.—Only known specimen is the holotype in the BM(NH). It appears to closely resemble the male as described above.

FEMALE GENITALIA (Figure 16).—Lamella post-vaginalis more closely associated with lamella ante-vaginalis than in *panthalon*. Sinus vaginalis a narrow sclerotized pocket with ostium bursae opening at midpoint ventrally. Ductus seminalis opens on ductus bursae. Thickened folds on corpus bursae may be homologous with spines seen in *panthalon*.

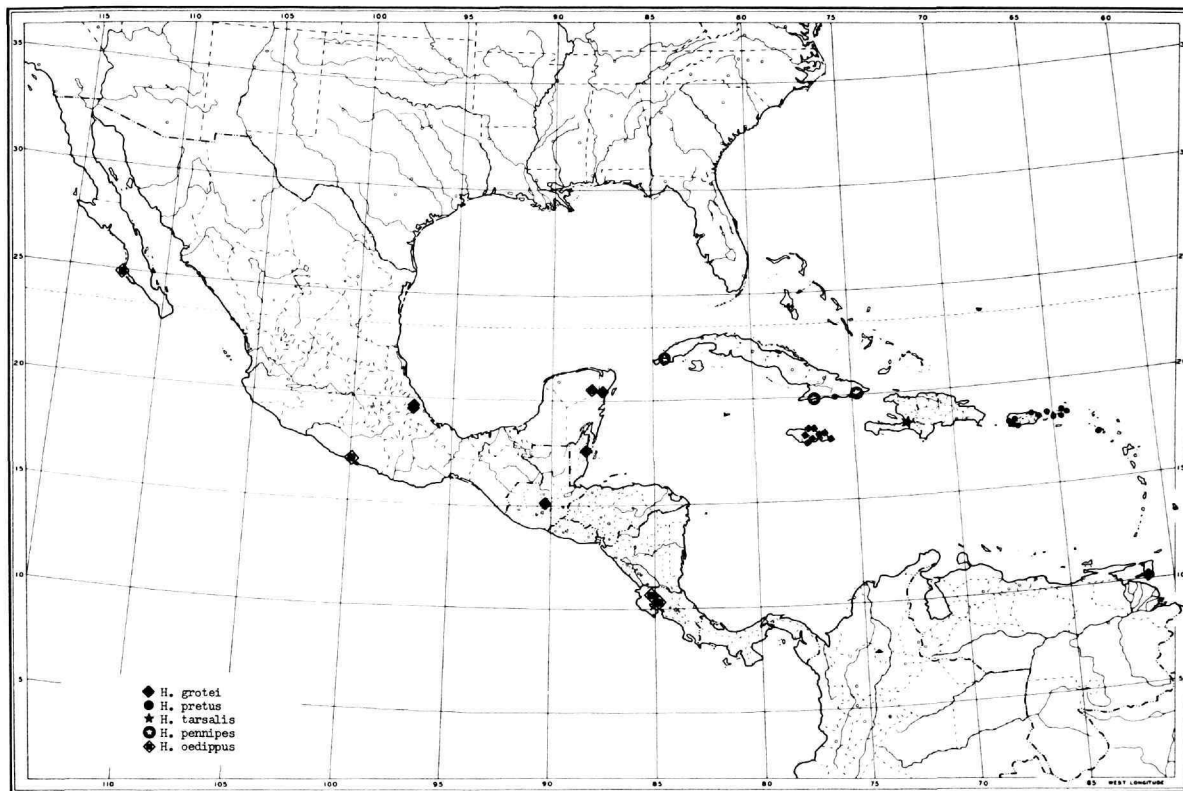
TYPE.—Holotype female, BM(NH).

TYPE-LOCALITY.—Unknown.

HOST PLANTS.—Unknown.

DISTRIBUTION (Map 3).—Only known record is from Haiti. May possibly be endemic on Hispanola.

REMARKS.—An affinity between *H. tarsalis* and *H. panthalon* is suggested by the resemblance of the male and female genitalia. The similarity in



MAP 3.—Distribution of *Horamia grotei* Butler, *H. pretus* (Cramer), *H. tarsalis* Walker, *H. pennipes* (Grote), *H. oedippus* (Boisduval).

shape of the valvae and uncus is greater between these two species than between any others in the genus.

SPECIMENS EXAMINED (1 male, 1 female).—HAITI: Port-au-Prince, 15–21 April, AMNH. No locality: female holotype, BM (NH).

Horamia pennipes (Grote)

FIGURES 5a–c, 17; PLATE 2: FIGURE 10; MAP 3

Callicarus pennipes Grote* 1866:182; 1867:310, 330, pl. 5: fig. 3.—Butler, 1876:372.—Gundlach, 1881:236. Saalmüller in Möschler, 1890:349.

Phylloecia pennipes.—Kirby, 1892:129.

Horamia pennipes.—Hampson, 1898:419.—Zerny, 1912:121.—Draudt in Seitz, 1916:143.

* Todd (1966), in the *Proceedings of the United States National Museum*, 120:4, discusses the priority of the Grote names over those of Herrich-Schäffer.

Horamia [sic] *plumosa* Herrich-Schäffer, 1866:113.—Saalmüller in Möschler 1890:349 [as synonym of *Burtia rubella*]. [Type-locality: Cuba. Type: Not located.]

Horamia plumosa.—Kirby, 1892:129 [as synonym of *Phylloecia pennipes*.]

MALE (Plate 2: figure 10).—Head black. Frons with two white, diffuse spots below antennae and one at vertex between antennae. Eyes bordered behind by ochreous-yellow stripes. Palpi white, obliquely upturned, tips porrect; upper surface of second segment and entire third segment black. Antennae black, serrate with slight dilation beyond middle, tips recurved. Patagia black with lateral white spots and two subdorsally. Tegulae black, medial margins white interspersed with some yellow, anterior margins with a lateral ochreous-yellow spot. Thoracic disc black with scattered yellow and white on posterior margin. Pectus black interspersed with white hirsute scales, white dots

on each epimeron, ochreous-yellow spot on mesopleuron. Abdomen with lateral bulbs of first tergite white and ochreous-yellow spots on medial margins, center of first tergite black with white dot on anterior margin; remaining tergites black with a dorsal series of white spots obsolescent on terminal segments, pleurites black with a series of white spots preceded by ochreous yellow on first two segments. Sternites white with narrow black lateral margins. Legs black, variously streaked with white; all coxae white, mid and hind coxae with ochreous-yellow spots laterally; hind tibiae banded with black hirsute scales between spurs to middle of tarsus; tips of hind tarsi white. Forewing fuscous black with semidiaphanous streak through middle of cell and below to 2A; spot between M_3 and Cu_2 beyond cell with few persisting scales; white spot at humeral angle. Hind wing fuscous black, faint semidiaphanous streak below cell, costal margin gray, fringe white. Underside: both wings fuscous black with white scales scattered along veins at base. Venation (Figure 26). Alar expanse 26 mm.

MALE GENITALIA (Figure 5a-c).—The homologies are uncertain, but the uncus is bifurcated and the gnathos may consist of both the lateral bulbs on the tegumen and the submedial pair of upturned processes through which the tuba analis passes. The anellus is a sclerotized cone in the center of the diaphragma with the ventral edge extending to the valvae. Saccus long. Aedeagus sharply bent.

FEMALE.—We have seen one specimen from Yateras, Cuba. It resembles the male in all respects except in being slightly larger. Alar expanse 30 mm.

FEMALE GENITALIA (Figure 17).—Sinus vaginalis encircled by prominent sclerotized triangular hood of lamella postvaginalis; ostium bursae at bottom of shallow pouch; ductus seminalis attaches on cervix bursae; two accessory bursae present; interior surface of corpus bursae covered with inward directed spines.

TYPE.—Holotype male, Academy of Natural Sciences, Philadelphia.

TYPE-LOCALITY.—Cuba.

HOST PLANTS.—None recorded.

DISTRIBUTION (Map 3).—Known only from Cuba.

REMARKS.—Until the discovery of *H. zapata*, this species was unique in the genus for the semidiaphanous streak on the forewing. It is possibly

related to *H. zapata* if distribution and wing scaling are considered, but the antennae differ noticeably by being serrate rather than pectinate as in *zapata*. *Horama plumipes* might also be related by virtue of the black and white color pattern, the shape of the hind wing, and the similar appearance of the male genitalia. *Horama pennipes* may ultimately prove to be a species of *Saurita*. Possibly, too, *Callicarus* Grote should be resurrected and *H. pennipes* returned to it as the type-species. We have deferred such action pending further definition of the ctenuchid genera.

SPECIMENS EXAMINED (4 males, 1 female).—CUBA: Oriente: Alto de Cardero, Turquino, June, PAD; Cueva de Aura, 3700 ft, MCZ; Yateras, PAD. Pinar del Rio: Carabalitas, Guanahacabibes, 4 Oct, PAD.

Horama plumipes (Drury)

FIGURES 6a-c, 18a,b; PLATE 3: FIGURE 13; MAP 4

Sphinx plumipes Drury, 1773:47, pl. 27.

Aglaope plumipes.—Westwood, 1837:51, pl. 27: fig. 3.

Euchromia (*Horamia*) *plumipes*.—Walker, 1854:252.—Clemens [in part], 1860:546 [as "Variety?, Walker, 252"].—Clemens in Morris, 1862:275.

Horamia [sic] *plumipes*.—Herrich-Schäffer, 1866:114.

Callicarus plumipes.—Butler, 1876:372; 1877:25, pl. 8: fig. 2.—Druce, 1884:49; 1897:338.

Phylloecia plumipes.—Kirby, 1892:129.

Horama plumipes.—Hampson, 1898:419, fig. 218.—Zerny, 1912:121.—Draudt in Seitz, 1916:143: pl. 21: row h.

Phylloecia punctata Guérin, 1844:504.—Kirby, 1892:129. [Type-locality: Bay of Campeche. Type: Lost.]

Euchromia (*Macrocne*) *punctata*.—Walker, 1854:249.

Callicarus punctata.—Butler, 1876:372.

Callicarus punctatus.—Druce, 1897:338.

Horama jalapensis Neumoegen, 1890:63.—Kirby, 1892:131.—Druce, 1897:339. [Type-locality: Jalapa, Mexico. Type: Holotype female, NMNH, Smithsonian.]

MALE.—Head black with white spot between antennae and behind eyes on occiput. Palpi upturned not reaching vertex, white with black band at juncture of first and second segments, third segment very short. Antennae black, serrate, slightly dilated beyond middle, tips white and recurved. Patagia black with paired white spots laterally and subdorsally. Tegulae black with white midstripe. Thoracic disc black with four white spots. Pectus black with white spots on epimerons and white patches below wings. Abdomen black with violet-blue iridescence, first tergite with white spots on lateral bulbs and one at center, second tergite with

medial white spot on foremargin and lateral pair on hind margin; third tergite with white spot at center, third through eighth tergites with transverse pale yellow, slightly iridescent bands across middle of each segment; first and second sternites white on posterior half, last sternite white. Legs black, fore coxae with large white spot, remaining segments variously spotted, hind tibia banded with white at middle, distal half with three rows of long, black, hirsute scales extending to middle of tarsus, tip of tarsus white. Forewing black with white spot at humeral angle and at base of cell; hind wing black with white patch at base. Underside: both wings black with white streak below M_3 on forewing. Venation (Figure 27). M_3 and $Cu_1 + Cu_2$ in hind wing are occasionally slightly connate. Alar expanse 34–36 mm.

MALE GENITALIA (Figure 6a–c).—Uncus reduced and nonhoodlike. Short arms of gnathos closely attached laterally to tegumen. Valvae without long processes. Anellar plate conelike and occupying most of diaphragma, dorsal arms reaching tegumen. Saccus broader than in *pennipes*. Aedeagus bent at middle, followed distally by row of dentate spines.

FEMALE (Plate 3: figure 13).—Similar to the male except legs are entirely black with a small white spot on coxae. Alar expanse 39–42 mm.

FEMALE GENITALIA (Figure 18a,b).—Genital plate with ostium bursae forming a sclerotized cone, slightly curved at juncture with ductus bursae. Ductus seminalis attaches on cervix bursae. Corpus bursae largely covered by signa of inward directed spines. A single accessory bursa present.

TYPE.—Lost.

TYPE-LOCALITY.—Bay of Honduras.

HOST PLANTS.—None recorded. Adults have been collected visiting flowers of *Baltimora recta* (Compositae) in Costa Rica.

DISTRIBUTION (Map 4).—Southern Texas, Mexico, and Central America to Panama.

REMARKS.—This species shows little resemblance to other members of the genus except possibly *H. pennipes* or *H. zapata*. We are leaving it in *Horama* because $Cu_1 + Cu_2$ of the hind wing is long stalked and M_2 is strong.

SPECIMENS EXAMINED (32 males, 39 females).—UNITED STATES: Texas: College Station, 3 Sept., NMNH.

MEXICO: Chiapas: Comitán, 20 Aug., UCB, Isth. of Tehauntepec, MCZ; Portugal, 7 mi SE Simojovel, 17 July,

UCB; Ocozacoautla, 2700 ft, 26–28 Sept., CAS. Distrito Federal, MCZ. Guerrero: Acapulco, MCZ. Veracruz: Coatepec, NMNH; Córdoba, 24 April, 9 May, NMNH; Jalapa, April–June, SMC, BM (NH), NMNH; Misantla, April–May, BM (NH); Mozorongo [Motzorongo?], 6 June, NMNH; Orizaba, May, July, AMNH; Santa Rosa, Aug., NMNH; Yucatan: Chichén-Itzá, June, MCZ; Valladolid, BM (NH).

BRITISH HONDURAS: Toledo District: Punta Gorda, May, June, BM (NH); Rio Grande (BMNH); Castile [estate, 17°24'N, 88°39'W], June, BM (NH).

GUATEMALA: Baja Verapaz: S Geronimo [San Jerónimo], BM (NH). Izabel: Cayuga, April–Sept., NMNH, CM. Guatemala: Guatemala City, BM (NH).

HONDURAS: Atlantida: Tela, Lancetilla, MCZ, CU, MCZ. Cortés: Puerto Cortez, 2 Aug., MCZ; San Pedro Sula, BM (NH).

NICARAGUA: Chontales, BM (NH).

COSTA RICA: Alajuela: Mount Poas, May, NMNH. Guanacaste: "Avangarez," [Abangares?], July, BM (NH); La Pacifica, 4 km NW Cañas, 23 June, UCB; "Puntarenas," AMNH. "Sitio": [Sitio de Avance?], Feb., CM.

PANAMA: Canal Zone, Madden Dam, 5 May, MCZ.

Horama diffissa Grote

FIGURES 7a–c, 19; PLATE 2: FIGURES 11, 12; MAP 4

Horama diffissa Grote, 1866:181; 1867:310, 330, pl. 5: fig. 2.—Gundlach, 1881:235.—Kirby, 1892:131.—Hampson, 1898:421.—Zerny, 1912:121.—Draudt in Seitz, 1916:144.

Horama diffusa [sic].—Butler, 1876:373.

Horama diffisa [sic] Saalmüller in Möschler, 1890:349.

Horamia [sic] *pretellus* Herrich-Schäffer, 1866:113. [Type-locality: Cuba. Type: Not located.]

Horama pretellus.—Kirby, 1892:131 [as synonym of *H. diffissa*].

MALE (Plate 2: figure 11).—Head dark brown with pale yellow spots covering frons, vertex, and occiput behind eyes. Palpi yellow, third segment moderately porrect and mostly brown above. Antennae yellow with dark brown bands at base and in swollen area beyond middle; weakly serrate tips recurved and naked. Patagia ochreous yellow, sometimes with oblique dark brown stripe. Tegulae woody brown. Thoracic disc woody brown, immaculate. Pectus dark brown with yellow spots above coxae. Abdomen with first tergite white, sides bulbous interrupted across middle by transverse ochreous-yellow stripe, center of first tergite with medial white spot enclosed by yellow and posterior margin woody brown; second and third tergites dark brown with medial yellow spot on anterior margin of second segment and ochreous-yellow spots mixed with white laterally; remaining ter-

gites woody brown; first sternite dark brown; second sternite white; remaining sternites woody brown with yellow margins laterally. Legs yellow; coxae with proximal white spots; dark brown bands separating femora from tibiae and tibiae from tarsi; hind tibiae with dark brown, hirsute scales between spurs, hind tarsi ochreous yellow with row of hirsute scales. Forewing tawny, ochreous-yellow spot at humeral angle; hind wing ochreous yellow with tawny band across apex and termen. Underside: forewing tawny with yellow scaling along costa, inner margin buff yellow; hind wing as upperside. Venation (Figure 28). Alar expanse 33 mm.

MALE GENITALIA (Figure 7a-c).—Overall size small for the genus. Uncus S-shaped process at center; gnathos consisting of unmodified sclerotized areas on lateral tegumen; valve with flat, finger-like process on dorsolateral edge, tip recurved; sacculus short; tip of aedeagus with concentric ridges.

FEMALE (Plate 2: figure 12).—Larger than male. Similar in marking except for the following: Head entirely dark brown with occasional yellow scales on frons. Antennae yellow with dark brown bands at middle and at tips; second and third tergites of abdomen dark brown with yellow spots medially on foremargins and laterally on hind margins; third tergite with white spot laterally; remaining tergites woody brown with hind margins fringed with yellow; all sternites dark brown with ochreous-yellow hind margins except on third segment where margin is somewhat paler. Legs with dark brown femora and tibiae; coxae, trochanters, and tarsi yellow; wings similar to male. Alar expanse 38–44 mm.

