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Aganaine Moths (Lepidoptera: Noctuidae) from Thailand in the Collection of the Entomological Laboratory, University of Osaka Prefecture*

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Abstract

Sixteen aganaine species belonging to five genera are recorded from Thailand. Of these species, one belongs to *Agape*, two to *Peridrome*, one to *Euplocia*, three to *Neochera* and the remaining nine to *Asota*. All the species are illustrated in colour, and some taxonomically important characters of them are described and figured.

Introduction

During our lepidopterological expeditions to Thailand in 1981, 1983, 1985 and 1987, we were able to make a rich collection of aganaine moths, which consists of 536 Thai specimens. On the basis of these Thai materials, 16 already described species, belonging to six aganaine genera, are recorded in the present paper.

The Aganainae were placed in the Noctuidae by Holloway¹⁾ in 1988, based chiefly on the tympanal organs, though they had often been treated as a subfamily of the Arctiidae (Hypsinae or Aganainae) or as a good family (Hypsidae or Aganidae). Superficially the subfamily Aganainae is generally characterized by the following combination of features: the labial palpus long, ascending, with a long, slender third segment; the forewing with a distinct areole; the forewing with a conspicuous short fold on the space between the vein 1A+2A and the dorsal margin; the hindwing with the vein Sc connected to the vein Rs by the vein R₁ before the middle of cell.

The following abbreviations are used to indicate the provinces of Thailand and the collectors of the specimens in the text. Names of Thai provinces (for map, see Moriuti²⁾): CB, Chanthaburi; CM, Chiang Mai; CP, Chumphon; CY, Chaiyaphum; KB, Kanchanaburi; LI, Loei; NN, Nakhon Nayok; PK, Phuket, RN, Ranong; and TR, Trat. Collectors: A, Yutaka Arita; K, Hiroshi Kuroko; M, Sigeru Moriuti; S, Toshihisa Saito; and Y, Yutaka Yoshiyasu.

Material examined is in the collection of the Entomological Laboratory, University of Osaka Prefecture, Sakai.

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Genus *Agape* Felder

The genus *Agape* is represented in Thailand by a single species. According to Holloway¹⁾, *Agape* differs essentially from the other four genera (*Peridrome*, *Euplocia*, *Neochera* and *Asota*) in the genital characters.

Hindwing without retinaculum in male; female (Fig. 30) with one frenular bristle; Sc+R, shortly fused with Rs.

1. *Agape chloropyga* (Walker) (Figs. 7, 30)

Hypsa (Damalis) chloropyga Walker, 1854, List Specimens lepid. Insects Colln Br. Mus., 2: 455.
Agape chloropyga Walker; Holloway, 1988: 79¹⁾.

Wing-expanse: ♀ 60–64 mm. ♀ illustrated in Fig. 7.

Forewing bright deep yellow, with five small reddish spots and with two small black spot on costa just before base and in disc well before base. Tegula with a small black spot near base. Abdomen with a broad blue-black posterior end.

Genitalia of both sexes were illustrated by Holloway¹⁾.

Specimens examined. 6 ♀.

1 ♀, NN, Khao Yai, ca. 800 m, 26. VIII. 1981 (KMAY); 2 ♀, do., 11–19. XI. 1985 (MSA); 1 ♀, do., 8. VIII. 1987 (MSAY); 1 ♀, NN, Wang Ta Krai, 6. VIII. 1981 (KMAY); 1 ♀, CB, Khao Soi Dao, ca. 400 m, 7–8. X. 1985 (KMSA).

Distribution. Thailand (Central and Southeastern); Hainan, Philippines, Sundaland to Australia.

Remarks. No female specimen is available for study.

A. chloropyga is the type species of *Agape*.

Genus *Peridrome* Walker

This genus includes two species, both occurring in Thailand.

The two species show the striking sexual dimorphism in the coloration, as well as in the wing shape and venation, as shown in Figs. 1–4 and 25–29. They differ markedly from each other in coloration and structure in the males, but are superficially similar in the females. The wing venation and genitalia are described under the respective species.

In Thailand the females are attracted to light more exceedingly than the males.

2. *Peridrome orbicularis* (Walker) (Figs. 1, 2, 25, 26, 35, 42)

Hypsa (Peridrome) orbicularis Walker, 1854, List Specimens lepid. Insects Colln Br. Mus., 2: 445.
Peridrome orbicularis Walker; Holloway, 1988: 80¹⁾.

Wing-expanse: ♂ 63–69 mm, ♀ 69–84 mm. ♂ illustrated in Fig. 1; ♀ in Fig. 2.

♂. Forewing (Fig. 25) very broad, with an extremely long areole, consequently R₁ rising

from near base, and R_{2+3} approximated to R_1 at base; cell short. Hindwing much broader than forewing; cell proportionally short, with one-third the length of wing. ♀. The venation (Fig. 26) is the ordinary form of the Aganainae.

Male genitalia: ♂ as in Fig. 35; sacculus produced into two processes. Female genitalia: as in Fig. 34; corpus bursae having anterior half with signa forming two sclerotized bands.

Specimens examined. 6♂, 24♀.

1♀, CM, Chiang Mai, ca. 300 m, 6. VIII. 1981 (KMAY); 2♂, 8♀, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 1♂, KB, Mae La Mun, ca. 800 m, 25–26. XI. 1985 (MSA); 2♂, 7♀, NN, Khao Yai, ca. 800 m, 21. VI. 1983 (KMAY); 1♂, 3♀, do., 7–10. VIII. 1987 (MSAY); 2♀, 21. IX. 1987 (MSAY); 1♀, CB, Khitchakut, ca. 500 m, 5. X. 1985 (KMSA); 2♀, CB, Khao Soi Dao, 14. VIII. 1981 (KMAY).

Distribution. Thailand (Northern, Northeastern, Southwestern, Central and Southeastern); N.E. Himalayas to Sundaland, Lesser Sundas.

Remarks. As mentioned in the generic description, this species is quite different from the next species in the male. In the females the two species are similar to each other in superficial appearance; in the forewing the dark outer area has white streaks in the spaces in *orbicularis*, but has not such streaks in *subfascia*; the orange basal area is distinctly produced outwardly into a lobe at the end of cell in *subfascia*, but not produced in *orbicularis*; the dorsum bears a white spot above it before the middle in *orbicularis*, but has not such a spot in *subfascia*.

P. orbicularis is the type species of *Peridrome*.

3. *Peridrome subfascia* (Walker) (Figs. 3, 4, 27–29, 36, 43)

Hypsa (Anagnia) subfascia Walker, 1954, List Specimens lepid. Insects Colln Br. Mus., 2: 446.

Anagnia subfascia Walker; Barlow, 1982: 77^a.

Peridrome subfascia Walker; Holloway, 1988: 90^b.

Wing-expanse: ♂ 65–66 mm, ♀ 60–72 mm. ♂ illustrated in Fig. 3; ♀ in Fig. 4.

♂. Antenna partially dilated to be compactly clothed with enormous scales just beyond middle. Forewing (Figs. 27, 28) with a short, narrow areole; R_1 and R_{2+3} approximated, from near angle; R_2 and R_{3+4} very short-stalked, from angle of areole; cell extremely small, with a forked M; Cu_{1b} from lower angle. Hindwing (Fig. 27) with a short cell; Cu_{1a} and Cu_{1b} short-stalked, from lower angle. ♀. Wing shape and venation (Fig. 29) very similar to those of *orbicularis*, except that in the forewing the areole is much shorter than that of *orbicularis*.

Male genitalia: as in Fig. 36; valva broad, with a distinct angular process on dorsal margin at middle; sacculus with a long process at ventral corner, and without a process at dorsal corner, though angulated. Female genitalia: as in Fig. 43; signum absent.

Specimens examined. 2♂, 17♀.

1♀, CM, Doi Pakia, ca. 1300 m, 1–4. IX. 1987 (MSAY); 1♀, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 1♀, NN, Khao Yai, ca. 800 m, 21. VI. 1983 (KMAY); 1♀, CB, Khitchakut, ca. 500 m, 5. X. 1985 (KMSA); 1♀, CB, Khao Soi Dao, ca. 400 m, 6. VI. 1983 (KMAY); 1♀, do., 7–8. X. 1985 (KMSY); 2♂, 7♀, do., 24–25. VIII. 1987 (MSAY); 2♀, CB, Nam Tok Klang Narai, ca. 200 m, 6–7. X. 1985 (KMSA); 1♀, CB, Phliu, ca. 100 m, 23–26. VIII. 1987 (MSAY); 1♀, CP,

Langsuan, 3. VIII. 1981 (KMSA).

Distribution. Thailand (Northeastern, Central, Southeastern and Peninsular); Hainan, N.E. India to Peninsular Malaysia, Indonesian Archipelago.

Remarks. This species is somewhat allied to, but distinct from the preceding species, as mentioned previously.

The female specimen illustrated by Fang (Fig. 1668 ♀)³⁾ as that of *P. orbicularis* is that of this species.

Genus *Euplocia* Hübner

Euplocia Hübner is a monotypic genus, and is closely allied to *Peridrome* Walker in genital characters.

Forewing (Fig. 31) with R_s stalked with M_1 ; in male fore-wing with a strong costal fold.

4. *Euplocia membliaria* (Cramer) (Figs. 5, 6, 31, 37, 44)

Phalaena membliaria Cramer, 1780, Uitl. Kapellen, 3; 139, 175.

Euplocia membliaria Cramer; Barlow, 1982: 77⁴⁾; Holloway, 1988: 81⁵⁾.

Wing-expanse: ♂ 64–82 mm. ♀ 65–78 mm. ♂ illustrated in Fig. 5; ♀ in Fig. 6.

This species shows sexual dimorphism in coloration (cf. Fig. 5 with Fig. 6).

Male genitalia: as in Fig. 37; valva with dorsal margin angulated beyond middle; ventro-distal part with a small triangular process; sacculus with two distal processes. Eighth abdominal segment with peculiarly shaped sclerotized sternite, as shown in Fig. 37a. Female genitalia: as in Fig. 44; signum a long, slender sclerotized band, running round almost the length of large corpus bursae, the basal parts forming much broader plates.

Specimens examined. 56♂, 53♀.

1♂, CM, Doi Chang Khian, ca. 1250 m, 21. VII. 1981 (KMAY); 15♂, 13♀, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 2♂, 4♀, KB, Tam Tarn Lod, 20–21. VIII. 1981 (KMAY); 1♂, NN, Khao Yai, ca. 800 m, 25. VIII. 1981 (KMAY); 7♂, 12♀, do., 16–22. VI. 1983 (KMAY); 1♂, 2♀, do., 11–19. XI. 1985 (MSA); 2♂, 1♀, do., 7–10. VIII. 1987 (MSAY); 1♂, 2♀, do., 21–23. IX. 1987 (MSAY); 2♂, 1♀, CB, Khitchakut, ca. 500 m, 5. X. 1985 (KMSA); 2♂, 1♀, CB, Khao Soi Dao, ca. 400 m, 14. VIII. 1981 (KMAY); 1♀, do., 7–8. X. 1985 (MSA); 22♂, 16♀, do., 24–25. VIII. 1987 (MSAY); 1♂, CP, Langsuan, 3. VIII. 1981 (KMAY).

Distribution. Thailand (Northern, Northeastern, Southwestern, Central, Southeastern and Peninsular); N.E. Himalayas to Weber's Line.

Remarks. The specimens collected from Thailand vary from those from Borneo in the male genitalia. Judging from the description and photograph of the genitalia given by Holloway⁵⁾, the Bornean specimens have a strong angular dorsal process beyond the middle of valva, but the Thai specimens have not such a process on the dorsal margin, though angulated. In spite of the difference between them, I consider them to be conspecific.

This widely distributed species is very common in Thailand.

Genus *Neochera* Hübner

To this genus belong four species, of which three occur in Thailand.

5. *Neochera dominia* (Cramer) (Fig. 10)

Phalaena dominia Cramer, 1780, Utitl. Kapellen, 3: 123, 174.

Neochera dominia Cramer; Holloway, 1988: 83¹⁾.

Wing-expanse: ♂ 61–73 mm, ♀ 52–74 mm. ♀ illustrated in Fig. 10.

Hindwing white, with a large dark brown patch and large blackish-purple marginal spots in spaces, the white cilia producing a marginal effect.

Genitalia of both sexes were illustrated by Holloway¹⁾.

Specimens examined. 9♂, 6♀.

1♀, CM, Fang, ca. 450 m, 17. VII. 1981 (KMAY); 2♂, CM, Doi Pakia, ca. 1500 m, 23. VII. 1981 (KMAY); 1♀, do., 5–7. IX. 1987 (MSAY); 4♂, 3♀, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 1♂, KB, Tam Tarn Lod, 21. VIII. 1981 (KMAY); 1♀, NN, Khao Yai, ca. 800 m, 16. VI. 1983 (KMAY); 2♂, do., 21. IX. 1987 (MSAY).

Distribution. Thailand (Northern, Northeastern, Southwestern and Central); Indo-Australian tropics.

Remarks. This species is somewhat similar to the next species in appearance, but the two are distinct from each other, as illustrated in Figs. 9 and 10.

N. dominia is the type species of *Neochera*.

6. *Neochera marmorea* (Walker) (Figs. 9, 45)

Hypsa marmorea Walker, 1856, List Specimens lepid. Insects Colln Br. Mus., 7: 1674.

Neochera marmorea Walker; Barlow, 1982: 76⁴⁾; Holloway, 1988: 83¹⁾.

Wing-expanse: ♂ 66–74 mm, ♀ 73–82 mm. ♀ illustrated in Fig. 9.

Forewing lustrous violet, with white streaks on veins, and nearly concolorous with hindwing, which has a large blackish-purple discal patch.

Male genitalia: illustrated by Holloway¹⁾. Female genitalia: as in Fig. 45; corpus bursae with signa forming two short sclerotized bands.

Specimens examined. 4♂, 5♀.

1♂, NN, Khao Yai, ca. 800 m, 11–19. XI. 1985 (MSA); 1♂, 1♀, do., 9. VIII. 1987 (MSAY); 1♀, CB, Khitchakut, ca. 500 m, 5. X. 1985 (KMSA); 3♀, CB, Khao Soi Dao, ca. 400 m, 7–8. X. 1985 (KMSA); 1♂, do., 24–25. VIII. 1987 (MSAY); 1♂, CB, Nam Tok Klong Narai, ca. 200 m, 6–7. X. 1985 (MSAY).

Distribution. Thailand (Central and Southeastern); N.E. India, Sundaland.

Remarks. This is an easily recognizable species. The female genitalia of this species suggest a close relationship with *N. dominia*, but the male genitalia differ considerably from those of *dominia*.

7. *Neochera inops* (Walker) (Figs. 8, 32, 38, 46)

Hypsa (Philona) inops Walker, 1854, List Specimens lepid. Insects Colln Br. Mus., 2: 457.

Neochera inops Walker; Barlow, 1982: 76⁹⁾; Holloway, 1988: 84¹⁾.

Wing-expanse: ♂ 46–52 mm, ♀ 51–55 mm. ♂ illustrated in Fig. 8.

Forewing (Fig. 32) with R_s and M_1 connate; a white streak present between cell and fold, in basal half of wing, and appreciably broader than the other streaks on veins.

Male genitalia: as in Fig. 38; valva with asymmetrical processes. Aedeagus with a distinct large cornutus and many minute spines. Female genitalia: as in Fig. 46; signa consisting of two long sclerotized bands, the basal parts being very broad. Eighth abdominal sternite (Fig. 46a) with a pair of large, heavily sclerotized processes.

Specimens examined. 7♂, 6♀.

1♀, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 2♀, NN, Khao Yai, ca. 800 m, 15–18. VI. 1983 (KMAY); 1♂, 1♀, do., 11–19. XI. 1985 (MSA); 1♂, do., 8. VIII. 1987 (MSAY); 1♂, do., 24–25. IX. 1987 (MSAY); 1♀, CB, Khitchakut, ca. 500m, 5. X. 1985 (KMSA); 1♂, CB, Khao Soi Dao, ca. 400 m, 7–8. X. 1985 (KMSA); 3♂, CB, Phliu, ca. 100 m, 4–7 & 9. X. 1985 (KMSY); 1♀, TR, Khao Saming, 16. VIII. 1981 (KMAY).

Distribution. Thailand (Northeastern, Central and Southeastern); N.E. Himalayas to Sundaland.

Remarks. This species is very similar to *N. privata* (Walker), occurring in Andamans, Sunda Is., etc., in superficial appearance, but differs markedly from it in the hindwing yellow instead of white.

Genus *Asota* Hübner

Nine Thai species belong here.

Amongst the Thai species of *Asota*, only *A. ficus* has a single pair of the typical pectinations on each of the antennal segments in male, i.e., bipectinate antenna. In the other species, the male antenna possesses a distinct pair of bristles on each segment, i.e., bristled. In forewing the males and the females are generally different in shape, viz., the termen of males more oblique than that of females. Forewing (Figs. 33, 34) with R_s and M_1 remote, parallel or nearly parallel. Hindwing with a small oval patch of scent scales on subcosta about middle on upper-side. Male genitalia (Figs. 39–41): valva simple, with a rounded distal margin. Female genitalia (Figs. 42–54) with a rather long ductus bursae; signa present in general.

Barlow⁴⁾ wrote on *Asota*: "In this genus the females are captured at light more frequently than the males." However, as far as I am aware, the males and the females caught in light traps by us were neraly equal in number in Thailand.

8. *Asota plana* (Walker) (Figs. 15, 47)

Hypsa (Hypsa) plana Walker, 1854, List Specimens lepid. Insects Colln Br. Mus., 2: 450.

Asota plana Walker; Inoue, 1982: 652⁵⁾; Barlow, 1982: 76⁴⁾; Holloway, 1988: 87¹⁾.

Wing-expanse: ