

GENUS *DIPTYCHOPHORA* ZELLER AND A RELATED NEW
GENUS *STENEROMENE* FROM THE NEOTROPICAL
REGION (PYRALIDAE: CRAMBINAE)

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ABSTRACT. *Diptychophora* Zeller a Neotropical-southern Nearctic fringe genus of the subfamily Crambinae, is redefined. The type species *D. kuhlweini* Zeller, presently a junior synonym of *D. azanalis* (Walker), is resurrected and shown to be distinct. *Diptychophora diasticta* is described as new, *D. subazanalis* Błeszyński is elevated to specific rank, and *Mysticomima desmoteria* Meyrick is transferred to *Diptychophora* from its present position in Pyraustinae. *Diptychophora azanalis* is transferred, along with *Pareromene nymphocharis* (Meyrick), to the new genus *Steneromene* which is defined and distinguished from *Diptychophora*.

The genus *Diptychophora* Zeller (Pyralidae: Crambinae: Diptychophorini) originally contained a single species from Brazil, *D. kuhlweini* Zeller, but subsequently became a repository for scores of small Crambinae from all over the world except the northern Holarctic (Meyrick 1931-33, Błeszyński & Collins 1962). Błeszyński (1965) determined that *Pareromene* Osthelder, erected for one species, *P. rebeli*, from Crete was the appropriate genus for all Old World "*Diptychophora*", and this name has since been used for these insects (Błeszyński 1966, 1970, Gaskin 1971, 1974a, 1974b, 1975). However, there are problems relating to the continued use of this name (Gaskin 1985). Błeszyński (1967) formally redefined *Diptychophora* Zeller as an exclusively neotropical-southern Nearctic fringe genus with four species and one subspecies, but this is unsatisfactory for several reasons. His "subspecies" *subazanalis* deserves full specific rank within *Diptychophora* while *azanalis* requires a new genus to exclude it from *Diptychophora*. Błeszyński also transferred the balance of named New World forms (then totalling nine species) to *Pareromene*. The status of these will be examined elsewhere.

During a long-term revision of the Diptychophorini of the world, all the above material was re-examined by the author and Michael Shaffer of the British Museum (Natural History), together with new finds from several collections not seen by Błeszyński. The purpose of the present paper is to redefine the genus *Diptychophora*, since the diagnosis given by Błeszyński (1967), essentially in three lines, is inadequate; to resurrect the type species *D. kuhlweini* Zeller, since it is not synonymous with *D. azanalis* (Walker) as indicated by Błeszyński and Collins (1962) and Błeszyński (1967); to transfer one species described in Pyraustinae to *Diptychophora*; to describe a new species of

the genus from Brazil; and to define a new genus *Steneromene* to contain *D. azanalis* (Walker) and *Pareromene nymphocharis* (Meyrick).

The following abbreviations for institutions are used in the text: BMNH (British Museum (Natural History)); CNIC (Canadian National Insect Collection, Ottawa); UMO (University Museum, Oxford, UK); USNM (United States National Museum of Natural History). In descriptions of male genitalia the LMB ratio refers to the length–median breadth ratio of the aedeagus. Decimals indicate the position of features, as a proportion of the total length of a structure or organ. In the forewing, measurements along the costa are taken from the base, those along the termen/margin from the apex, and those along fascia from the costa. In the male genitalia, measurements along the uncus, gnathos, valva, valval costa and aedeagus are from the base of each. In the female genitalia, measurements along the ductus bursae are made from the ostium.

Diptychophora Zeller

Diptychophora Zeller (1866). Type species *Diptychophora kuhlweini* Zeller (1866) (by monotypy).

Scissolia Barnes & McDunnough (1914). Type species *Scissolia harlequinialis* Barnes & McDunnough (1914) (by monotypy) [Syn. Błeszynski 1967].

Colimea Dyar (1925). Type species *Colimea incisalis* Dyar (1925) (by monotypy) [Syn. Błeszynski 1967].

Mysticomima Meyrick (1931). Type species *Mysticomima desmoteria* Meyrick (1931) (by monotypy) [New synonymy (from Pyraustinae)].

Revised description. In forewings, Sc and R₁ concurrent, R₃ vestigial or absent. In hindwings, M₃, Cu₁ arising from common stalk, or individually from distal margin of hindwing cell. Male genitalia with characteristic “fish hook” gnathos, tubular, tapered to apex, hooking occurring at junction of basal elements. Saccus almost vestigial, juxta simple. Setulose valva highly modified, secondarily simplified, in most species broader than long, terminating distally in dorsal and ventral blunt lobes. Female genitalia simple: Antrum usually broad, membranous, ductus bursae also broad with or without subantral expansion. Corpus bursae bearing scobinate patch or distinct signum, usually crescentic.

Key to Species of *Diptychophora*

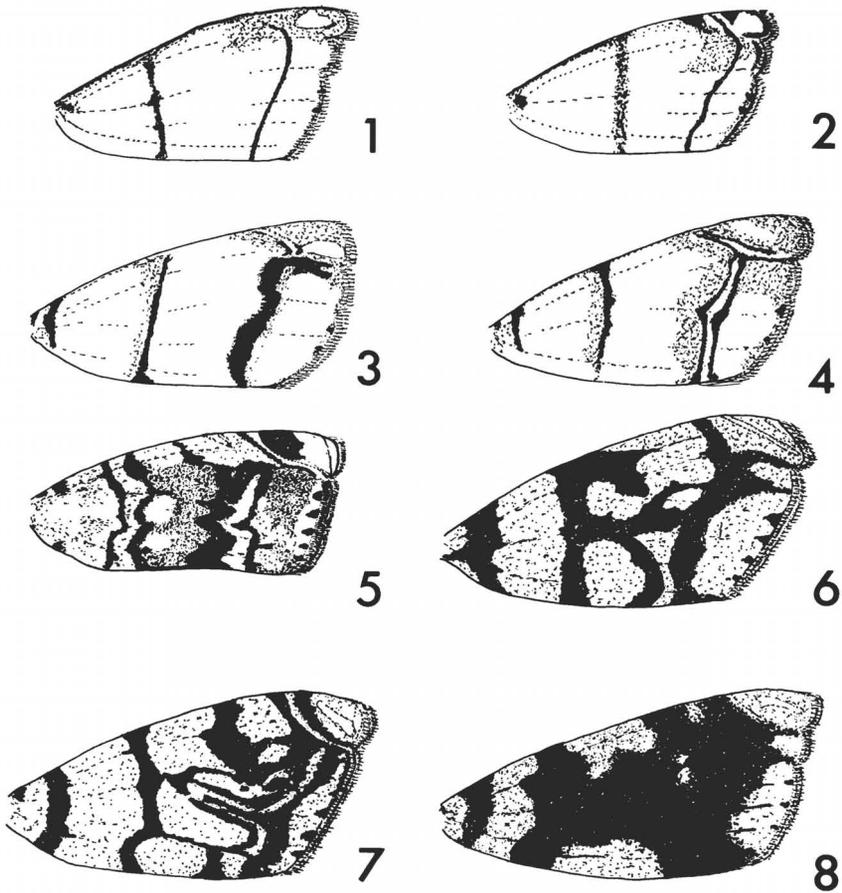
- 1 ♂: Sclerotized anellar structure present around aedeagus. [Female not known] *diasticta*
- Sclerotized anellar structure absent 2
- 2(1) ♂: Ventral margin of valva slightly rounded, but with saccular region not developed into distinct lobe. ♀: Ductus bursae with secondary swelling anterior to corpus bursae *kuhlweini*
- ♂: Ventral margin of valva terminating in a distinct projecting, saccular lobe. ♀: Ductus bursae without secondary swelling anterior to corpus bursae 3

- 3(2) ♂: Vinculum broad, half as wide as length of uncus; gnathos tapered to smoothly pointed apex. ♀: Antrum a membranous funnel, wider than length of 8th abdominal tergum; corpus bursae with broad, diffuse scobinate patch, no distinct signum *subzanzanalis*
- ♂: Vinculum a narrow strip at base of valva; gnathos tapered abruptly, hooked dorsad. ♀: Antrum a membranous funnel if flared, considerably narrower than length of 8th tergum; corpus bursae with distinct signum 4
- 4(3) ♀: Ductus bursae lacking flared antrum, latter slightly “crimped”; 7th sternum with tapered and rounded posterior margin. [Male not known] *incisalis*
- ♂: as described in 3–. ♀: Antrum of ductus bursae flared at entrance; 7th sternum not tapered and barely rounded posteriorly 5
- 5(4) ♂: Costal lobe of valva relatively broad, length to width ratio about 2.2:1. ♀: Antrum of ductus bursae membranous, with smooth margin; corpus bursae with small, crescentic narrow, horizontal signum *desmoteria*
- ♂: Costal lobe of valva quite elongate, length to width ratio about 3.5:1. ♀: Antrum of ductus bursae with slightly crenulate margin, somewhat sclerotized; corpus bursae with large, tapered, horizontal signum with infolded lower (anterior) margin *harlequinialis*

Diptychophora diasticta, new species

Exterior description (Fig. 5). Alar expanse 12 mm (N = 1). Labial palpi, head, antennae brown, head with postcephalic, buff scale tuft. Thorax and abdomen brown with scattered darker scaling. Ground color of forewings creamy white, heavily irrorated with brown clouding. Basal fascia obsolete, position marked with scattered brown scales. Antemedial fascia cream, zigzagged, broad, thickly bordered with dark brown. Discal region clouded with brown, cream zone just distal of median transverse line. Costa with orange area at about 0.7 and small oblique central white bar. Postmedial fascia wider toward dorsum, also becoming less distinct, zigzagged from 0.5, with thick dark brown margins. Terminal zone cream, heavily clouded with brown. Margin with stripe of bright orange from 0.4–0.8, and row of 4 black spots. Apical zone clearly delineated by narrow white line extending from 0.8 of costa to subapical indentation on termen, orange brown proximally, white distally, wedge of yellow scales on costal extremity. Cilia brown with darker brown apices. Hindwings dark brown. Ventral surfaces dark brown, apical and terminal markings repeated from dorsal surface.

Male genitalia (Fig. 9) (N = 1). Uncus simple, broad, spatulate, apically rounded, slight subapical constriction. Gnathos triangular in cross section, slightly tapered to apex, angled sharply dorsad at about 0.4. Tegumen simple, vinculum a strip at base of valva, saccus small, pyramidal. Juxta an elongate, apically tapered plate; hooked, double transtillalike structure present above juxta. Valva about 2.2× length of uncus, half as broad as long, broad posteroventral lobe. Sacculus, costal region of valva undeveloped. Aedeagus tubular, truncate, curved slightly dorsad, huge relative to rest of genitalia, about 1.8×



FIGS. 1-8. Forewings of *Steneromene* and *Diptychophora* species. 1, *Steneromene azanalis*; 2, *S. nymphocharis*; 3, *Diptychophora kuhlweini*; 4, *D. subazanalis*; 5, *D. diasticta*; 6, *D. desmoteria*; 7, *D. harlequinialis*; 8, *D. incisalis*.

length of valva. LMB ratio about 10:1, cornuti absent, scobinate patch of vesica in subapical region.

Type. Holotype ♂. Prov. de Bahia, Sao Antonia de Barra, Brazil, II.XII 1888, Gounelle, BMNH, genit. prep. Pyralidae 15351.

Discussion. Known only from the holotype, which is from eastern Brazil. Except for the development of a sclerotized, rather than membranous transtilla, the male genitalia are typical of the genus.

Diptychophora kuhlweini Zeller

Diptychophora kuhlweini Zeller (1866). [Holotype not located despite search of collections in Britain and Europe by author, M. Shaffer, and other curators.]

Diptychophora kuhlweini Zeller; Błeszyński & Collins (1962); Błeszyński (1967); erroneously synonymized with *D. azanalis* (Walker).

Exterior description (Fig. 3). Alar expanse 12 mm ($N = 4$). Labial palpi whitish, some dark scaling; head, thorax, largely dull white. Legs, straw; abdomen white, scattered dark scaling. Ground color of forewings shining white. Basal and antemedial fasciae nearly straight, proximally bright yellow ochre, distally blackish brown. Postmedial fascia proximally broad and blackish brown, distally broad and ochreous yellow. Subterminal line turning at right angles toward termen at about 0.2, touching margin at primary indentation of termen. Terminal zone white, a few yellowish scales near margin, two black spots at 0.6 & 0.7. Apical zone delimited by marginal indentation (a secondary indentation occurs at nearly 0.5) and by thin silvery white line running from costa at about 0.8 to angle of subterminal line, also joining with a weaker thin line angling proximally from the costa. Apical zone bright ochreous yellow, white wedge of scales at extremity, a horizontal, white, pendant-shaped mark above indentation. Hindwings shining white, few dark scales near apex.

Male genitalia (Fig. 10) ($N = 3$). Uncus broad, tapered, spatulate, apically rounded. Gnathos triangular in cross section, flat surface dorsad, sharply pointed, curved or angled very acutely dorsad at about 0.4. Tegumen simple, sclerotized bandlike margins. Vinculum a narrow strip at base of each valva. Saccus very small, juxta a weak, oval plate, almost membranous. Valva trapezoid in shape, basal length barely greater than dorsoventral width, dorsal margin about $1.8 \times$ width; dorsal margin sclerotized, apex tapering, rounded. Aedeagus small, barely $0.5 \times$ valva, tubular, apically truncate, LMB ratio about 5.5:1. Cornuti absent.

Female genitalia (Fig. 14) ($N = 1$). Anal papillae triangular, moderately sclerotized, weakly fused; 8th abdominal tergum narrow; anterior apophyses short, nearly as long as posterior apophyses; 7th abdominal sternum unmodified, slightly rounded posteriorly. Antrum weak, membranous, masked by margin of 7th sternum. Ductus bursae $6-7 \times$ length of posterior apophyses, membranous, flattened to about 0.5, where it is swollen and lightly reticulate. Corpus bursae with two crescentic signa.

Material examined. BRAZIL: 1 ♂, Castro, Parana, 950 m, Jones, no date BMNH, genit. prep. Pyral. 15353; 1 ♂, Petropolis, Prov. Rio de Janeiro, no date, BMNH, GS-5083-SB; 1 ♂, Nova Teutonia, -X.1943, F. Plaumann, BMNH, Pyral. 16325; 1 ♀, Guaraquefaba, P.R., 7.XII.1970, V. O. Becker Collection, Brasilia, spec. no. 11,423.

Discussion. This species is probably widely distributed across the southern part of the Brazilian shield although its specific habitat is unknown. The flight period includes at least October and December.

Błeszyński (1967) noted that "too little of the typical *azanalis* material is available . . . to decide whether *subazanalis* is a distinct species or only a subspecies". It would appear that unknowingly, Błeszyński never examined any true *azanalis* material at all, since M. Shaffer and I were only able to locate the type and one other specimen, both in UMO. Had Błeszyński seen the genitalia of the type slide he would not have made the remark quoted above because congenerity is out of the question. M. Shaffer first drew my attention to inconsistencies in the forewing characters within the "*azanalis*" and "*subazanalis*" series accumulated by Błeszyński and stored at BMNH. When the specimens with the thicker, solid postmedial fascia angled beneath the apex were compared to the illustration of *kuhlweini* given by Zeller (1866), they matched exactly. We then compared the genitalia between specimens segregated on the basis of forewing pattern and again found consistent

differences, much more marked in the female than in the male (Figs. 9, 11, 14–16). We concluded that *kuhlweini* was a valid species of *Diptychophora*, and that synonymization with *azanalis* was invalid, and, furthermore, that *subazanalis* should be elevated to full specific rank within the genus. Both known specimens of true *azanalis* (Fig. 1) were also noted to differ consistently in forewing characters from *subazanalis* (Fig. 4), the postmedial fascia of the former being thin, single and curved towards the costal margin. The genitalia of both sexes of *azanalis* (Figs. 20, 22) are unlike those of any *Diptychophora*.

Diptychophora subazanalis Błeszyński, new status

Diptychophora azanalis subazanalis Błeszyński (1967). [♂ genitalia, mislabelled *D. examinalis subexaminalis*.]

Exterior description (Fig. 4). Alar expanse 8–12 mm (N = 23). Labial palpi, head, white with yellow, brown; thorax shining white, yellow lappets, chocolate brown shoulders. Ground color of forewings white. Basal and antemedial fascia broad, nearly straight, each proximally bright yellow, distally chocolate brown. Postmedial fascia narrow, composed of pair of slender dark brown parallel lines, angled sharply toward termen at about 0.2, angled again at about 0.6. In Peruvian specimens, second angle of inner transverse line sometimes detached as a dark brown blotch. A broad strip of bright yellow extends along proximal side of inner line. Apical zone bright ochreous yellow; a white streak curves through it from costa to termen. Terminal region filled anteriorly with yellow, posteriorly with white; margin bears two black spots at 0.5 and 0.7. Cilia brown with yellow clouding. Hindwings and their cilia shining white. Ventral surfaces brown on forewings, white on hindwings.

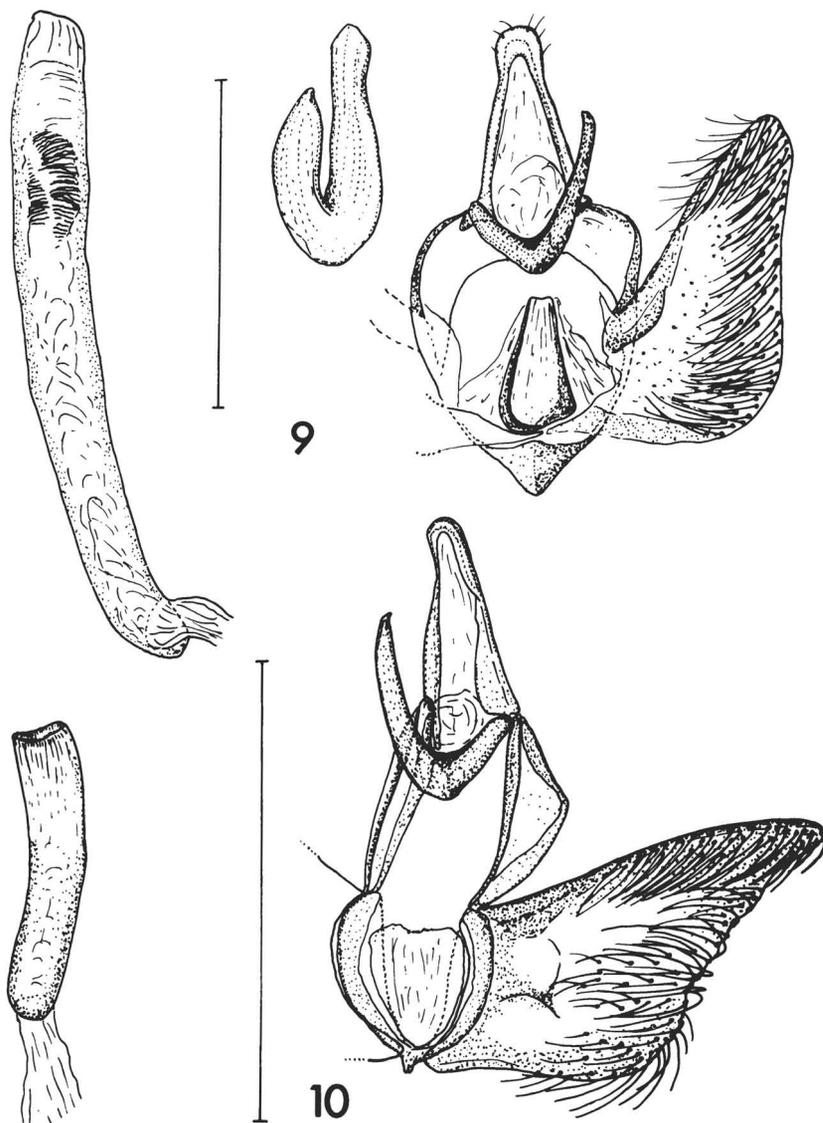
Male genitalia (Fig. 11) (N = 3). Uncus simple, broad, apically rounded, spatulate. Gnathos tubular, tapering sharply to point, curved acutely dorsad at about 0.4–0.5. Tegumen broad, divided into wide dorsal and ventral bands, juxta a simple oval plate, vinculum broad, half as wide in profile as length of uncus, saccus almost negligible. Valva characteristically wider than long, drawn into blunt, double apex dorsally and ventrally; costa of valva represented by thin sclerotized margin, sacculus undeveloped. Aedeagus short, tubular, apically truncate, LMB ratio about 6:1, cornuti absent.

Female genitalia (Figs. 15, 16) (N = 4). Anal papillae broad, slightly sclerotized marginally, relatively short posterior apophyses about 1.5× length of papillae; 8th abdominal tergum and anterior apophyses each about half length of posterior apophyses, 7th abdominal sternum unmodified. Antrum a very broad, shallow, basally constricted, weak funnel, ductus bursae otherwise broad, about 4.5× length of posterior apophyses. Ductus seminalis joining at about 0.4–0.5. Corpus bursae with huge, crescentic scobinate area or diffuse signum.

Types. Holotype ♂, SURINAM. Zanderij, Boven, Para district, 25.IV.1927, Cornell University collection, genit. prep. GS-5140-SB.

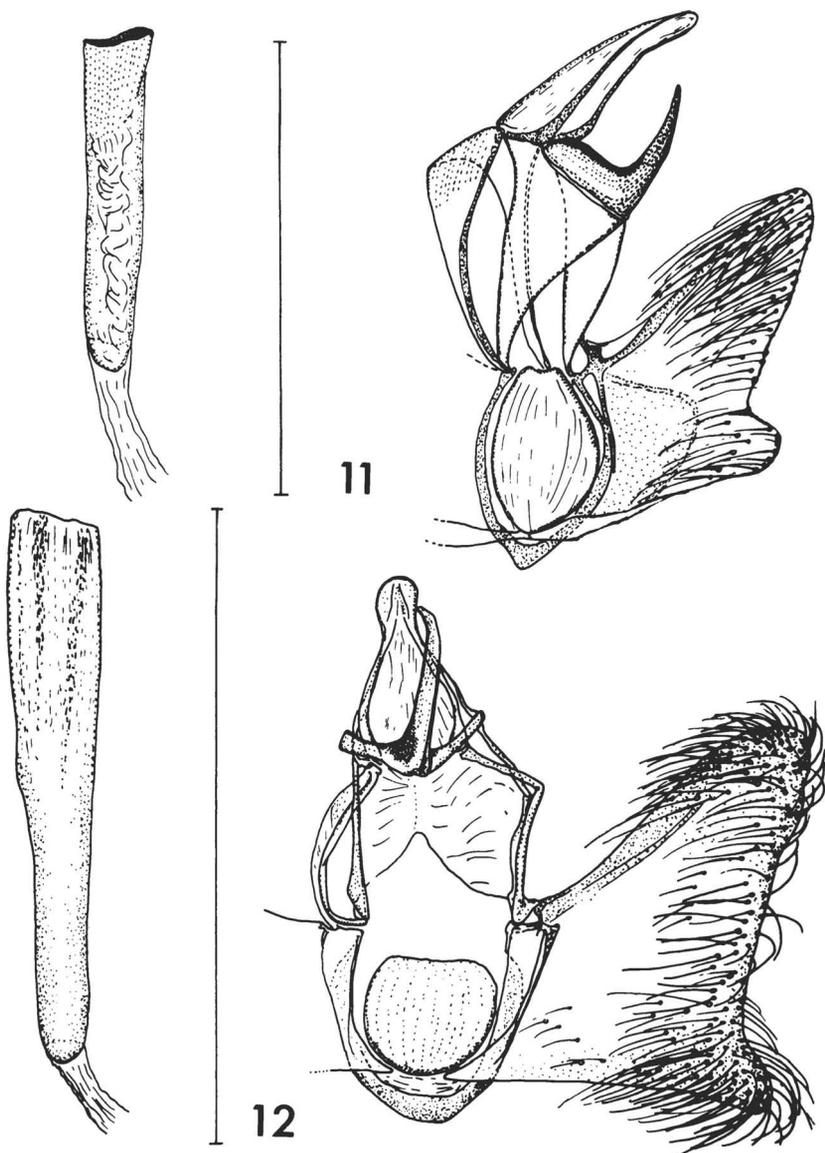
Paratypes, SURINAM: 2 ♂, 2 ♀, as above but 19, 20.IV.1927 in case of ♀, Cornell 1 ♂, CNIC, Ottawa, 1 ♀; BMNH, 1 ♂, 1 ♀; genit. preps. GS-5141-SB ♀, GS-4383-SB ♀. GUYANA: 2 ♂, Tumatumari, Potaro River, 27–29.VI.1927, Cornell, genit. prep. Cornell slide no. 2 (M. Shaffer prep.).

Other material examined. GUYANA: 7 ♂, Atkinson airfield, nr. Georgetown, 1955, Lyall, BMNH (all lack abdomens); 1 ♂, Bartica, -I.13, BMNH (no abdomen); 1 ♂, same locality, 6.V.1901, BMNH; 1 ♀, same locality BMNH, Pyral. 15355 ♀. PERU: 2 ♂, 1 ♀, Iquitos, -V.1920, Parish, BMNH, Pyral. 15354 (1 ♂ without abdomen). BRAZIL: 1 ♀, Para (=Recife), Prov. Pernambuco, Serra de Communaty, 1.II.1893, Gounelle, BMNH; 1 ♂, 1 ♀, Amazon Reserva Ducke, km, 26, Manaus–Itacoatiara Highway, 21.IV.1971, E. G. Munro, CNIC, Ottawa.



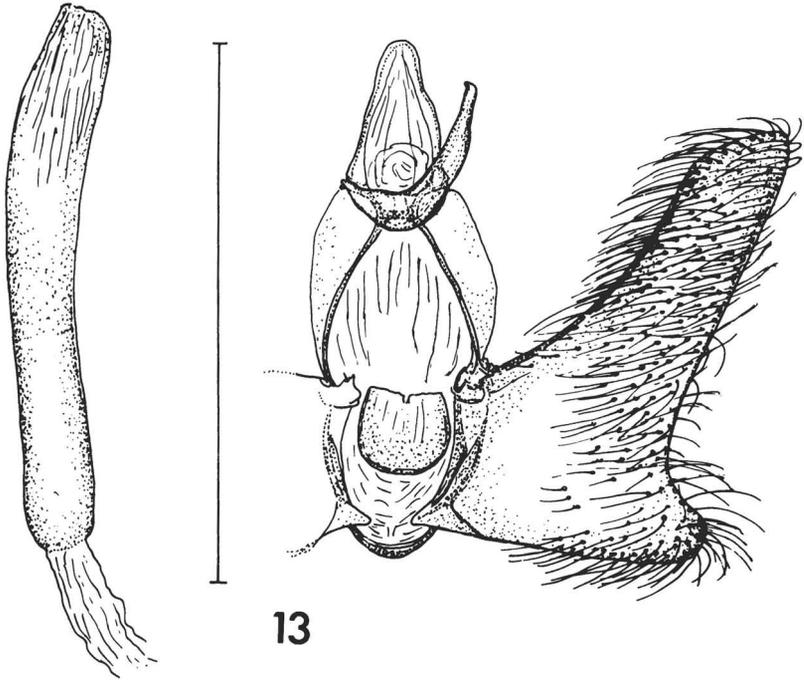
FIGS. 9, 10. Male genitalia of *Diptychophora*. 9, *D. diasticta* holotype, aedeagus (left), transtilla in lateral aspect (center), posterior aspect of genitalia with left valva (right); 10, *D. kuhlweini*, aedeagus (left), genitalia with left valva (right). Scale = 1 mm.

Discussion. The male and female genitalia are redescribed here. In the case of the male, Błaszynski's brief comments are ambiguous; he overlooked some structures in his drawing, and the proportions are misleading. His drawing of the female was made from a poor prepa-



FIGS. 11, 12. Male genitalia of *Diptychophora*. 11, *D. subazanalis*, aedeagus (left), posterior aspect of genitalia with left valva (right); 12, *D. desmoteria* lectotype, aedeagus (left), genitalia with left valva (right). Scale = 1 mm.

ration. The amount of material collected for this species is so great compared to some others that it must probably be either one of the commonest *Diptychophora* species, or perhaps particularly attracted to light. It has been taken in the Amazon Basin from Iquitos to Para,



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FIG. 13. Male genitalia of *Diptychophora harlequinialis*, aedeagus (left), posterior aspect of genitalia with left valva (right). Scale = 1 mm.

N to the Caribbean coast and S to the edge of the Brazilian Shield; the flight period is known to include January–June. Explanation of elevation of *subazanalisis* to full specific status appears in the discussion of *D. kuhlweini*.

Diptychophora incisalis (Dyar)

Colimea incisalis Dyar (1925).

Scissolia incisalis (Dyar); Błeszyński (1966).

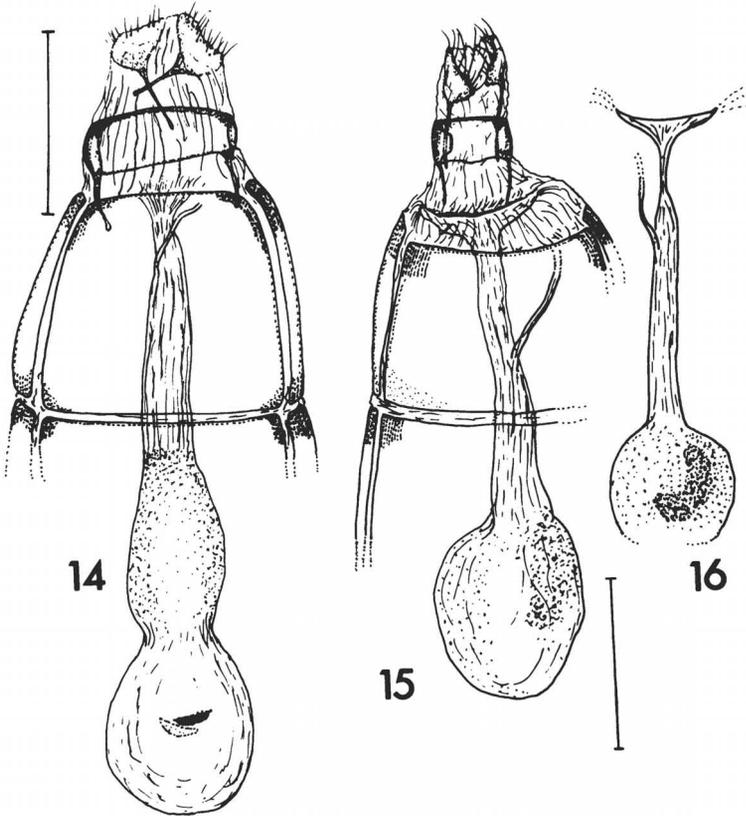
Diptychophora incisalis (Dyar); Błeszyński (1967).

Exterior description (Fig. 8). Alar expanse (♀) 14–15 mm (N = 2). Details of external characteristics were adequately provided by Dyar (1925). The male is unknown.

Female genitalia (Fig. 17) (N = 1). Anal papillae weakly fused, small, about 0.5× length of posterior apophyses, 8th tergum and anterior apophyses shattered in Błeszyński's paralectotype preparation, 7th sternum tapered, rounded posteriorly. Antrum a weak funnel, ductus bursae about 6× length of posterior apophyses, ductus seminalis joining at about 0.3. Corpus bursae with single, huge strong crescentic signum, basal margin sharply turned introrse into bursae.

Types. Lectotype and paralectotype ♀, MEXICO, Colima, -.VIII.1923, Muller, type 27503, USNM, genit. prep. GS-6117-SB.

Discussion. The female genitalia are redescribed because Błeszyński-



FIGS. 14-16. Female genitalia of *Diptychophora*, ventral aspect. 14, *D. kuhlweini*; 15, *D. subazanalís* paratype; 16, *D. subazanalís* variation in form of signum. Scale = 1 mm.

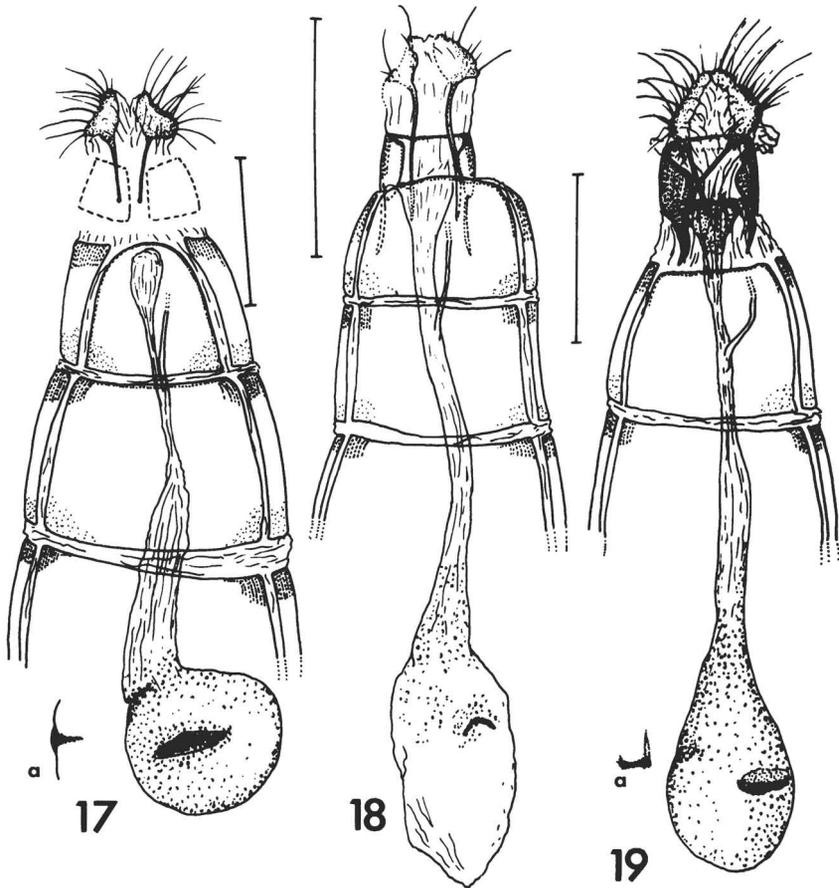
ski's diagnosis and illustration are ambiguous. This highly patterned insect has so far been reported only from the type locality in western Mexico during August. The lectotypic series was selected by S. Błeszyński (1966).

***Diptychophora desmoteria* (Meyrick), new combination**

Mysticomima desmoteria Meyrick (1931) (from Pyraustinae).

Exterior description (Fig. 6). Alar expanse 14-15 mm (N = 6). External characteristics were described in detail by Meyrick (1931).

Male genitalia (Fig. 12) (N = 2). Uncus simple, broad, apically rounded, spatulate, slightly constricted subapically. Gnathos triangular in cross section, curved sharply dorsad at 0.2, only slightly tapered until near the blunt apex, which is angled dorsad. Tegumen simple; juxta a suboval, relatively weak plate; saccus simple, small, rounded apically; vinculum a narrow band at valval base. Valva about 3 × length of uncus, 0.8 × as broad



FIGS. 17-19. Female genitalia of *Diptychophora*, ventral aspect. 17, *D. incisalis* paralectotype, 17a, signum in lateral aspect; 18, *D. desmoteria*; 19, *D. harlequinialis*, 19a, signum in lateral aspect.

as long, bifurcating into dorsal and ventral lobes, latter moderately pointed. Aedeagus about $1.2\times$ length of simple, tubular, apically expanded valva, LMB ratio about 7.5-8:1. No cornuti.

Female genitalia (Fig. 18) ($N=1$). Anal papillae small, weak; posterior apophyses about $3\times$ length of papillae; 8th tergum narrow, about $0.3\times$ length of posterior apophyses, anterior apophyses about $0.5\times$ posteriors; 7th sternum unmodified. Antrum a weak, simple funnel. Ductus bursae about $3.5\times$ length of posterior apophyses, ductus seminalis joining at about 0.3. Corpus bursae with single, narrow, crescentic signum.

Types. Lectotype δ , COSTA RICA: San Jose, 1922, BMNH, genit. prep. Pyral. 15096. Selected by author and M. Shaffer (BMNH) and designated here. Paralectotypes, COSTA RICA: 3 δ , 1 φ , data as above, BMNH, genit. preps. Pyral. 2475 δ , 15096 φ .

Other material examined. 1 δ , COSTA RICA: 3.III.24, Schmidt, BMNH.

Discussion. While curating BMNH Pyralidae, M. Shaffer noticed that *desmoteria* possessed not only a strong superficial resemblance in

both pattern and color to *Diptychophora harlequinialis*, but also the cleft forewing apex typical of most Diptychophorini. Dissection of the genitalia confirmed immediately that the species belonged in this genus, not in the Pyraustinae.

Diptychophora harlequinialis Barnes & McDunnough

Scissolia harlequinialis Barnes & McDunnough (1914).

Scissolia harlequinialis Barnes & McDunnough; Bleszynski (1966).

Diptychophora harlequinialis (Barnes & McDunnough); Bleszynski (1967).

Exterior description (Fig. 7). Alar expanse 15 mm (N = 6). External features described by Barnes and McDunnough (1914).

Male genitalia (Fig. 13) (N = 2). Uncus simple, broad, spatulate, apically rounded; gnathos triangular in cross section, tapered, curved sharply dorsad at about 0.4, apically pointed, point slightly turned dorsad. Tegumen simple, strong ventral margins; juxta a squat, semicircular, moderately sclerotized simple plate; vinculum a narrow strip at base of valva; saccus simple, small, rounded anteriorly. Valva about 3.5× length of uncus, broadly bifurcate distad, lacking costal or saccular development. Aedeagus tubular, apically truncate, slightly curved dorsad, equal to valva in length, LMB ratio 8–9:1, cornuti absent.

Female genitalia (Fig. 19) (N = 3): Anal papillae weakly fused, marginally sclerotized, posterior apophyses about 1.25× length of papillae; 8th tergum about 0.9× length of posterior apophyses; anterior apophyses present only as short, broad, pointed prongs less than length of tergum; 7th abdominal sternum unmodified. Antrum weak, flared funnel with slightly crenulate margin; ductus bursae about 6× length of posterior apophyses; ductus seminalis joining at about 0.3. Corpus bursae with single crescentic signum.

Types. Holotype ♂, U.S.A., Arizona, no date, Cornell collection.

Other material examined: USA: 1 ♂, Arizona, Oslar, Huachuca Mts., 28.VIII.1903, BMNH, genit. prep. Pyral. 15095; 1 ♀, Arizona, Madera Canyon, Santa Rita Mts., 25.VIII.1946, Comstock & Martin, Cornell, genit. prep. Cornell #2 (M. Shaffer prep.); 1 ♂, same locality, 25.VIII.1946, CNIC, Ottawa; 2 ♀, same locality, 27.VII.1947 and 3.VIII.1959, R. W. Hodges, genit. prep. EGM 1744 CNIC, Ottawa, genit. prep. EGM 1745 and 4912-SB.

Discussion. This bright yellow and black little moth has yet to be recorded outside Arizona, where its habitat is montane forest.

Steneromene, new genus

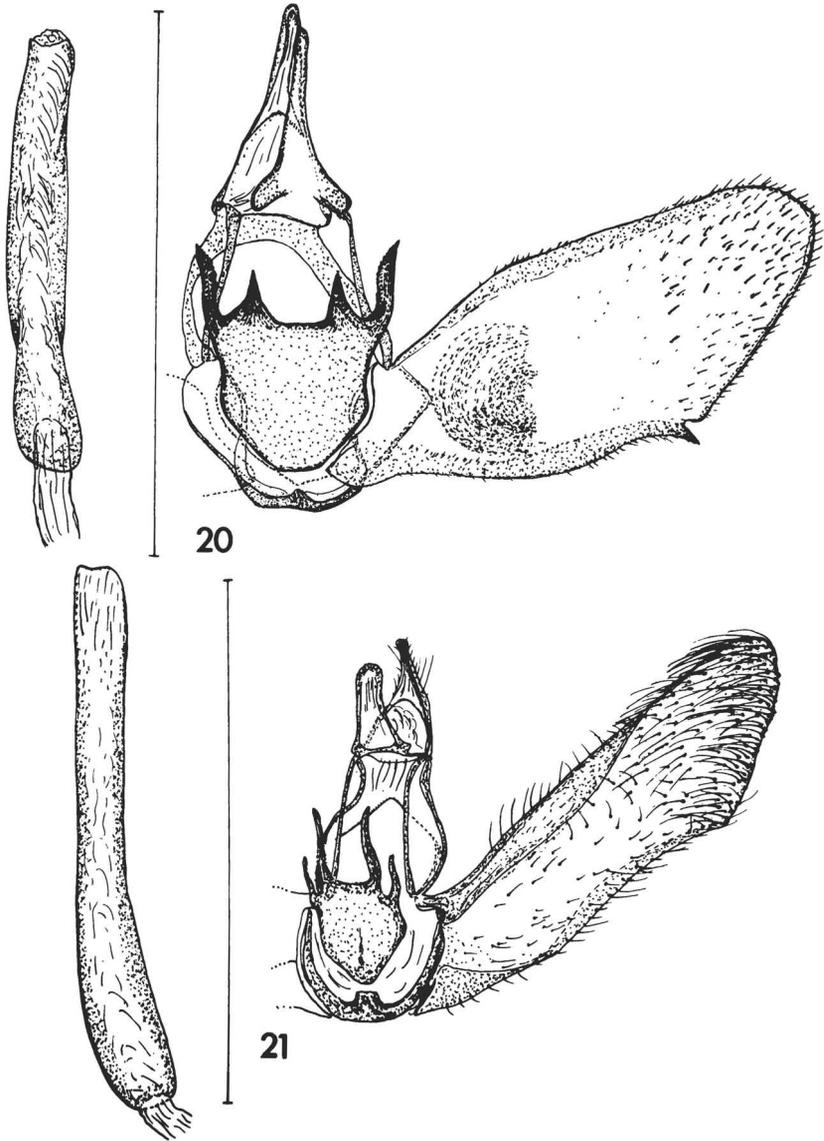
Type species ?*Zebronia azanalis* Walker (1859).

Description. Hindwing venation characterized by M_3 and Cu, free as in most Old World Diptychophorini, not stalked as in *Diptychophora*. Male genitalia characterized by elongate valva, definite apical lobate expansion (but not as extreme as in most species of *Diptychophora*), no development of costal region. Juxta bearing two pairs of apical horns. Saccus, vinculum exceedingly narrow. Female genitalia with eighth tergum reduced and narrow, anal papillae fused dorsally, ductus bursae bearing spinose, sclerotized subantral globate sac, ductus seminalis arising from its dorsoposterior surface, or a short distance anterior to it.

Steneromene azanalis (Walker), new combination

?*Zebronia azanalis* Walker (1859).

[*Isopteryx parvalis* Walker (1865) [Erroneous synonymy by Bleszynski & Collins (1962).]

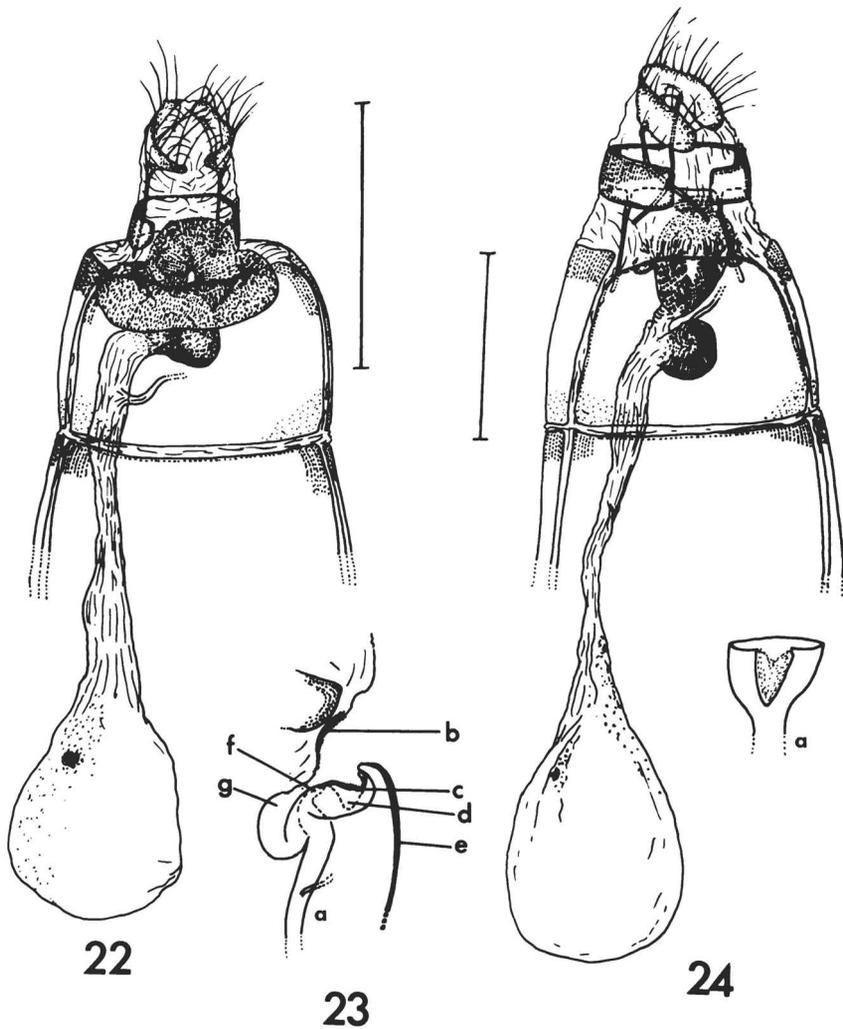


FIGS. 20, 21. Male genitalia of *Steneromene*. **20**, *S. azanalis*, aedeagus (left), posterior aspect of genitalia with left valva (right); **21**, *S. nymphocharis*, paralectotype, aedeagus (left), posterior aspect with left valva (right).

[*Diptychophora kuhlwini* Zeller (1866). [Erroneous synonymy by Błeszyński & Collins (1962).]

Diptychophora azanalis (Walker); Błeszyński & Collins (1962); Błeszyński (1967).

[*Diptychophora kuhlwini* Zeller; Błeszyński (1967). [Erroneous synonymy.]



FIGS. 22-24. Female genitalia of *Steneromene*. 22, *S. azanalis* holotype, ventral aspect; 23, *S. azanalis*, diagram of antrum in lateral aspect, a, ductus bursae; b, lamella postvaginalis; c, lamella antevaginalis; d, antral "pocket"; e, 7th sternum; f, antrum; g, subantral expansion; 24, *S. nymphocharis* lectotype, ventral aspect, a, diagram of antrum, ventral aspect.

Exterior description. Alar expanse 15 mm (N = 2) (Fig. 1). Labial palpi, head, thorax, silvery white, some brown scaling. Ground color of forewings shining white, some brown scaling along costa. Basal fascia reduced to short black bar on costa near wing base. Antemedial fascia mid-brown, lateral orange shading. Postmedial fascia mid-brown, very narrow, single, virtually straight from tornus to 0.2 from costa, where it curves smoothly inwards to meet costa. Terminal zone white, except for marginal brown line with some ochre shading from 0.4-0.6, within which are two black dots. Cilia brown. Apical zone

orange ochre, with small white wedge of scales at costal extremity, and a large, irregularly shaped shining white central area, touching costa at one point, and caudally edged with black. Hindwings white, with pale brown cilia. Ventral surface pale brown, apical markings of forewing repeated from dorsal surface.

Male genitalia (Fig. 20) ($N = 1$). Uncus, gnathos simple, tapered, bluntly pointed. Tegumen weak except for strong posterior margins. Vinculum narrow, about 0.3 as wide as uncus is long. Saccus broad, straplike, hardly developed. Juxta strong, massive, with two pairs of apical horns, outer pair serrate on their inner margins. Valva about $2.8 \times$ length of uncus, striking concavity on inner surface from 0.2 to 0.4, costa strong but not developed into protrusions. Sacculus developed, apical prong at about 0.7 from base of valva. Aedeagus tubular, about $0.8 \times$ length of valva, cornuti absent, LMB ratio about 8:1.

Female genitalia (Figs. 22, 23a-g) ($N = 1$). Anal papillae broad, marginally sclerotized, about half as long as posterior apophyses. Anterior apophyses absent, 8th tergum about $0.4 \times$ length of posterior apophyses, 7th sternum not tapered posteriorly, but posterior margin in-turned to form complex lodicular structure with lamella antevaginalis, structurally a broad, heavily sclerotized ventral collar to the antrum. Lamella postvaginalis strong, suboval, fused laterally with margins of antevaginalis, forming plate dorsal to small and narrow ostium. Both lamellae spinose and scobinate. Ductus bursae with sclerotized swelling immediately below antrum proper, bulging dorsad, containing a half reverse loop of ductus bursae, the latter about $5.5-6 \times$ length of posterior apophyses, broad, weak below subantral region, ductus seminalis joining at about 0.3. Corpus bursae with single small, circular signum.

Type. Holotype ♀, BRAZIL: "Rio", "87", UMO, type slide 1193.

Other specimen examined. BRAZIL: "Rio", 1 ♂ no other data, M. Shaffer genit. prep. 1979/7 (UMO).

Discussion. I have no information on the distribution of this species; "Rio" presumably refers to Rio de Janeiro. The juxta is proportionately large and sclerotized, and there is some sclerotization of the saccular region of the male valva.

Steneromene nymphocharis (Meyrick), new combination

Diptychophora nymphocharis Meyrick (1932).

Diptychophora nymphocharis Meyrick; Błeszyński & Collins (1962).

Pareromene nymphocharis (Meyrick) Błeszyński (1967).

Exterior description (Fig. 2). External characters were described by Meyrick (1932).

Male genitalia (Fig. 21) ($N = 1$). Uncus simple, tapered, curved slightly ventrad, apex blunt and slightly expanded. Gnathos broad, spatulate, apically rounded with scobinate margin, membranous except for margins. Tegumen reduced, weak, prominent dorsal and ventral straplike margins. Vinculum a narrow straplike structure at base of valva. Saccus short, rounded with ventromedial strengthening. Juxta an oval plate bearing two pairs of apical horns, probably anellar in origin but firmly fused with rest of plate. Inner pair twice length of outer pair. Valva long, broad, massive in comparison to rest of genitalia, about $4.5 \times$ length of uncus; apically expanded, with beginnings of saccular fold. Costa distinct to about 0.8 on dorsal margin, without protuberances. Lateral basal coremata present. Aedeagus long, $1.1 \times$ length of valva, simple, tubular, LMB ratio about 12:1, cornuti absent.

Female genitalia (Fig. 24) ($N = 1$). Anal papillae strongly fused in dorsal midline; anterior apophyses about $0.7 \times$ length of posterior apophyses, 8th tergum less than half as long as anterior apophyses, 7th sternum rounded posteriorly, otherwise unmodified. Antrum a strong, scobinate, flared funnel. Lamella postvaginalis forming roof of antrum, but medially cleft. Ductus bursae about $3.5 \times$ length of posterior apophyses, ductus sem-

inalis joining at 0.3, and arising from swollen, scobinate, subantral sac. Corpus bursae bearing single, small signum.

Types. Lectotype ♀, designated here, ARGENTINA: Alta Gracia, .32, "C.B.", BMNH, genit. prep. Pyral. 15099. Paralectotypes, 1 ♂, 1 ♀, same locality but dated "2.34", BMNH, Pyral. 15100 ♂.

Discussion. Presently known only from one locality in Argentina (Sierra de Cordoba). As in *azanalis*, the male valva is not as strikingly modified from the elongate quadrate form typical of most Diptychophorini as in *Diptychophora* itself. Sclerotization of the antrum of the female ductus bursae is not as marked as in *azanalis*.

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LITERATURE CITED

- BARNES, W. & J. H. MCDUNNOUGH. 1914. Some new North American Pyraustinae. Cont. Nat. Hist. Lepid. N. Am. 2:223-246.
- BLESZYNSKI, S. 1965. Crambinae: 2 vols. text and plates. Vol. 1 of "Microlepidoptera Palaearctica", Amsel, H. G., F. Gregor & H. Reisser (eds.), i-xlvii; 1-552; Pl. 1-133 (1-31 col.).
- 1966. Studies on the Crambinae (Lepidoptera). Part 43. Further taxonomic notes on some tropical species. Acta Zool. Cracov. 11:451-494.
- 1967. Studies on the Crambinae (Lepidoptera). Part 44. New Neotropical genera and species. Preliminary checklist of Neotropical Crambinae. Acta Zool. Cracov. 12:39-110.
- 1970. New genera and species of tropical Crambinae (Studies on the Crambinae, Lepidoptera, Pyralidae, Part 48). Tijdschr. Ent. 113:1-26.
- BLESZYNSKI, S. & R. J. COLLINS. 1962. A short catalogue of the world species of the Family Crambidae (Lepidoptera). Acta Zool. Cracov. 7:197-389.
- DYAR, H. G. 1925. Some new American moths (Lepidoptera). Insec. Inscit. Menstr. 13: 1-19.
- GASKIN, D. E. 1971. A revision of New Zealand Diptychophorini (Lepidoptera: Pyralidae: Crambinae). New Zeal. J. Sci. 14:759-809.
- 1974a. The species of *Pareromene* Osthelder (Pyralidae: Crambinae: Diptychophorini) from the western South Pacific, with further notes on the New Zealand species. J. Entomol. (B) 43:159-184.
- 1974b. The species of *Pareromene* Osthelder (Pyralidae: Crambini: Diptychophorini) from Malaysia, Indonesia and New Guinea. J. Entomol. (B) 43:185-208.
- 1975. A revision of the Australian species of *Pareromene* (Lepidoptera: Pyralidae: Crambinae: Diptychophorini). Aust. J. Zool. 23:123-147.
- 1985. Morphology and reclassification of the Australasian, Melanesian and Polynesian *Glaucocharis* (Lepidoptera: Crambinae: Diptychophorini). Aust. J. Zool. Suppl. ser. 115:1-75.
- MEYRICK, E. 1931-33. Exotic Microlepidoptera 4:33-192; 193-252; 253-448.
- OSTHELDER, L. 1941. Beitrag zur Kleinschmetterlings fauna Kretas. Mitt. Münch. Entomol. Ges. 31:365-70.

WALKER, F. 1859. List of the specimens of lepidopterous insects in the collection of the British Museum, London, 19:967.

ZELLER, P. C. 1866. Beschreibung einiger amerikanischen Wickler und Crambiden. Entomol. Ztg., Stettin 27:137-157.

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BOOK REVIEW

BUTTERFLIES OF EUROPE, vol. 1. CONCISE BIBLIOGRAPHY OF EUROPEAN BUTTERFLIES, by Otakar Kudrna. 1985. AULA-Verlag GmbH, Postfach 1366 · D-6200 Wiesbaden, West Germany. 447 pp. Octavo, hard bound. \$67.00 (including shipping).

This is the first in a series of planned volumes reappraising knowledge of European butterflies. Future volumes will cover all butterfly families except skippers; also, introduction to lepidopterology, ecology, and conservation. When completed, the series promises to be the most in-depth study of European butterflies, and will include taxonomy, life histories, biogeography, ecology, behavior, etc. There is a minimum of typographical errors in this first volume.

The bibliography lists about 6,000 references, primarily those between 1901 and 1983, the period before 1900 already having been covered by Horn and Schenkling, Derksen and Scheidung, Bang-Haas, Bretherton, Junk, and Kusnezov. The succinct Preface and Introduction discuss methods, purposes, history, 19th century works, and acknowledgements. Information content on ecology, biogeography, conservation, and taxonomic revision proves sparse for Europe. "The present bibliography is . . . aimed to serve the needs of all students of the butterflies of Europe, whether they take primary or secondary interest in lepidopterology, whether they are professionals or amateurs, whether they are beginning students, or experienced scientists and/or university lecturers." Kudrna estimates that over 50,000 titles bear directly or indirectly on the butterflies of Europe, with the included 6,000 being selected on merit and usefulness. He plans to update the bibliography with supplements, and eventually produce a larger, more comprehensive work of 10-15,000 references. Especially relevant to North American workers are the many general studies cited; part of our nearctic butterfly fauna was derived from the Palaearctic.

This bibliography is a useful reference source that must have been a Herculean effort to prepare. Over 80% of the references were checked against the original works for citation accuracy. Europe presents special problems because of its multitude of languages and the scattered references. The completion of the eight volumes of the *Butterflies of Europe* toward the end of this century, produced by a team of modern specialists and edited by Kudrna, promises to be a major advance in the scientific study of butterflies.

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