FEMALE GENITALIA (Figure 19).—Sinus vaginalis surrounded by triangular periostial hood of lamella postvaginalis. Ductus bursae lightly sclerotized. Two accessory bursae present with ductus seminalis entering on the most caudad. Corpus bursae with medial band of sclerotized dots surrounded by border of radiating plicae.

TYPE.—Holotype male (abdomen missing). Academy of Natural Sciences, Philadelphia.

TYPE-LOCALITY.—Cuba.

HOST PLANTS.—None recorded.

DISTRIBUTION (Map 4).—Cuba, Haiti.

REMARKS.—This species is notable in the genus for the sexual dimorphism and for the origin of

the ductus seminalis on an accessory bursa in the female.

SPECIMENS EXAMINED (2 males, 3 females).—CUBA: Alto de Cardero, Turquino, June, PAD; Gran Piedra, Caney, May, PAD; Santiago, NMNH.

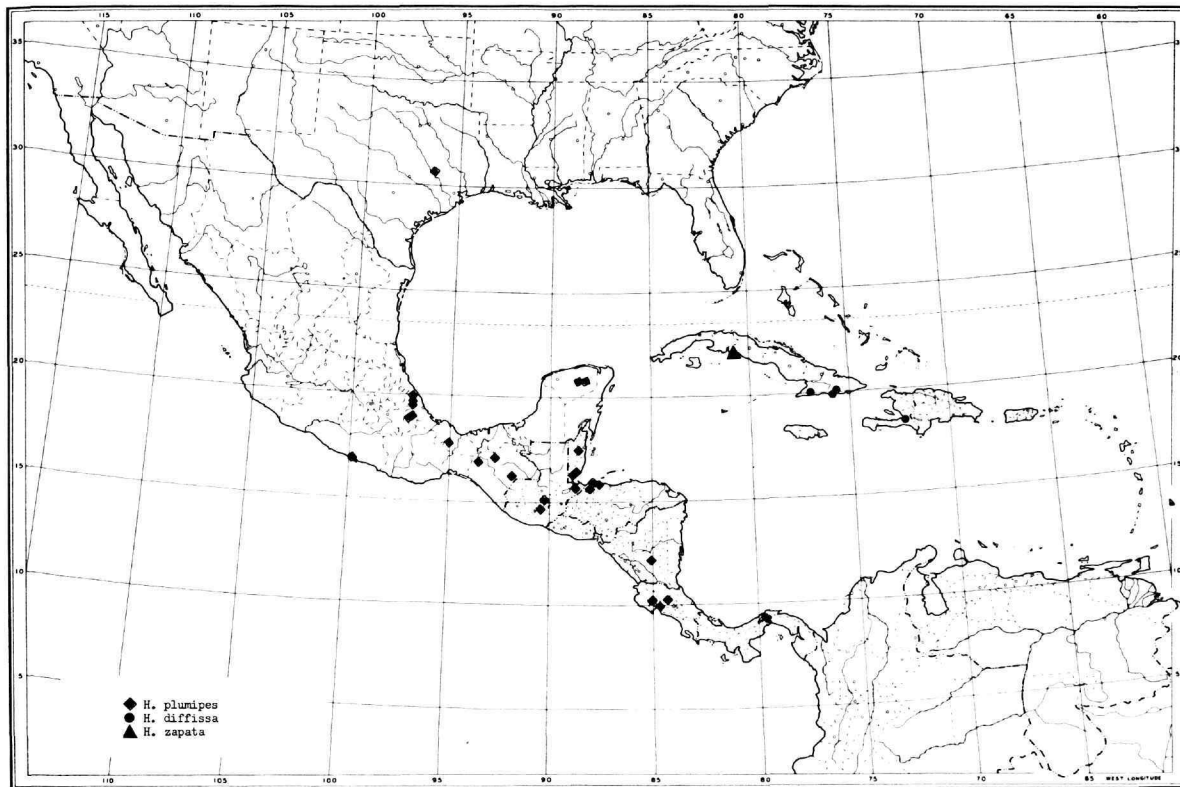
HAITI: Port-au-Prince, ca. 300 ft, 21–29 March, AMNH.

Horama zapata, new species

FIGURES 8a,b, 20; PLATE 3: FIGURE 16; MAP 4

MALE.—Head ochreous yellow with fuscous spot on occiput; palpi white, apical segment dark fuscous with some dark scaling extending onto dorsal surface of second segment, antennae dark fuscous, strongly pectinate, ciliate, tips slightly dentate, recurved and mostly naked; patagia fuscous, white spots laterally and two confluent at center; tegulae fuscous, anterior and medial margins ochreous yellow, thoracic disc fuscous with three pairs of faint white spots along margin of overlapping tegulae; pectus fuscous with ochreous-yellow spots on lateral edges of coxae, and on meso- and metapleura; white spot on mesopleura; abdomen with lateral bulbs of first tergite white, ochreous-yellow spots on laterocaudal margins; center of first tergite fuscous with two ochreous-yellow spots along margins, remaining tergites fuscous except for white margins laterally on segments 2–4; first and second sternites white, remaining segments fuscous; legs fuscous, fore and hind coxae white; foretibiae with white scaling and hind tibiae with white band above spurs and band of dark fuscous hirsute scales between spurs extending to middle of tarsi, tips of hind tarsi white, hind legs long; forewing dull grayish brown with semihyaline streak extending length of cell and below anal fold; hind wing dull grayish brown with semihyaline streak below cell extending to origin of cubitus; base of streak suffused with white. Fringe on both wings white. Underside: both wings similar to upperside. Alar expanse 28 mm.

MALE GENITALIA (Figure 8a,b).—General appearance suggests affinity with *tarsalis*. Uncus broad, gently curved, widened at base and moveable. Tegumen with two sclerites (= gnathos) laterad at base of uncus. Valva simple with clasper consisting of two lobes, one ventrocaudad is smooth and lightly sclerotized, the second more dorsad is short and club-shaped with inner margin slightly dentate



MAP 4.—Distribution of *Horama plumipes* (Drury), *H. difflisa* Grote, *H. zapata*, new species.

and surface rough. Sacculus a prominent ridge with thickened setae, anellus consists of two sclerotized rods on either side of aedeagus and a lightly sclerotized, helmet-shaped sclerite (= juxta) ventrally; saccus short; aedeagus simple as in *tarsalis* and *panthalon*.

FEMALE.—Similar to the male but slightly larger.

FEMALE GENITALIA (Figure 20).—Lamella postvaginalis with dorsomedial papilla leading caudally to U-shaped sclerite surrounding ostium bursae; dorsal wall of ostium bursae interrupted by dagger-like lobe; lamella antevaginalis broadly U-shaped, with ventrocaudal edges indented and protuberant; ductus seminalis attached on cervix bursae; corpus bursae with band of irregular ring-shaped signa at middle, interior wall of bursae covered with inward directed spines.

TYPE.—Holotype male, May 1959 (F. Zayas, leg). To be deposited in National Museum, Havana, Cuba, PAD.

Allotype female, May 1959 (F. Zayas, leg). NMNH, Smithsonian Institution.

TYPE-LOCALITY.—San Blas, Cienaga de Zapata, Cuba.

HOST PLANTS.—None recorded.

DISTRIBUTION (Map 4).—Known only from the type-locality in Cuba.

REMARKS.—The semihyaline streaks and the habitus of this species suggest an affinity with *H. pennipes*. The similarity in genitalia, antennae, and distribution suggest a closer relationship to *H. tarsalis*. Also to be noted is the resemblance to species in *Pseudomya* with which it may ultimately prove congeneric.

Horama oedippus (Boisduval)

FIGURES 9a-c, 21; PLATE 3: FIGURES 14, 15; MAP 3

Mastigocera oedippus Boisduval, 1870:81.

Mastigocera oedippus [sic].—Butler, 1876:373.—Druce, 1884:49, pl. 6: fig. 19; 1897:339.

Drucea oedippus.—Kirby, 1892:130.

Horama oedippus.—Hampson, 1898:418.—Fleming, 1959:94.

Horama oedippus [sic].—Zerny, 1912:121.—Draudt in Seitz, 1916:143, pl. 26: row *m*.—Kaye and Lamont, 1927:10.

MALE.—Head black. Frons and vertex with creamish-yellow spots. Palpi creamish yellow, upturned almost to vertex, third segment black and porrect. Antennae black dorsally, yellow beneath, serrate, dilated at middle, tips recurved. Patagia black with two confluent white spots subdorsally. Tegulae black with inner margins and cephalic spot yellow. Thoracic disc black with white oblique stripes below tegulae, hind margins of mesothorax and metathorax yellow. Pectus black with yellow patches below wings and patagia, each coxa with a silky white spot above. Abdomen banded bluish black with hind margins ochreous yellow; first tergite divided by white transverse stripe, first sternite bluish black with caudal half white. Legs black, variously spotted with yellow; hind tibiae with pronounced band of long, black hirsute scales on basal half; proximal half of tibiae and entire hind tarsi yellow with scales hirsute. Wings dark brown, humeral angle of forewing with white spot superimposed on black patch; costa of hind wing buff yellow. Underside: wings similar to upperside but suffused with few yellow scales at base. Venation (Figure 29). Alar expanse 32–40 mm.

MALE GENITALIA (Figure 9a–c).—Uncus bifurcate with gnathos represented by paired Y-shaped processes beneath. Tegumen with lateral edges modified into long, caudal arms. Anellus shield-shaped, occupying most of diaphragma. Valvae with dorsal arms falcate and patch of modified scales at base. Aedeagus small with phallobase winged; only tip exerted through annular opening (Figure 9c).

FEMALE (Plate 3: figure 14).—Similar to male but larger. Alar expanse 42–46 mm.

FEMALE GENITALIA (Figure 21).—Lamella postvaginalis modified to form medial periostial protrusion with ostium bursae opening midventrally. Ductus bursae slightly sclerotized. Ductus seminalis enters on cervix bursae. Interior of corpus bursae covered basally with numerous spines; accessory bursa sculptured exteriorly with faint starlike sclerotizations.

TYPE.—Holotype, BM(NH). Consists of four

wings and two hind legs glued to a card.

TYPE-LOCALITY.—Guatemala and Mexico.

HOST PLANTS.—None recorded. Adult specimens have been collected visiting flowers of *Cordia curassavica* and *C. inermis* [Boraginaceae] in Costa Rica.

DISTRIBUTION (Map 3).—Baja California, Mexico, Guatemala, British Honduras, Costa Rica, and Trinidad.

REMARKS.—This species has a notable resemblance to *panthalon texana*. Its distribution overlaps with *p. texana* in Baja California and southern Mexico. It is possible that the type-specimen of *oedippus* may, in fact, be *p. texana*. The latter is much more common in collections than *oedippus* and its hind legs are never as plumose as *oedippus*. The body of the *oedippus* holotype has been destroyed and what remains is four wings and a pair of hind legs glued to a card. The wings are indistinguishable from those of *p. texana* and the plumose scales of the hind legs are only moderately long as in *p. texana* rather than being long and bushy as in *oedippus*. If the type abdomen were available, the transverse white stripe on the first abdominal tergite would readily have separated *oedippus*. Boisduval makes no mention of the stripe in his original description. In the absence of more conclusive evidence and in the interest of stability we are maintaining the *oedippus* designation. Further studies on Lepidoptera scales and venation with the aid of a scanning electron microscope may someday help resolve the question.

The senior author has collected a mating pair in Quintana Roo, Mexico, flying midmorning above the forest canopy. Other mating pairs are recorded from Magdalena Island, Baja California; X-Yaaxchexlabpax [Mpio. Tizimín], Yucatán; and Trinidad, BWI.

Several variants in the abdominal pattern of *oedippus* should be noted. One male (Plate 3: figure 15) in the NMNH has the caudal tergites uniformly tawny in color. No other specimens have been found with this pattern. Occasionally specimens occur with the abdominal sternites entirely yellow.

SPECIMENS EXAMINED (12 males, 16 females).—MEXICO: Baja California Sur: Magdalena Island, Tres Marias Islands 15 Dec., NMNH, AMNH. Chiapas: 8 mi W Navenchauc [between San Cristóbal and Chiapas], 1 April, UCB. Sinaloa: Venadío [Venadillo?], NMNH. Veracruz: Coatepec, NMNH;

Jalapa, NMNH. Yucatán: Valladolid, BM (NH); X-Yaaxchex-labpax [Mpio. Tizimín], July, CM. Quintana Roo: Ruins at Cobá, 29 Nov., in copulo, NMNH.

BRITISH HONDURAS: Belize, NMNH; no specific locality, BM (NH).

GUATEMALA: Baja Verapaz: S Geronimo, BM (NH).

COSTA RICA: Guanacaste: 4 mi NW Cañas, La Pacifica, 5 Sept., UCB; Comelco, 8 km NW Bagaces, 31 Aug., UCB.

TRINIDAD: Rock, Peñal, and Moruga roads, mostly through forest, Sept., OX.

Reestablishment of the Genus *Poliopastea* Hampson

During the course of this review, as well as related studies of the genus *Macrocneme*, it has become evident that a number of species previously placed in *Horama* and *Macrocneme* possess characteristics which relate them to each other more closely than to either of the above two genera in which they have been included. In addition, these features are of sufficient magnitude, in our opinion, to warrant establishment of a separate genus. Fortunately, one of the species involved, *P. plumbea* Hampson, was originally designated as the type-species of *Poliopastea*, a genus described by Hampson (1898) and subsequently synonymized under *Macrocneme* by Fleming (1957).

The genus *Poliopastea* is characterized as follows: It belongs in the Euchromiinae by having M_2 of the hind wing absent or rudimentary. The markings of the head, patagia, tegulae, and first abdominal tergite are often metallic blue or blue white, except in *P. mirabilis* and *P. cyanescens* where the markings are metallic green. In the genus *Macrocneme* (sensu stricto) these markings are characteristically white with little or no iridescence. In the males, the first, second, and third abdominal sternites are modified to form what has been called a "ventral valve" (Figure 11). The first sternite is developed into a flap that covers a pouch formed by the second and third sternites. Inside, the pouch contains a mass of long, white scent scales. In the females a small sclerotized pouch (Figure 12) occurs between the sixth and seventh abdominal sternites, which apparently serves to receive the tip of the right valva of the male during copulation; whereas, in *Horama* and *Macrocneme* (sensu stricto) the valvae are symmetrical. In the male genitalia of *Poliopastea* the valvae are asymmetrical with the right valva elongate and positioned midventrally rather than lat-

erally and the left valva short and positioned laterally (Figure 10c). The tegumen is often modified by a spine-tipped process on the right side (Figure 10a). The aedeagus with the vesica everted is very large, virtually twice the size of the combined vinculum and tegumen. The apex of the vesica always terminates in a large cornutus (Figure 10b).

When photographed under ultra-violet illumination the iridescent scales in *Poliopastea* may reflect positively (Figure 18). According to D. R. Davis (pers. comm.), who is currently conducting preliminary studies on ultraviolet reflection in moths, no other moth scales are presently known to reflect U-V light. The biological significance of this finding is unknown, but it suggests that a polymorphic species complex may be present and that the full range of member species may only become known with further U-V studies. The presence of these U-V scales on the venter, if verified, would imply an interesting mating behavior.

The following presentation of the taxa included in the genus *Poliopastea* is not intended to serve as more than a preliminary survey of the group. All the types were cursorily examined. Only in some cases were the genitalia compared. Obvious synonymies have been included where appropriate. For those species where the identity or past synonymy was questionable, we have deferred further treatment and merely listed the names in new combination. There may be a number of additional new synonymies and combinations, as well as new species, when a thorough study of the type-specimens and analyses of additional material is completed. In the meantime, the present reestablishment of the genus provides a more appropriate treatment of the included taxa and a starting point for additional revisionary studies.

Genus *Poliopastea* Hampson

Poliopastea Hampson, 1898:336. [Type-species: *Poliopastea plumbea* Hampson, 1898, by original designation.]

Chrysocneme Draudt, 1917:204. [Type-species: *Chrysocneme mirabilis* Draudt, 1917, by monotypy. New synonymy.]

Poliopastea anthracina (Klages), new combination

Saurita anthracina Klages, 1906:531.

Poliopastea ockendeni Rothschild, 1911:40. [New synonymy.]

TYPE-LOCALITY.—Suapure, Venezuela (*anthracina*); La Union, Peru (*ockendeni*).

TYPES.—Holotype female, National Museum of Natural History, Smithsonian Institution (*anthracina*); holotype male, British Museum (Natural History) (*ockendeni*).

***Poliopastea auripes* (Walker), new combination**

Euchromia auripes Walker, 1854:250.

TYPE-LOCALITY.—Honduras.

TYPE.—Holotype male, British Museum (Natural History).

***Poliopastea chryсотarsia* (Hampson),
new combination**

Macrocneme chryсотarsia Hampson, 1889:324.

TYPE-LOCALITY.—Taboga Island, Panama.

TYPE.—Holotype male, British Museum (Natural History).

***Poliopastea clavipes* (Boisduval), new combination**

Mastigocera clavipes Boisduval, 1870:81.

TYPE-LOCALITY.—Mexico.

TYPE.—Holotype male, British Museum (Natural History).

REMARKS.—Although the yellow and brown ground color of the wings and abdomen are anomalous in the genus, the blue metallic spots, the ventral pouch (Figure 11), and characteristic male genitalia (Figure 10a-c) definitely place this species in *Poliopastea*. When photographed under U-V light the yellow pattern disappears (cf. Figures 17 and 18, Plate 3) and the species then looks very similar to *laconia* and *laciades*. Both *laciades* Schaus and *clavipes* Boisduval occur sympatrically throughout their ranges and the male genitalia appear identical, suggesting a polymorphic species.

***Poliopastea coelebs* Bryk**

Poliopastea coelebs, Bryk, 1953:239.

TYPE-LOCALITY.—Amazonas (Brazil).

TYPE.—Holotype male (poor condition), Naturhistoriska Riksmuseet, Stockholm.

REMARKS.—This species was overlooked by Fleming (1957) when he synonymized *Poliopastea* with *Macrocneme*. It has been identified as *errans* Hübner (= *eacus* Cramer) in many collections. The forewings are mostly a suffused metallic blue, which may dull in older specimens. There is no distinct band of brassy scales as described for *eacus*. It is likely this species is a synonym of *pusilla* Butler; however, final judgment should await additional study.

***Poliopastea cyanescens* (Dognin), new combination**

Macrocneme cyanescens Dognin, 1921:7.

TYPE-LOCALITY.—Medina, east Colombia, 500 m.

TYPE.—Holotype male, National Museum of Natural History, Smithsonian Institution.

REMARKS.—This species is allied to *mirabilis* Draudt but lacks the scarlet and/or yellow tufts on the thorax and first abdominal tergite.

***Poliopastea cyllarus* (Druce), new combination**

Macrocneme cyllarus Druce, 1896:29.

TYPE-LOCALITY.—Chiriqui [Panama].

TYPE.—Lectotype female, Zoologisches Museum, Humboldt-Universität, Berlin.

REMARKS.—The original description lists both Chiriqui and Taboga Island as the locality for *cyllarus*. Hampson (1898) cites *cyllarus* as a synonym under *indistincta* and lists the type as being from Chiriqui. We accept Hampson's indication as the designation of that specimen as the lectotype.

***Poliopastea errans* (Hübner), new combination**

Sphinx eacus Cramer [1782], 4:129, 249 [index], pl. 357: fig. B [preoccupied by *Sphinx eacus* Cramer [1780], 3:166, 174 [index], pl. 285].

Pseudomya errans Hübner, 1819:124 [nomen novum].

TYPE-LOCALITY.—Unknown.

TYPE.—Lost.

REMARKS.—This species is most likely allied to *vittata* or some other as yet unstudied species from northern South America. The Cramer figure of *eacus* does not match his original description, which states that "the dark green band of the fore-

wings has a brassy lustre." The accompanying illustration shows a narrow, bluish band in the area of the cell and no indication of any metallic brassy sheen. Since none of the plates are illustrated with metallic pigments it may be reasonable to speculate that the metallic pigments that were available at that time were unsuitable for use in plate reproductions.

***Poliopastea esmeralda* (Butler), new combination**

Macrocneme esmeralda Butler, 1876:371.

TYPE-LOCALITY.—Ega [Tefé], Brazil.

TYPE.—Holotype female, British Museum (Natural History).

REMARKS.—This species may be conspecific with *indistincta* since both species are from northern Brazil and were described by Butler on the same page.

***Poliopastea evelina* (Druce), new combination**

Macrocneme evelina Druce, 1884:48, pl. VIII: fig. 4.

TYPE-LOCALITY.—Volcan de Chiriqui, Panama, 4000 to 6000 ft.

TYPE.—Holotype female, British Museum (Natural History).

***Poliopastea hesione* (Druce), new combination**

Macrocneme hesione Druce, 1888:239.

TYPE-LOCALITY.—Volcan de Chiriqui, Panama.

TYPE.—Holotype female, Zoologisches Museum, Humboldt-Universität, Berlin.

***Poliopastea indistincta* (Butler), new combination**

Macrocneme indistincta Butler, 1876:371.

Macrocneme indistincta hampsoni Schrottky, 1910:151.

Macrocneme hampsoni Schrottky, by Hampson, 1914:206. [New synonymy.]

Macrocneme sura Schaus, 1901:42. [New synonymy.]

TYPE-LOCALITY.—Para, Brazil (*indistincta*); Rio Grande do Sul, Brazil (*hampsoni*); Petropolis, Brazil (*sura*).

TYPE.—Holotype female, British Museum (Natural History) (*indistincta*); holotype male, British

Museum (Natural History) (*hampsoni*); holotype male, National Museum of Natural History, Smithsonian Institution (*sura*).

REMARKS.—This species has been seen only from Brazil. It may be conspecific with *esmeralda* Butler as mentioned earlier. Schrottky gave Hampson's *indistincta* Ab. 1 the name *hampsoni* on the basis of the absence of white fringes on the wings. Our examination has shown that the amount of white on the palpi and on the fringes of the wing and ventral pouch can vary considerably. The genitalia show no differences between the two; thus, we see no justification for maintaining *hampsoni* as a distinct species.

***Poliopastea jalapensis* (Schaus), new combination**

Callicarus jalapensis Schaus, 1889:89.

TYPE-LOCALITY.—Jalapa, Mexico.

TYPE.—Holotype female, National Museum of Natural History, Smithsonian Institution.

***Poliopastea laciades* (Schaus), new combination**

Callicarus laciades Schaus, 1889:88.

Callicarus misitra Schaus, 1889:88. [New synonymy.]

TYPE-LOCALITY.—Paso San Juan, Vera Cruz, Mexico (*laciades*); Paso San Juan, Vera Cruz, Mexico (*misitra*).

TYPE.—Lectotype male, National Museum of Natural History, Smithsonian Institution (*laciades*); holotype male, National Museum of Natural History, Smithsonian Institution (*misitra*).

REMARKS.—Schaus customarily noted the word "type" on the label of the specimen used to prepare the description. We have selected, labeled, and here designate that specimen as the lectotype.

***Poliopastea laconia* (Druce), new combination**

Callicarus laconia Druce, 1884:49, pl. VI: fig. 18.

TYPE-LOCALITY.—Valladolid, Yucatán, Mexico.

TYPE.—Holotype female, British Museum (Natural History).

REMARKS.—Forbes (1939) suggests that *misitra* and *laciades* may be merely color forms of this species.

***Poliopastea lamprosoma* (Hampson),
new combination**

Macrocne me lamprosoma Hampson, 1914:208, pl. XI: fig. 10.

TYPE-LOCALITY.—La Chorrera, Panama.

TYPE.—Lectotype male, British Museum (Natural History).

REMARKS.—This species is very similar to *cyllarus* but may be distinguished by the totally black hind tarsi. In his catalog Hampson uses the word "type" in a general sense to indicate the specimens at hand. The word order in his descriptions is an unreliable guide to the type-specimen. However, he would label one specimen with the word "type" and it is this specimen which we are designating as the lectotype.

***Poliopastea maroniensis* (Schaus),
new combination**

Macrocne me maroniensis Schaus, 1905:188.

TYPE-LOCALITY.—St. Jean, Maroni River, French Guiana.

TYPE.—Holotype male, National Museum of Natural History, Smithsonian Institution.

REMARKS.—This species is known only from the type-specimen and may ultimately prove to be the male of *hesione*, Druce. Like *hesione*, it is rare in collections.

***Poliopastea mirabilis* (Draudt), new combination**

Chrysocne me mirabilis Draudt, 1917:205.

Macrocne me apollinairei Schaus, 1928:56. [New synonymy.]

Macrocne me xantholopha Dognin, 1919:4. [New synonymy.]

TYPE-LOCALITY.—Pacho, Colombia, 2200 m (*mirabilis*); Vergara, Colombia (*apollinairei*); Chocó, near Bogotá, Colombia (*xantholopha*).

TYPE.—Holotype male, British Museum (Natural History) (*mirabilis*); holotype male, National Museum of Natural History, Smithsonian Institution (*apollinairei*); holotype male, National Museum of Natural History, Smithsonian Institution (*xantholopha*).

REMARKS.—These three names are all associated with a species collected in the Department of Cundinamarca, Colombia. The difference between the scarlet tufts of *mirabilis* and the yellow tufts of

xantholopha is apparently local variation because some specimens show an intermediate condition. For example, the tufts on the first abdominal tergite of the type-specimen of *mirabilis* are yellow basally and scarlet beyond. The hind tarsi of both types are bright yellow and the metallic markings are the same.

***Poliopastea nigratarsia* (Hampson),
new combination**

Macrocne me nigratarsia Hampson, 1898:326, pl. XII: fig. 24.

TYPE-LOCALITY.—Panzos, Verapaz, Guatemala.

TYPE.—Lectotype male, here designated, British Museum (Natural History).

***Poliopastea nordina* (Schaus), new combination**

Macrocne me nordina Schaus, 1901:41.

Macrocne me nordina form *altilis* Draudt, 1916:104. [New synonymy.]

TYPE-LOCALITY.—Guadalajara, Mexico (*nordina*); Guerrero, Mexico (*nordina altilis*).

TYPES.—Lectotype female, here designated, National Museum of Natural History, Smithsonian Institution (*nordina*); unknown (*nordina altilis*).

***Poliopastea obscura* (Wallengren),
new combination**

Tipulodes obscura Wallengren, 1860:40.

Chloropsinus nox Druce, 1898:208.

TYPE-LOCALITY.—Guayaquil, Ecuador (*obscura*); St. Lucia, Ecuador (*nox*).

TYPE.—Holotype male, Naturhistoriska Riksmuseet, Stockholm (*obscura*); holotype female, British Museum (Natural History) (*nox*).

***Poliopastea plumbea* Hampson**

Poliopastea plumbea Hampson, 1898:337, pl. XII: fig. 26.

Macrocne me albitarsia Hampson, 1898:325. [New synonymy.]

TYPE-LOCALITY.—Parantins, Lower Amazon, Brazil (*plumbea*); Tabatinga, Amazon, Brazil (*albitarsia*).

TYPE.—Holotype male, British Museum (Natural History) (*plumbea*); holotype female, British Museum (Natural History) (*albitarsia*).

REMARKS.—This is the type-species of *Poliopastea* and was transferred to *Macrocneme* by Fleming (1957) when he synonymized *Poliopastea*. Examination of the type-specimen of *albitarsia* indicates that it is merely the female of *plumbea*.

***Poliopastea pusilla* (Butler), new combination**

Euchromia (*Macrocneme*) *eacus* [not Cramer, 1782] Walker, 1854:250.
Mastigocera pusilla Butler, 1876:372.

TYPE-LOCALITY.—Para, Brazil.

TYPE.—Holotype female, British Museum (Natural History).

REMARKS.—Butler considered Walker's identification of *eacus* to be incorrect and proposed the new name *pusilla*. If *pusilla* is ultimately confirmed a valid species, then *coelebs* Bryk belongs here as a synonym.

***Poliopastea splendida* (Butler), new combination**

Macrocneme splendida Butler, 1876:371.

TYPE-LOCALITY.—Santa Marta, Colombia.

TYPE.—Lectotype male, here designated, British Museum (Natural History).

REMARKS.—This species has been synonymized with *indistincta* by all previous catalogers. The distribution of the two species suggests to us that this association is unlikely. The species appears to us to be much closer to *vittata* or *cyllarus* than to *indistincta*.

***Poliopastea vittata* (Walker), new combination**

Euchromia vittata Walker, 1854:249.
Macrocneme alesa Druce, 1890:493. [New synonymy.]
Macrocneme caurensis Klages, 1906:540. [New synonymy.]
Macrocneme nigritarsia ab. *trinitatensis* Strand, 1917:84.

TYPE-LOCALITY.—Para, Brazil (*vittata*); Bolivia (*alesa*); Suapure, Venezuela (*caurensis*); Trinidad (*nigritarsia* ab. *trinitatensis*).

TYPE.—Lectotype female, here designated, British Museum (Natural History) (*vittata*); holotype male, British Museum (Natural History) (*alesa*); lectotype male, here designated, National Museum of Natural History, Smithsonian Institution (*caurensis*); holotype female, British Museum (Natural History) (*nigritarsia* ab. *trinitatensis*).

REMARKS.—Stand's *trinitatensis*, which was synonymized by Fleming (1957), is merely the female of *vittata*. The white sublateral spots on the abdomen are characteristic markings of the females of this species.

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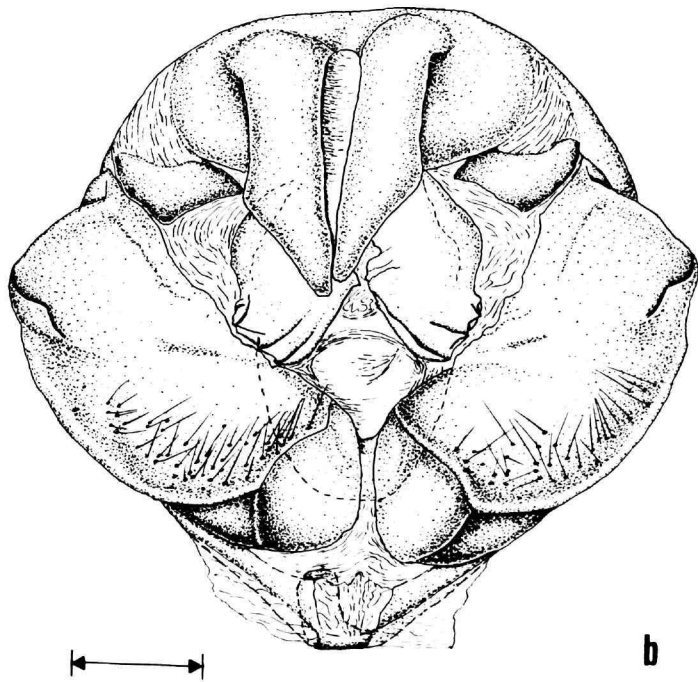
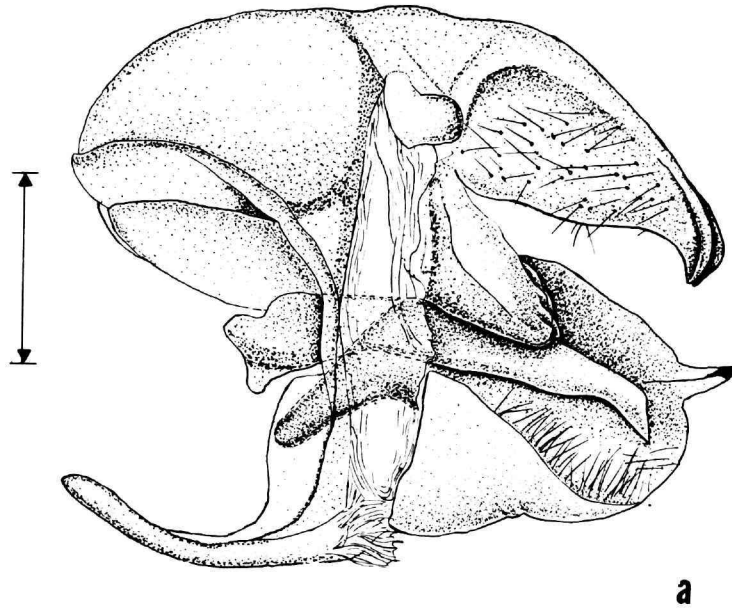


FIGURE 1.—Male genitalia, *Horama pretus* (Cramer): *a*, lateral view, aedeagus in situ, left valve removed; *b*, dorsoventral view.

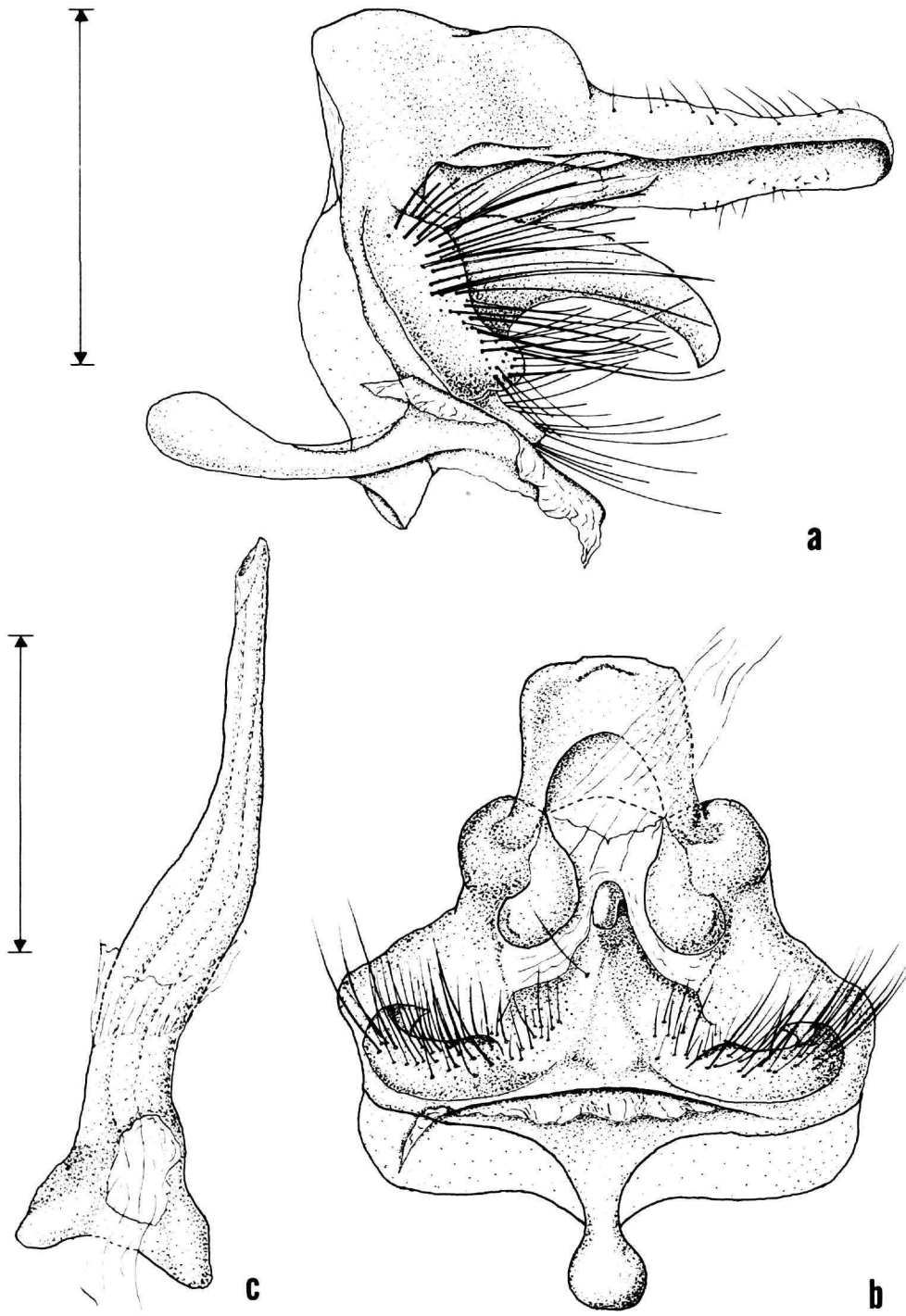


FIGURE 2.—Male genitalia, *Horama grotei* Butler: *a*, lateral view; *b*, dorsoventral view; *c*, aedeagus.

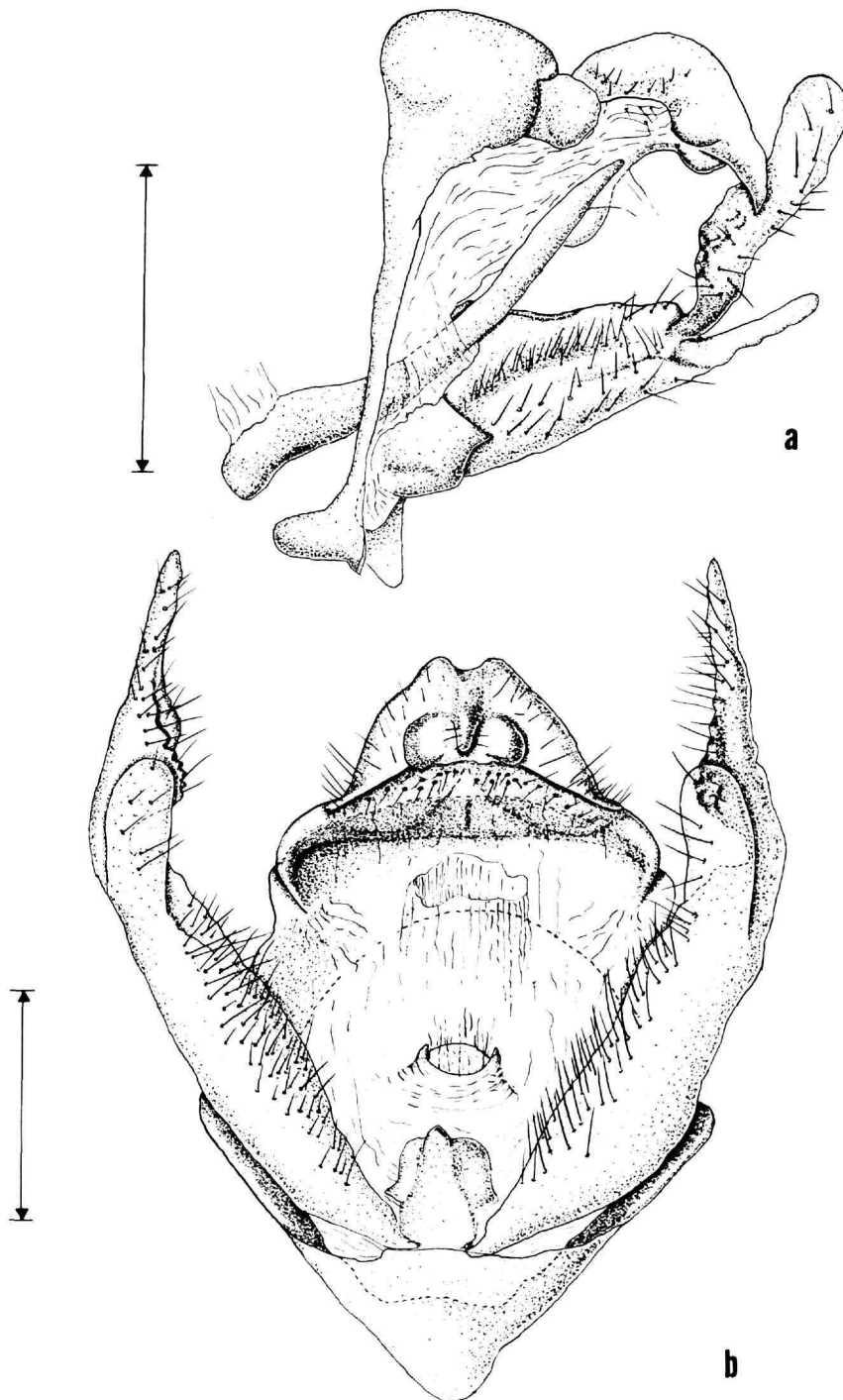


FIGURE 3.—Male genitalia, *Horama panthalon panthalon* (Fabricius):
a, lateral view, left valve removed; *b*, ventral view.

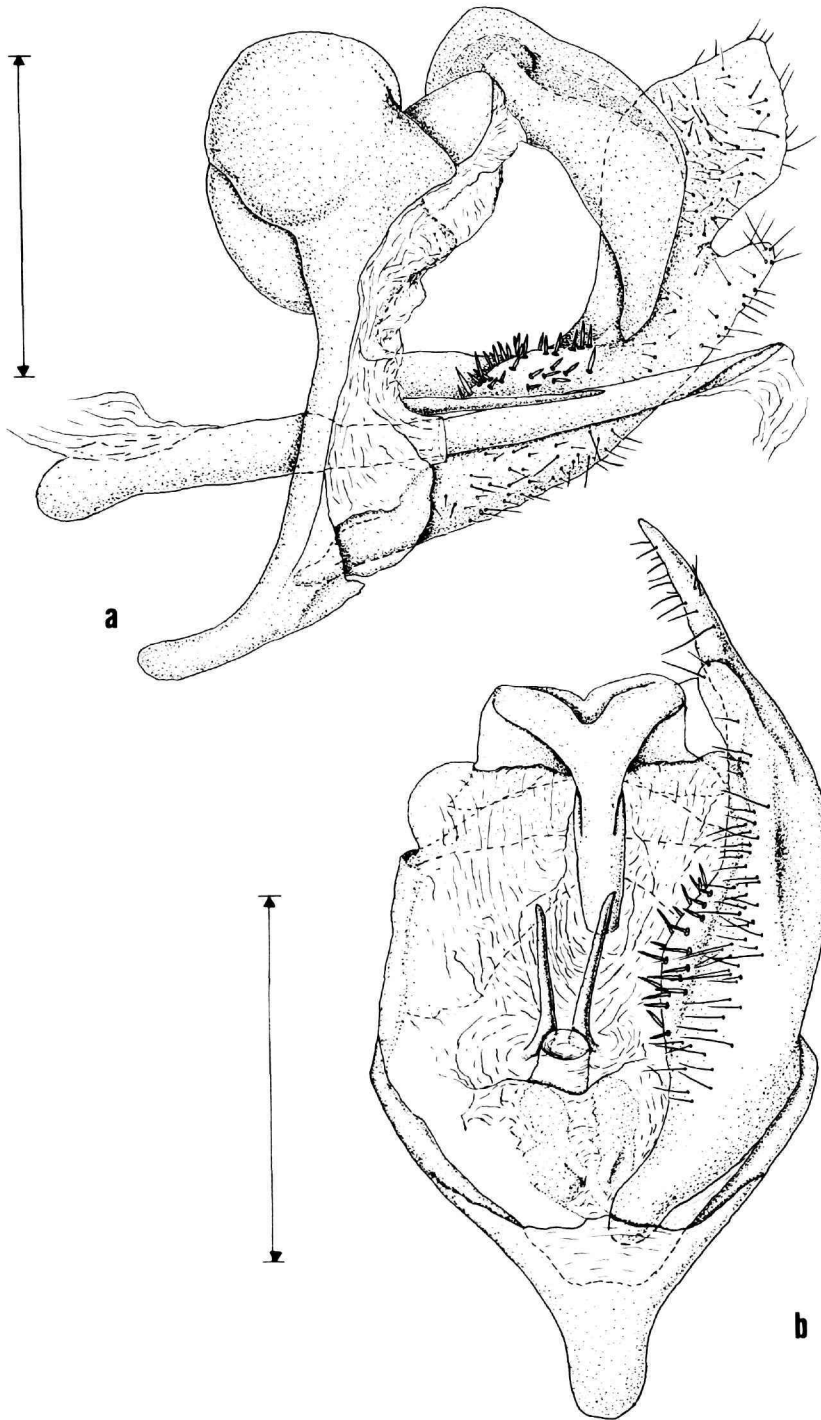


FIGURE 4.—Male genitalia, *Horama tarsalis* Walker: *a*, lateral view, left valve removed; *b*, ventral view, left valve and aedeagus removed.

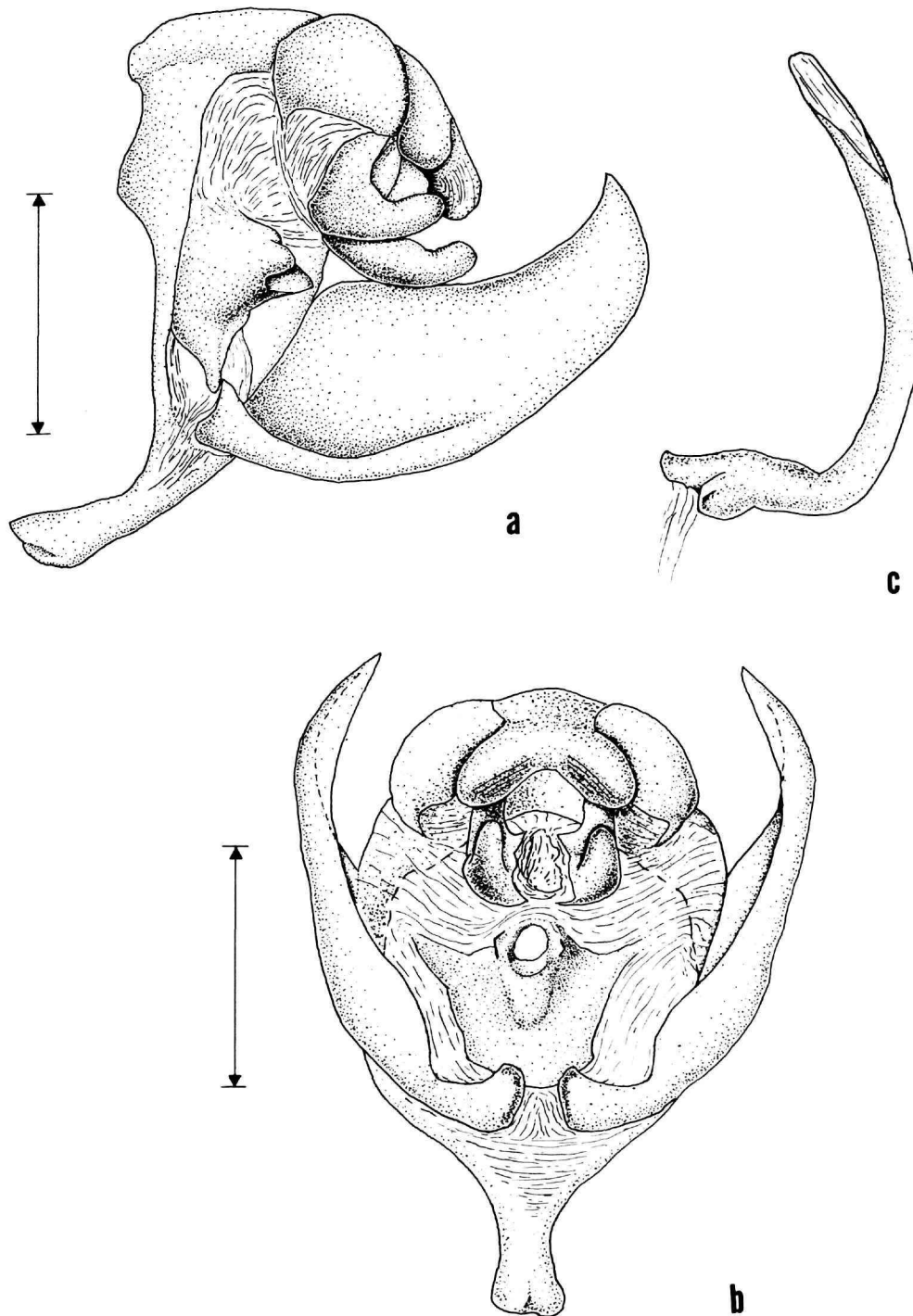


FIGURE 5.—Male genitalia, *Horama pennipes* (Grote): a, lateral view, left valve removed, setae omitted; b, ventral view, setae omitted; c, aedeagus.

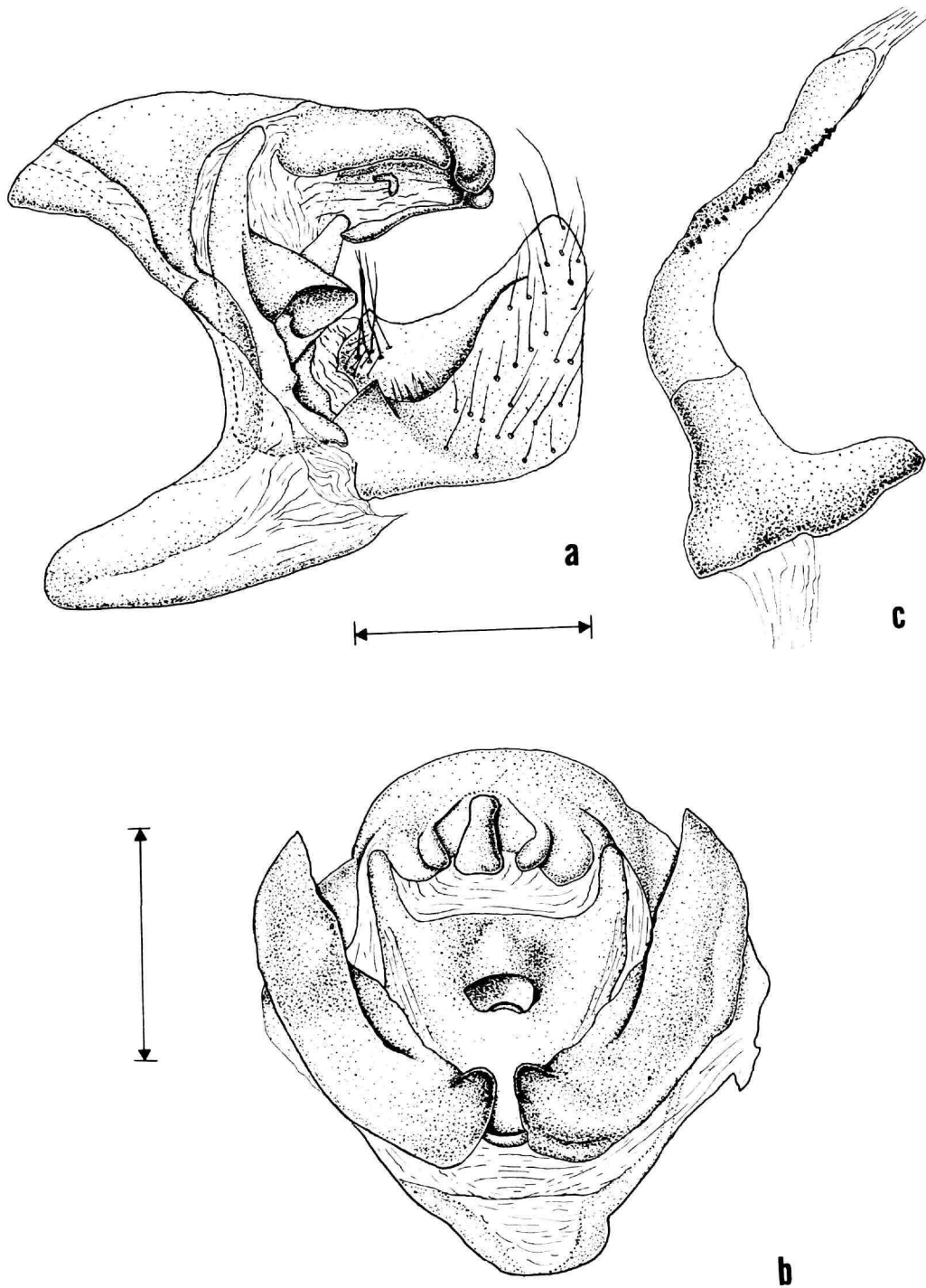


FIGURE 6.—Male genitalia, *Horama plumipes* (Drury): *a*, lateral view, left valve removed; *b*, ventral view, setae omitted; *c*, aedeagus.

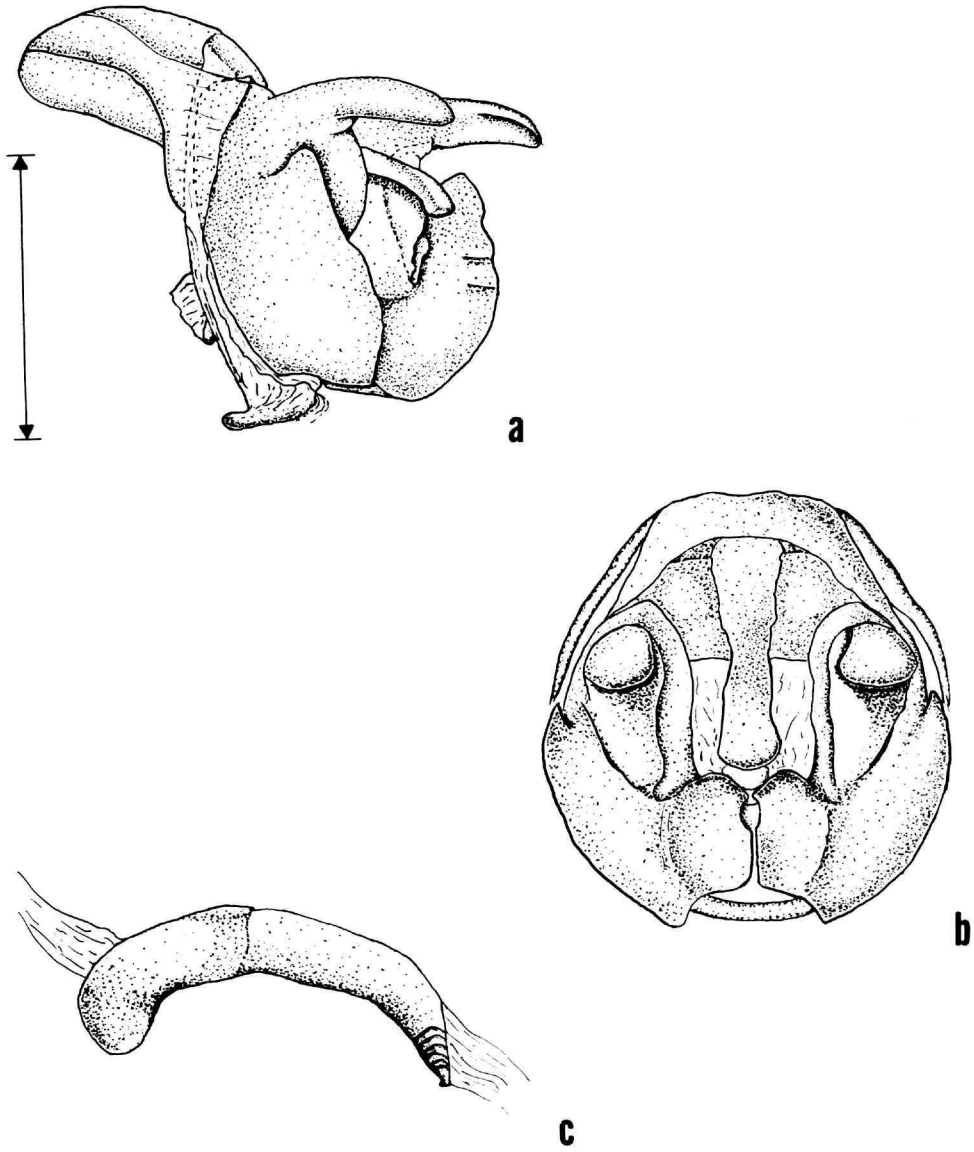


FIGURE 7.—Male genitalia, *Horama diffissa* Grote: *a*, lateral view; *b*, dorsoventral view; *c*, aedeagus.

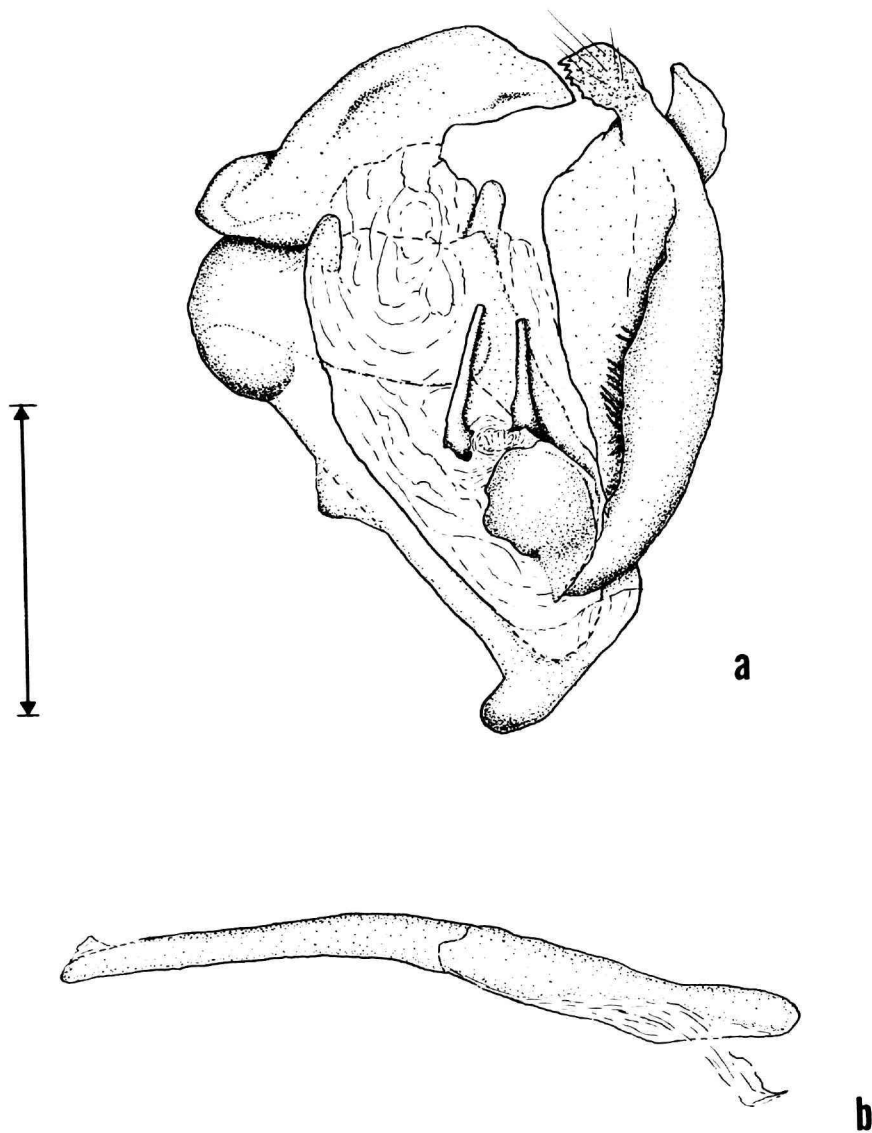


FIGURE 8.—Male genitalia, holotype, *Horoma zapata*, new species:
a, lateroventral view, left valve and aedeagus removed; *b*, aedeagus.

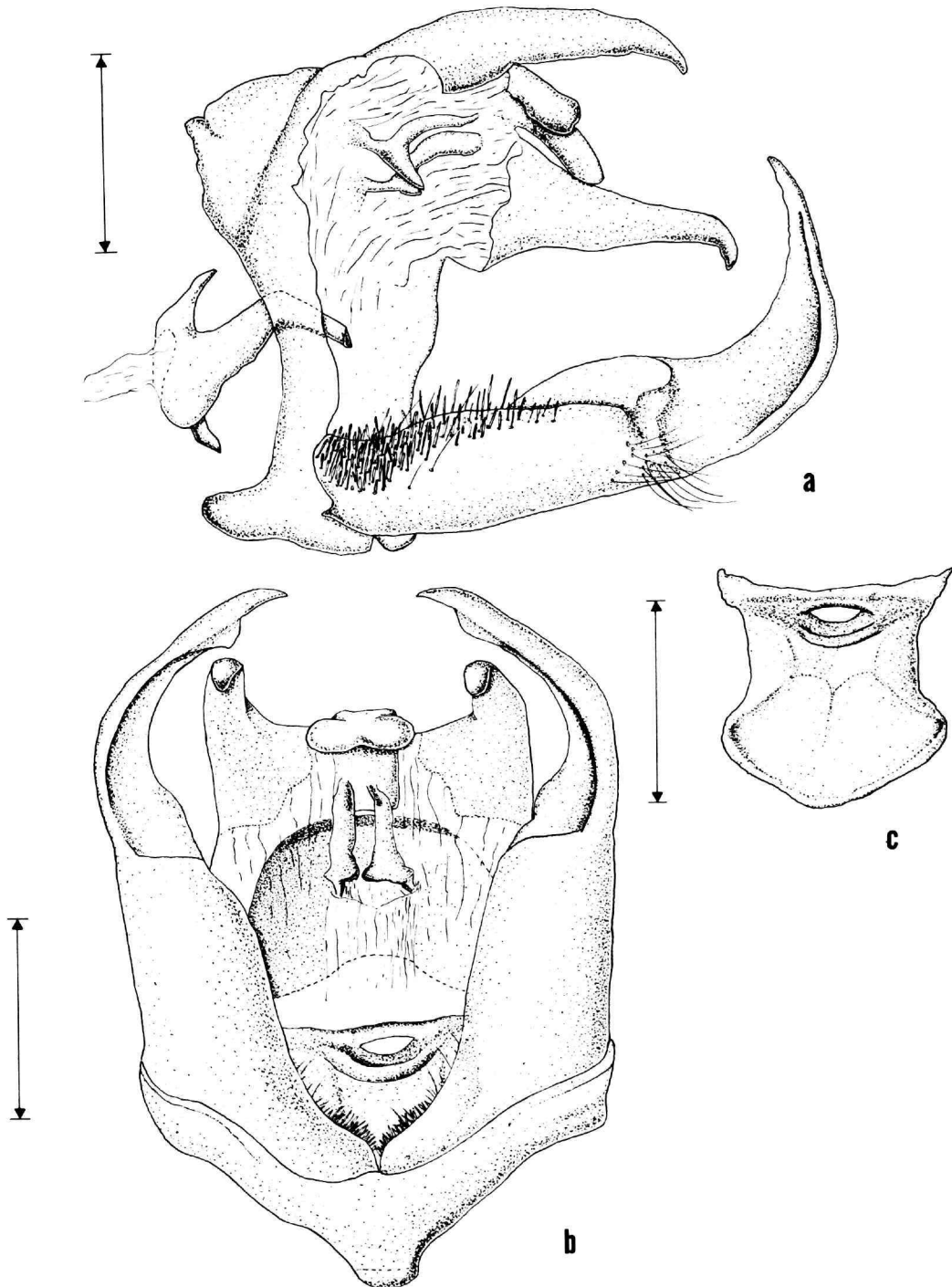


FIGURE 9.—Male genitalia, *Horama oedippus* (Boisduval): a, lateral view, aedeagus in situ, left valve removed; b, ventral view; c, anellar plate (= anellus + juxta).

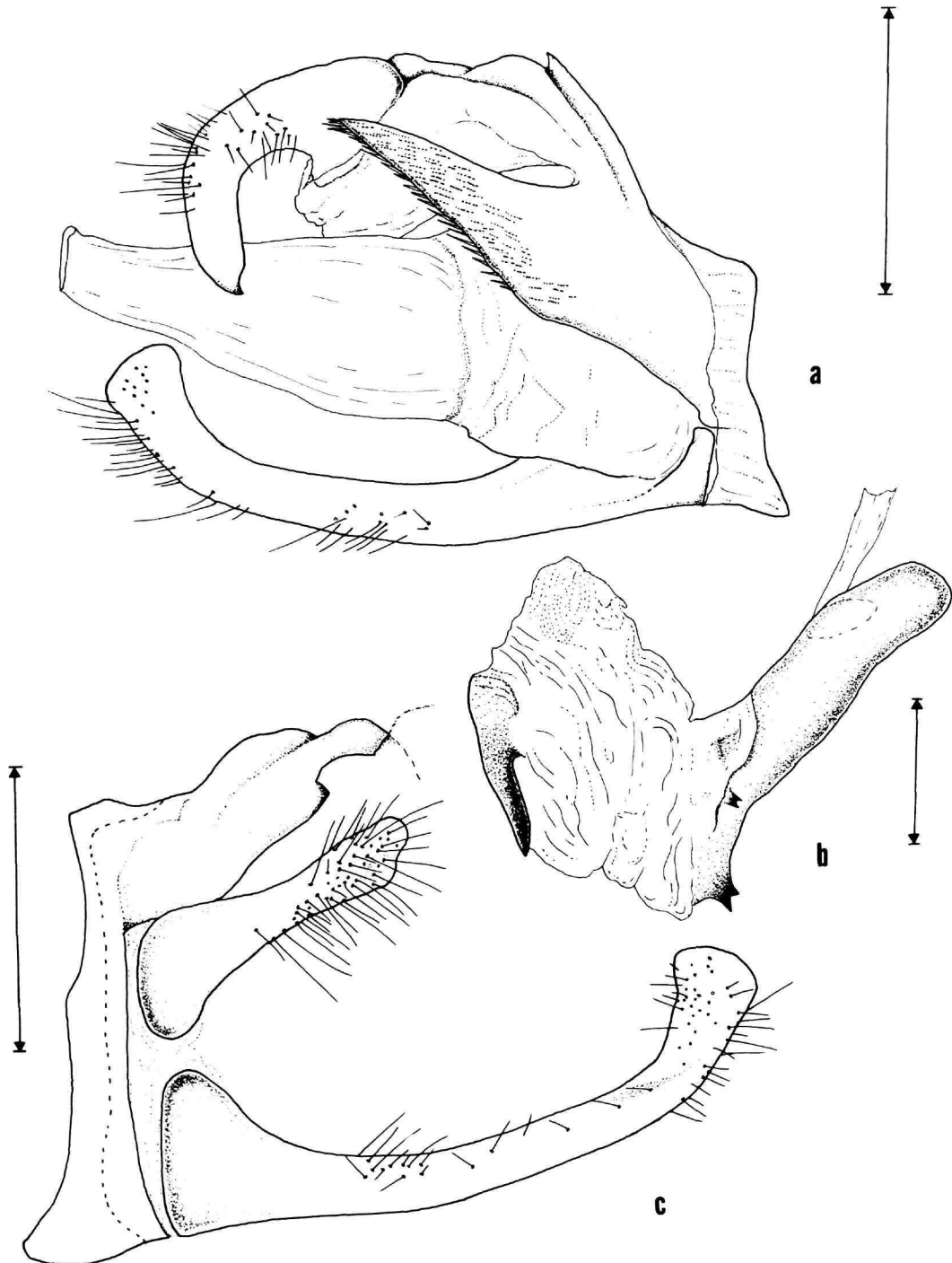
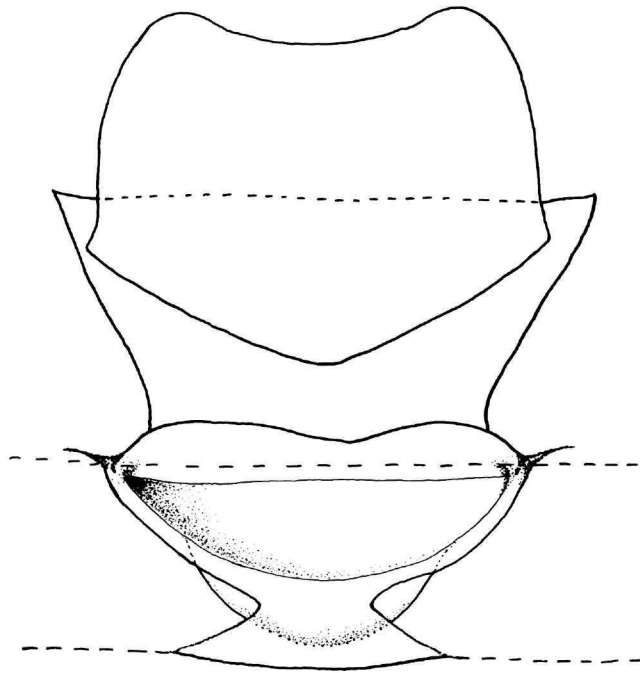
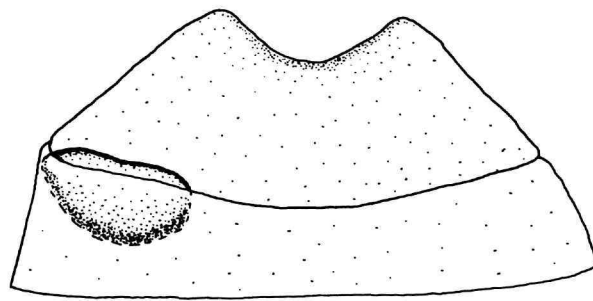


FIGURE 10.—Male genitalia, *Poliopectea clavipes* (Boisduval): *a*, right lateral view showing tegumen process and right valve, aedeagus removed; *b*, aedeagus; *c*, left lateral view showing both valves and tegumen, uncus omitted.



11



12



FIGURES 11, 12.—Modifications of abdominal sternites in *Poliopastea clavipes* (Boisduval): 11, male sternites 1-3 showing intersegmental pocket; 12, female sternites 6-7 showing intersegmental pocket.

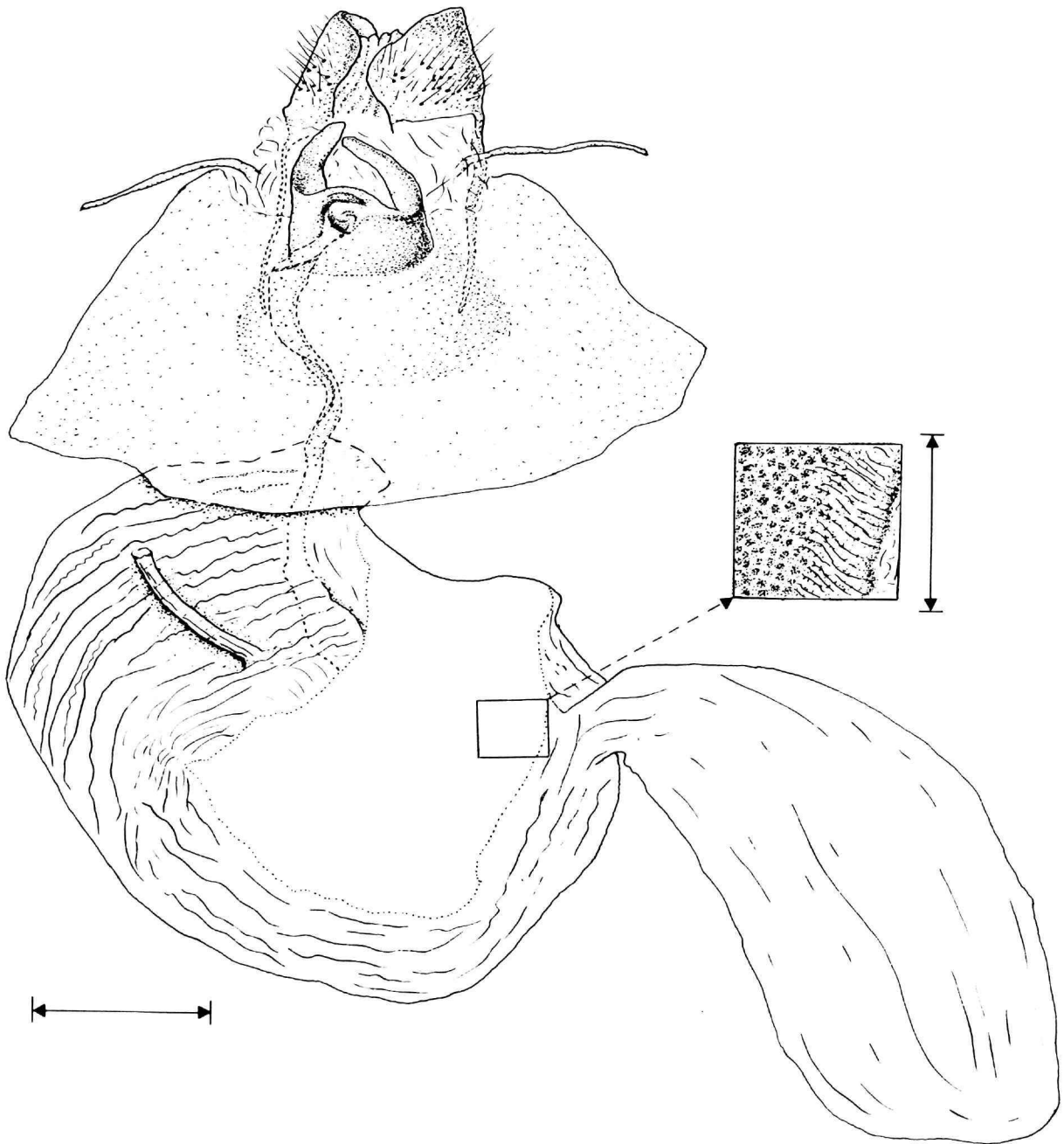


FIGURE 13.—Female genitalia, *Horama pretus* (Cramer): ventral view.

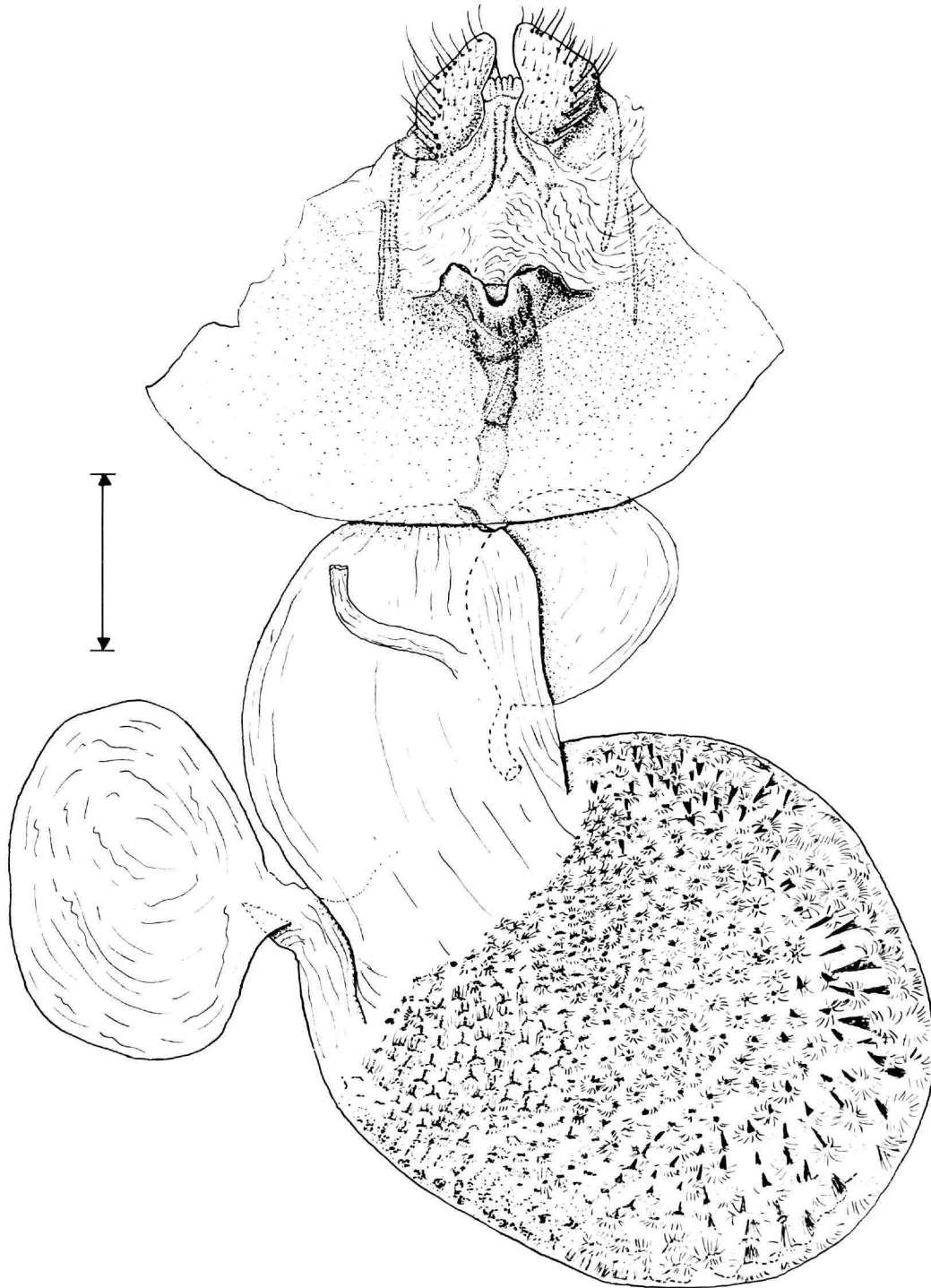


FIGURE 14.—Female genitalia, *Horama grotei* Butler: ventral view.

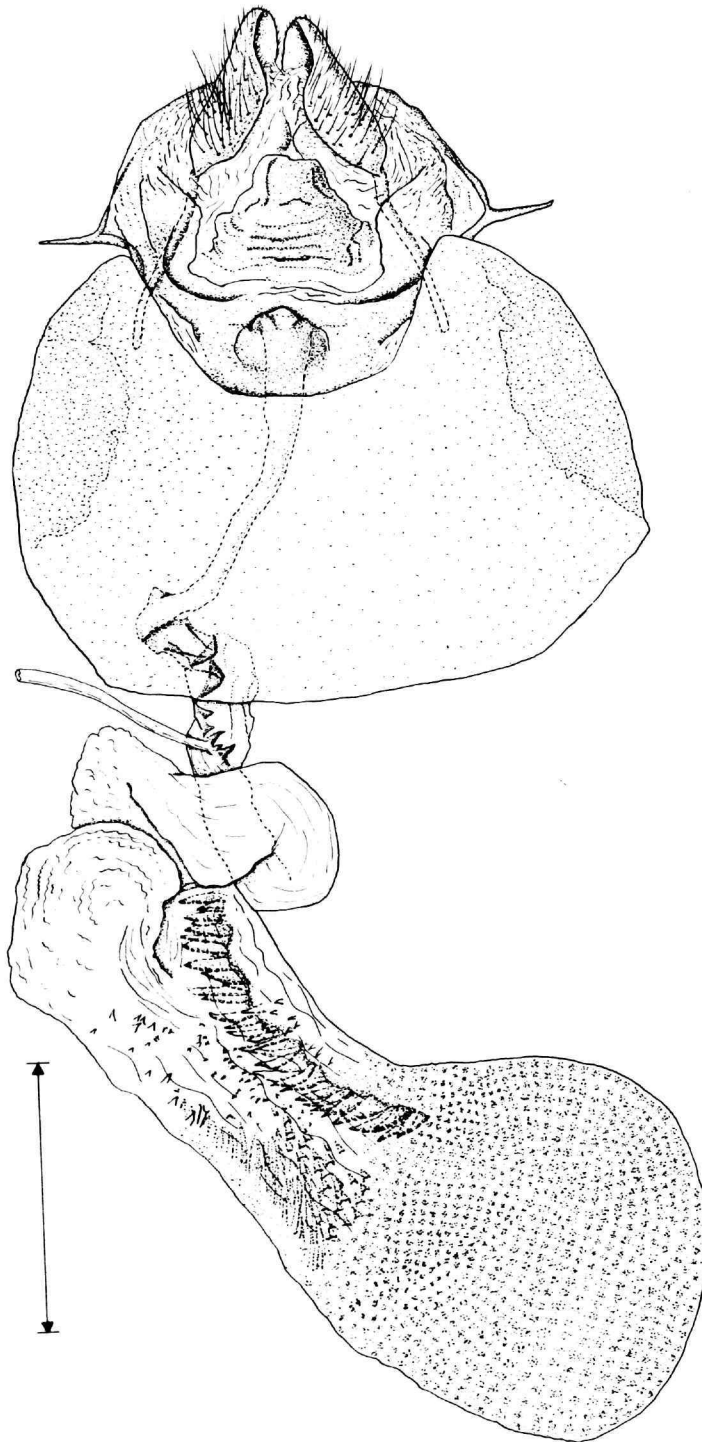


FIGURE 15.—Female genitalia, *Horama panthalon panthalon* (Fabricius): ventral view.

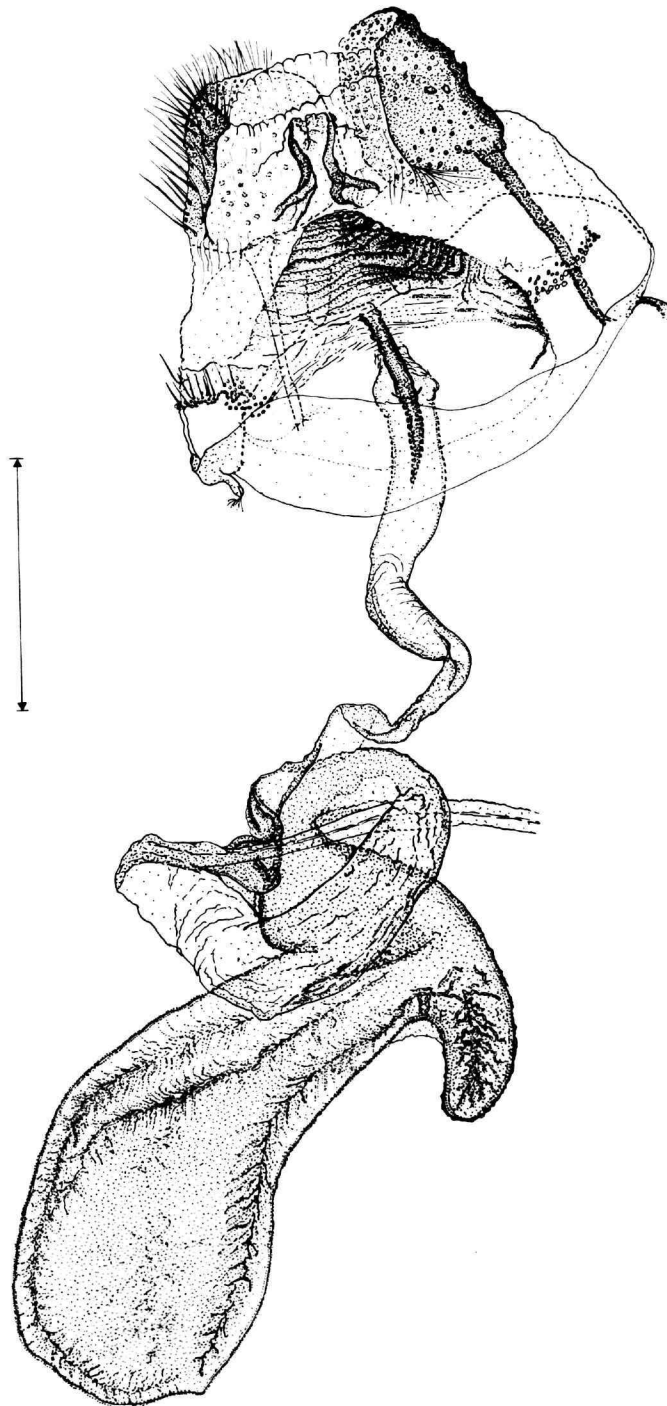


FIGURE 16.—Holotype female genitalia, *Horama tarsalis* Walker: ventral view.
(Drawing courtesy BM (NH).)



FIGURE 17.—Female genitalia, *Horama pennipes* (Grote): ventral view.

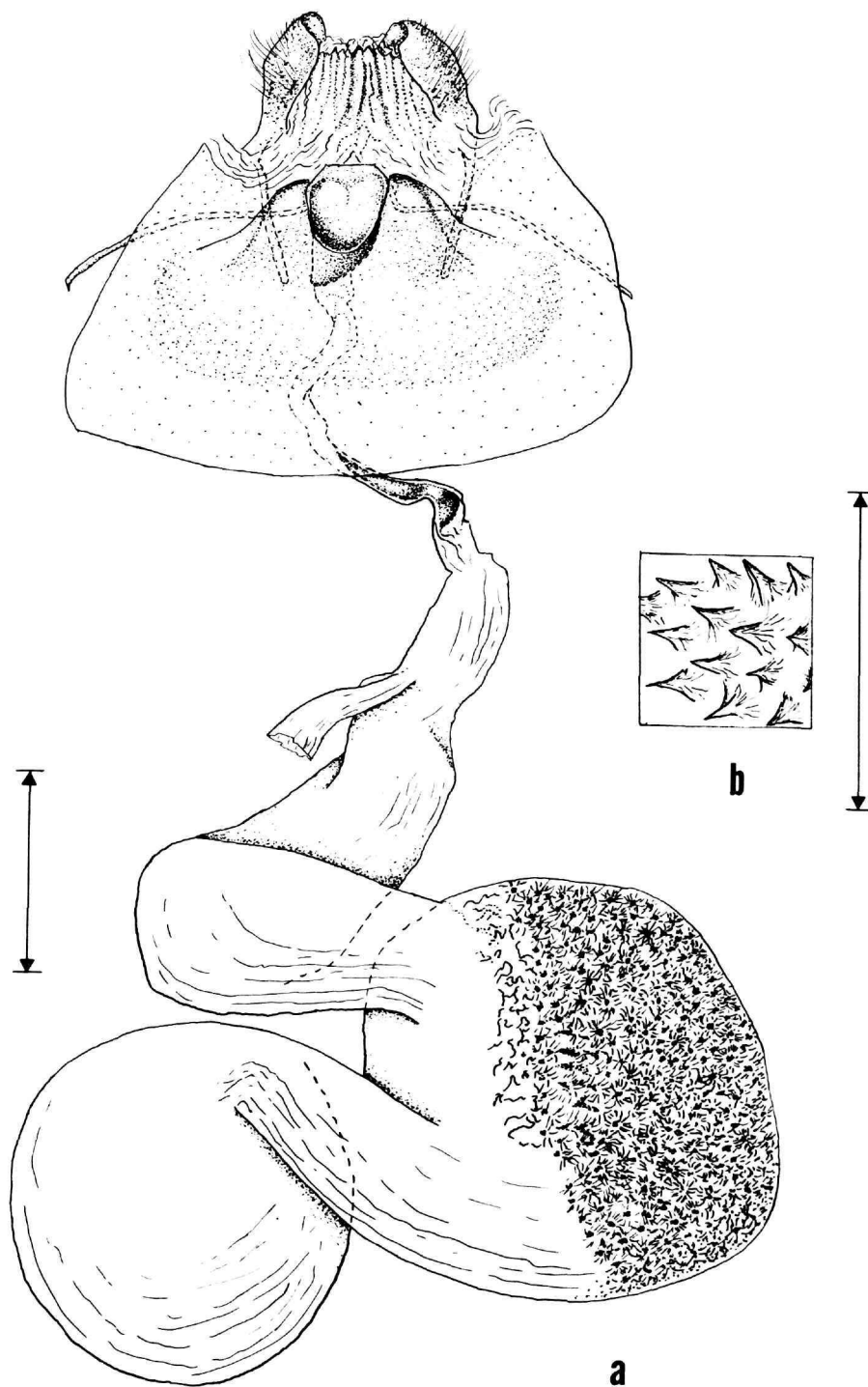


FIGURE 18.—Female genitalia, *Horama plumipes* (Drury): a, ventral view; b, enlargement of signa spines from wall of corpus bursae.

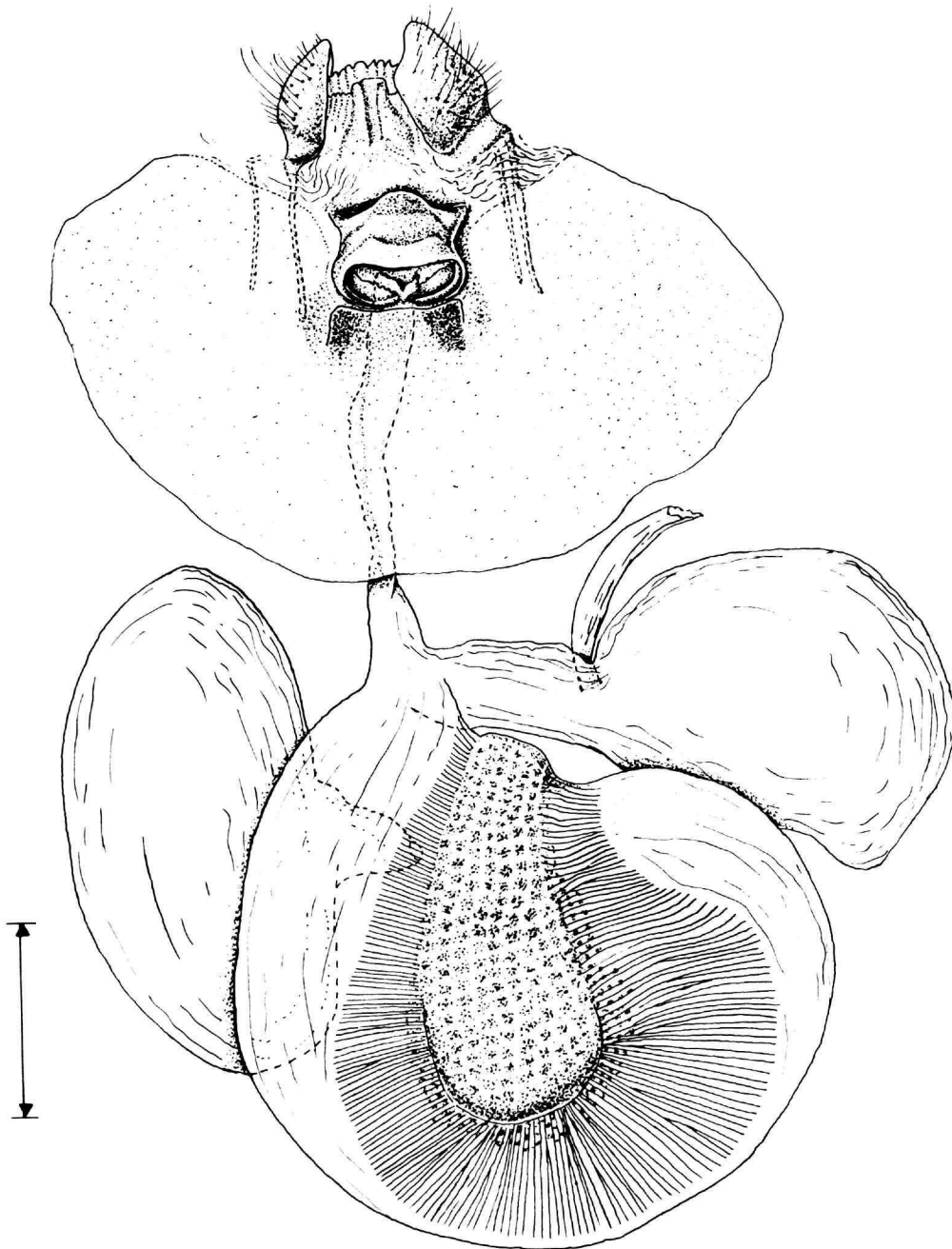


FIGURE 19.—Female genitalia, *Horama diffissa* Grote: ventral view.

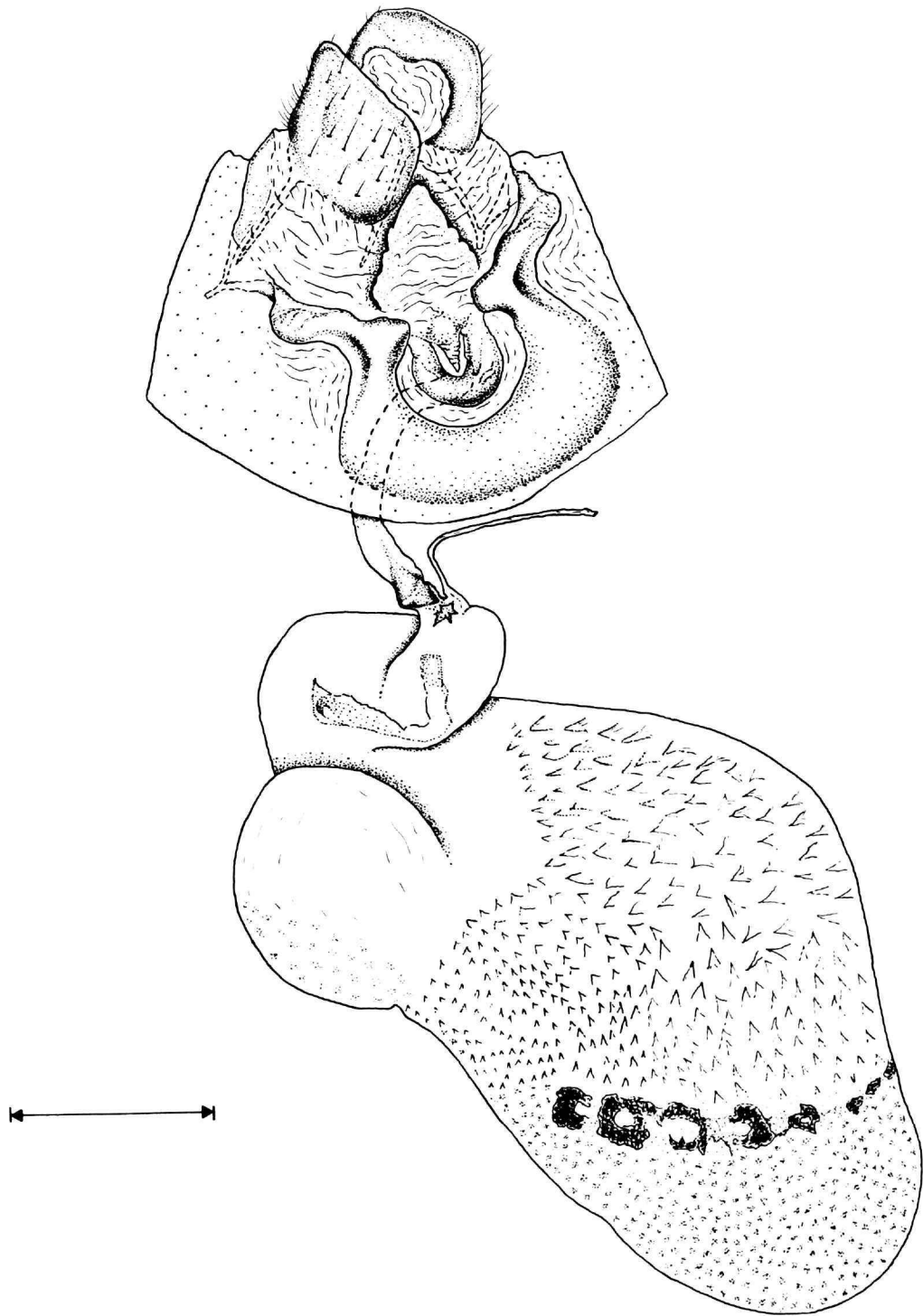


FIGURE 20.—Allotype female genitalia, *Horama zapata*, new species: ventral view.

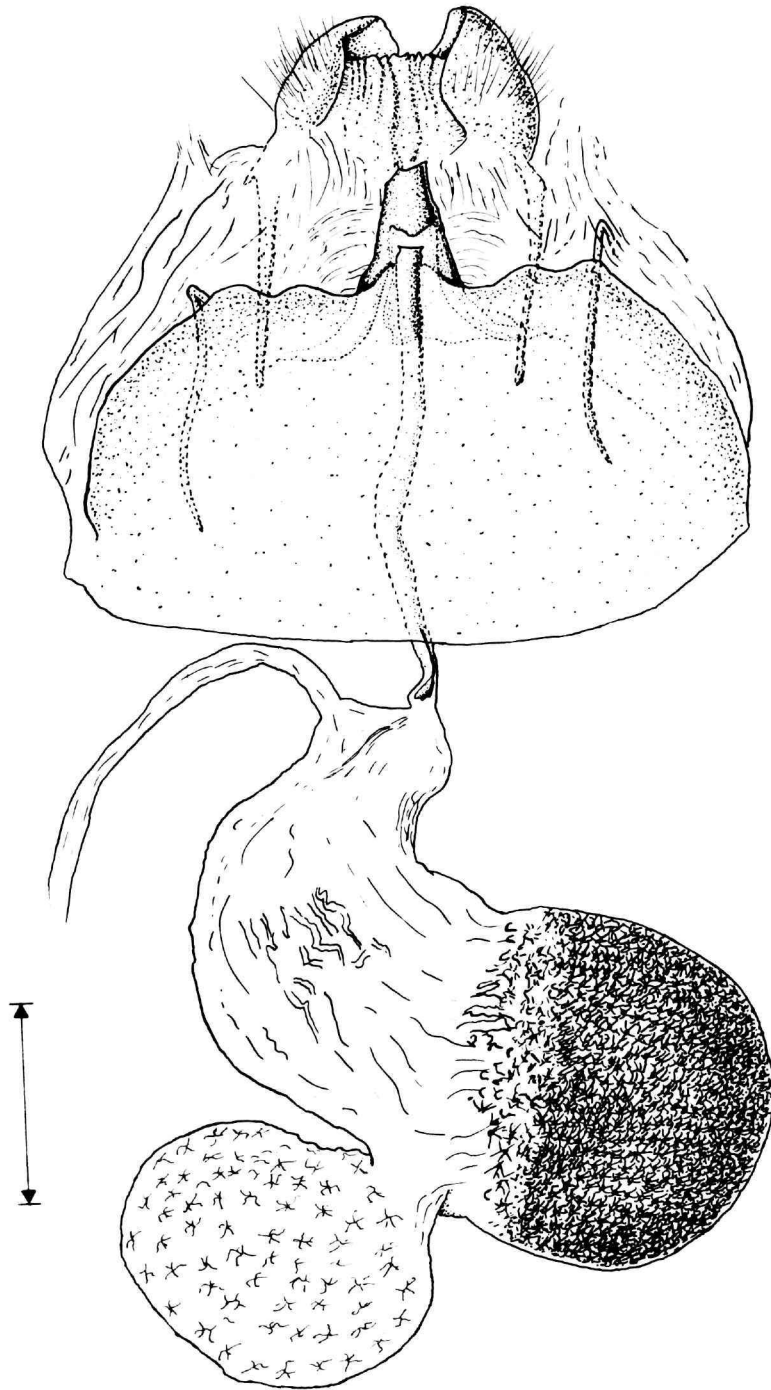
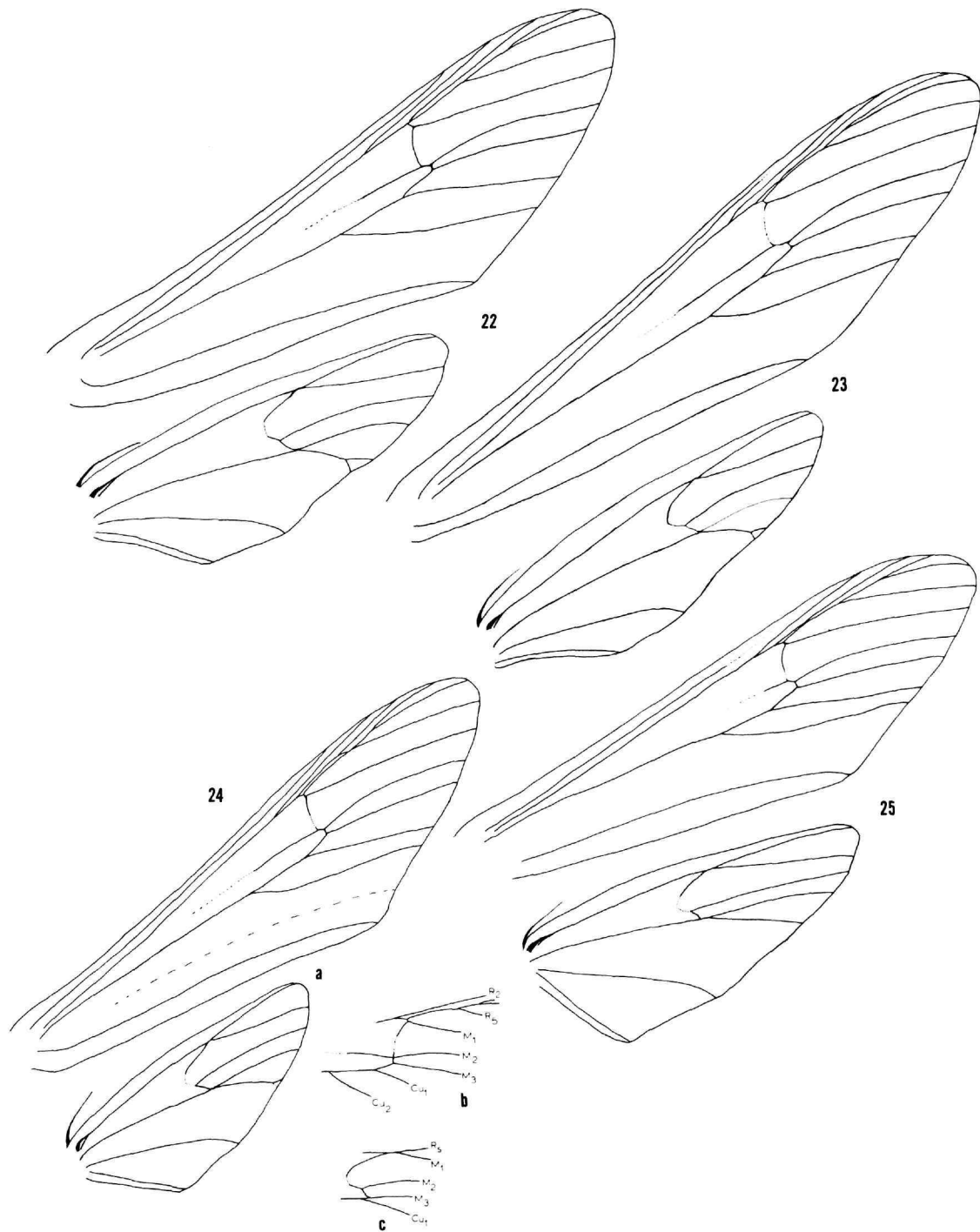
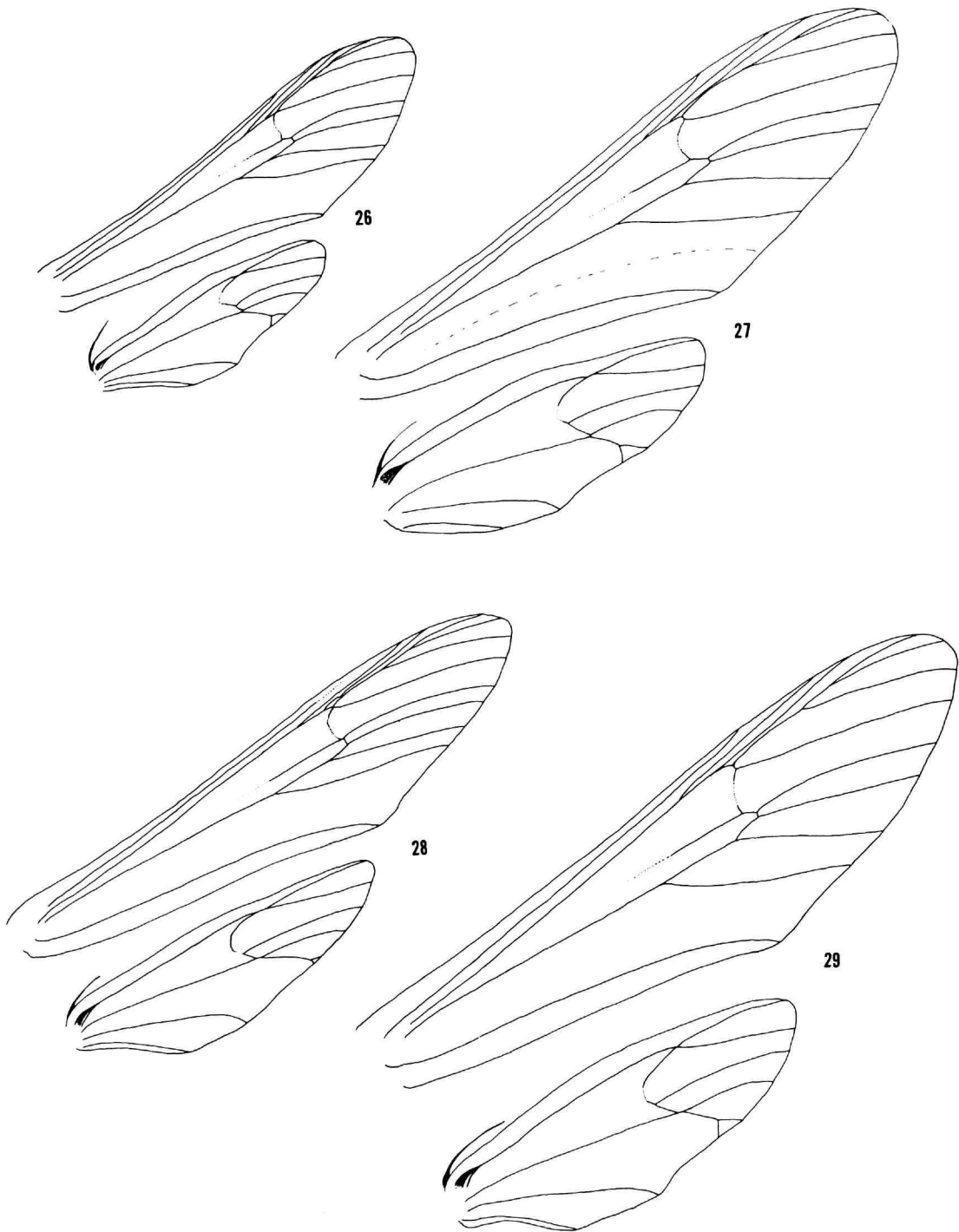


FIGURE 21.—Female genitalia, *Horama oedippus* (Boisduval): ventral view.



FIGURES 22-25.—Venation: 22, *Horama pretus* (Cramer); 23, *H. grotei* Butler; 24a, *H. panthalon* (Fabricius); 24b,c, variants in *H. panthalon*; 25, *H. tarsalis* Walker.



FIGURES 26-29.—Venation: 26, *Horama pennipes* (Grote); 27, *H. plumipes* (Drury);
28, *H. diffissa* Grote; 29, *H. oedippus* (Boisduval).

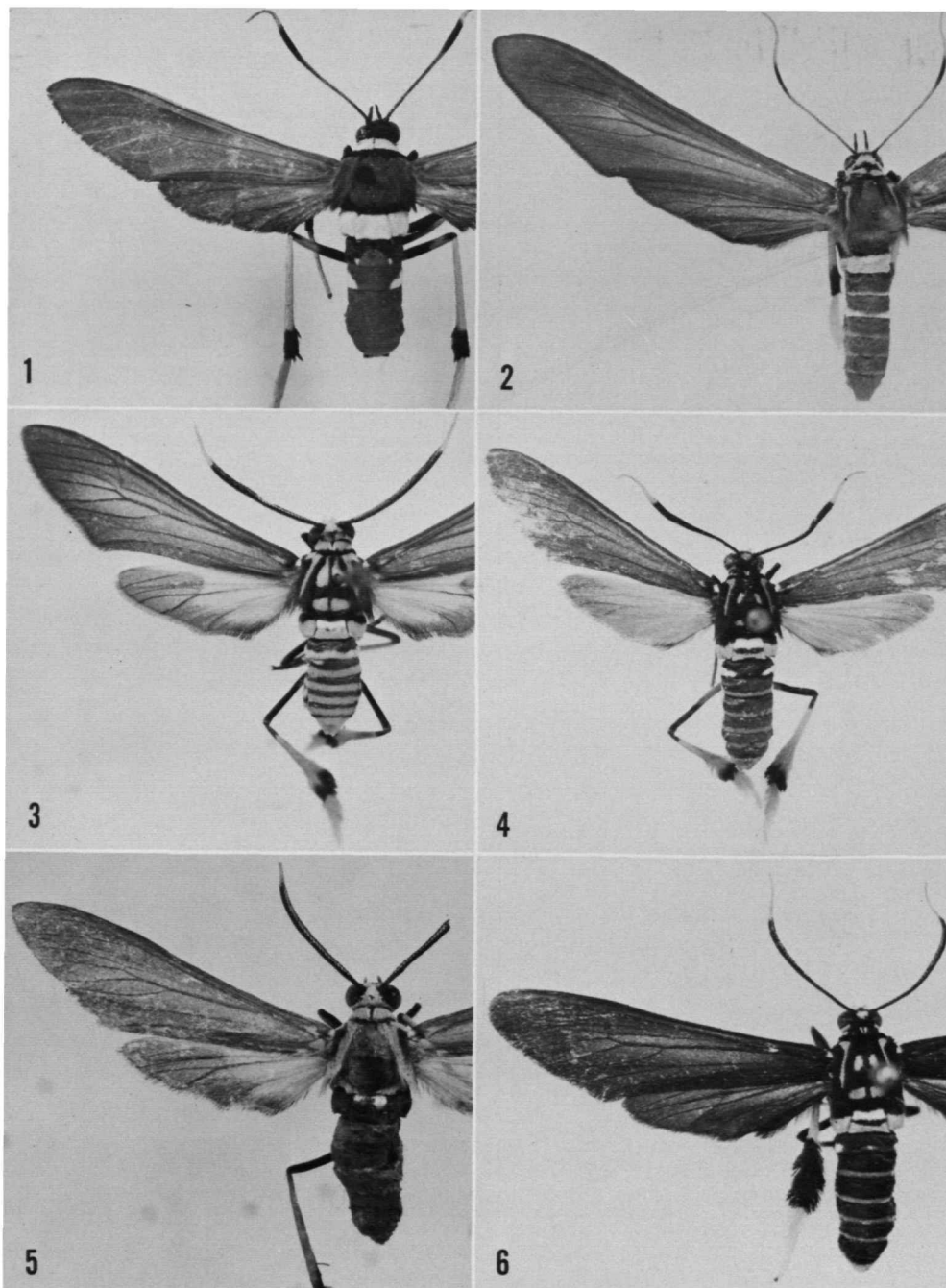


PLATE 1.—Adults of *Horama*: 1, *H. pretus* male, Puerto Rico, NMNH; 2, *H. grotei* female, Hardware Gap, Greenhills, Jamaica, CM; 3, *H. p. panthalon* male (yellow morph), Rancho Grande, Aragua, Venezuela, NMNH; 4, *H. p. panthalon* female (orange hind wing morph), Mt. Eagle, St. Croix, Virgin Islands, NMNH; 5, *H. p. panthalon* [holotype of *serena* Schaus], Canal Zone, Panama, NMNH; 6, *H. p. texana* female, 4 mi SW Ciudad Victoria, Tamaulipas, Mexico, NMNH.

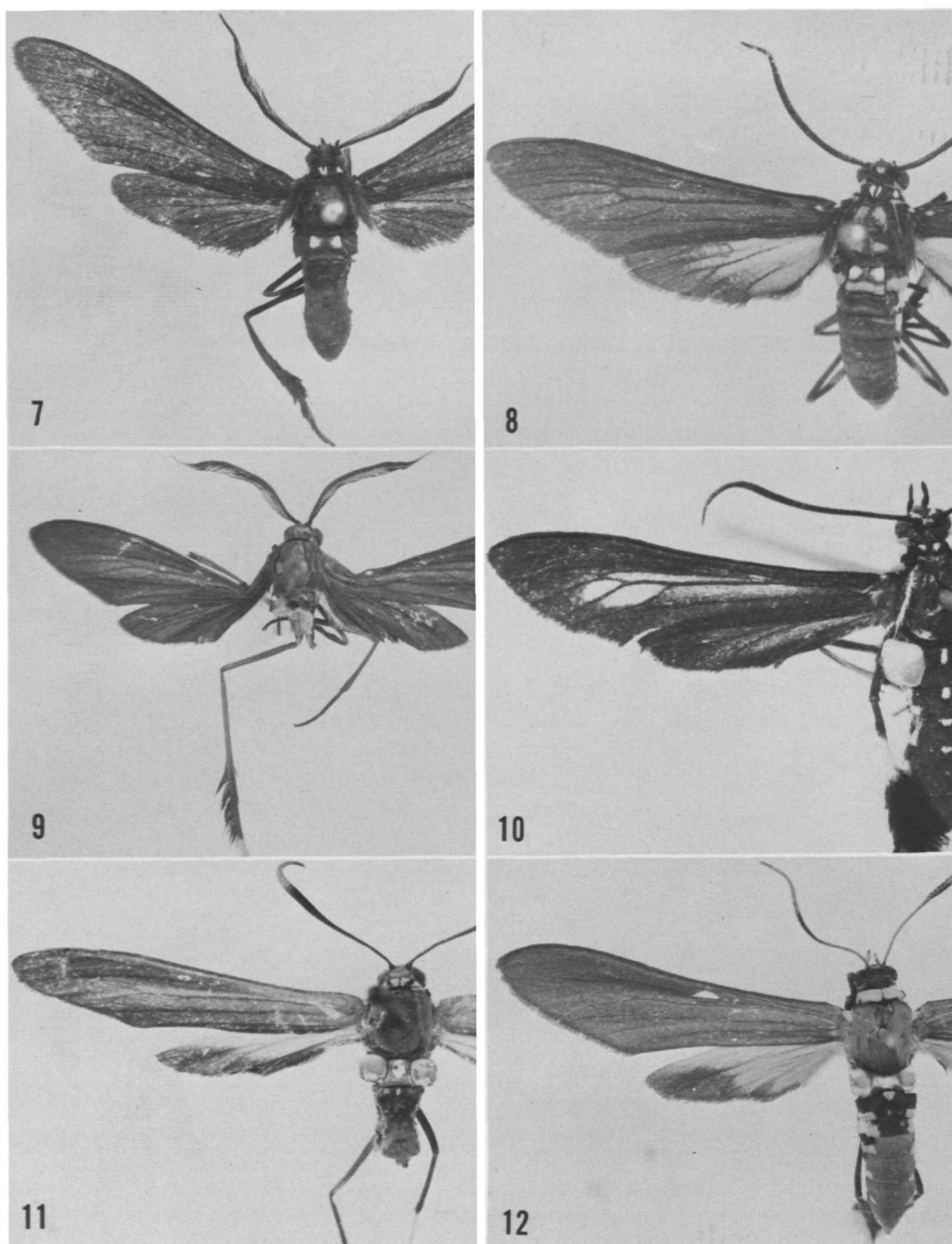


PLATE 2.—Adults of *Horama*: 7, *H. p. viridifusa* male (morph I, see text), San Julian, Chiquitos, Bolivia, BM (NH); 8, *H. p. viridifusa* male (morph II, see text), Prov. del Sara, Bolivia, CM; 9, *H. tarsalis* male, Port-au-Prince, Haiti, AMNH; 10, *H. pennipes* male holotype, Cuba; 11, *H. diffissa* male, Port-au-Prince, Haiti, AMNH; 12, *H. diffissa* female, Santiago, Cuba, NMNH.

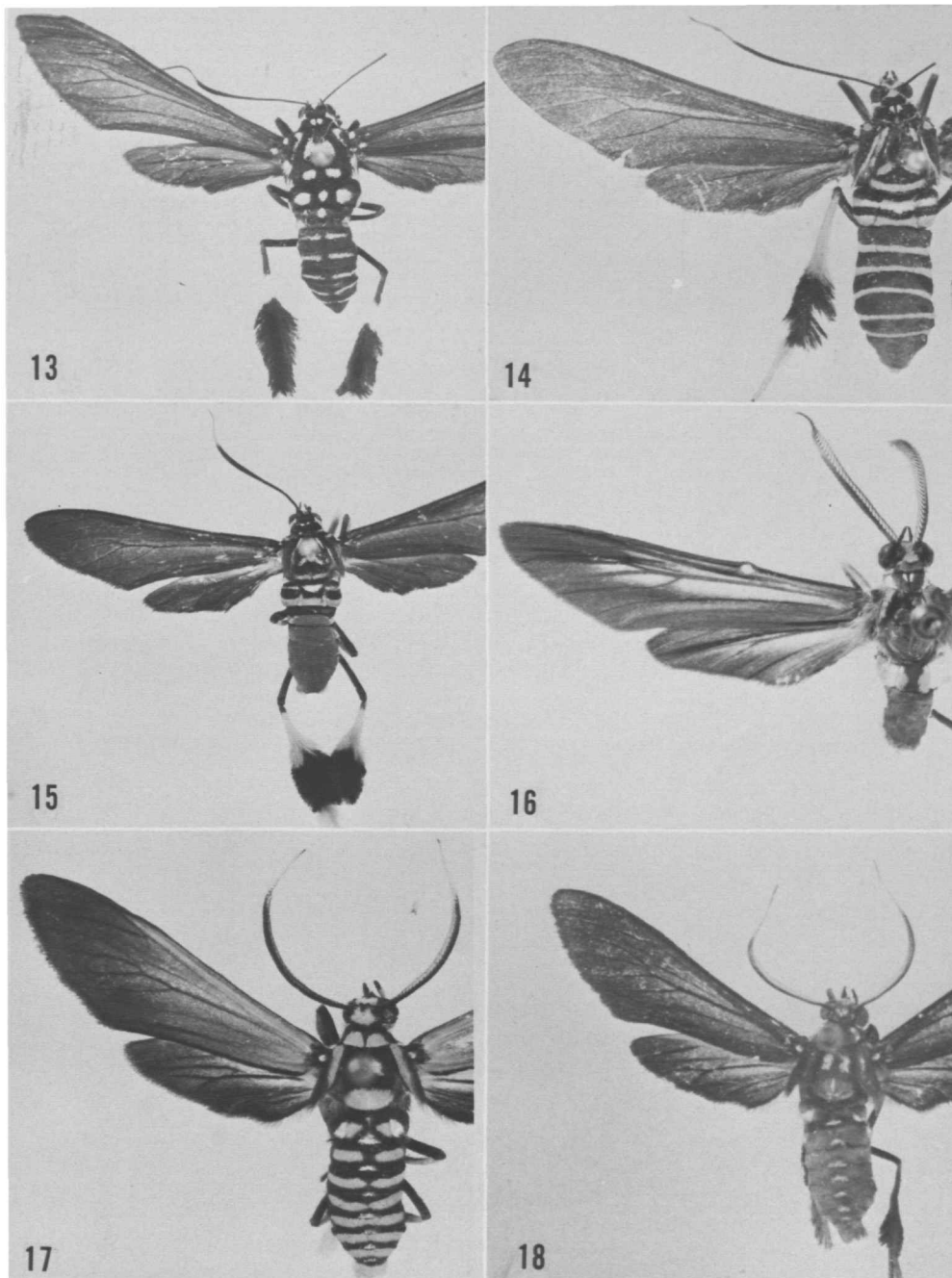


PLATE 3.—Adults of *Horama* and *Poliopastea*: 13, *H. plumipes* female, Madden Dam, Canal Zone, Panama, MCZ; 14, *H. oedippus* female, Valladolid, Yucatán, Mexico, BM (NH); 15, *H. oedippus* male [color variant], Coatepec, Mexico, NMNH; 16, *Horama zapata* male holotype, San Blas, Cienaga de Zapata, Cuba, PAD; 17, *Poliopastea clavipes* male, Rancho Quemado, Rt. 85, Km 353, SLP, Mexico, NMNH; 18, *Poliopastea clavipes* male photographed under ultraviolet illumination.

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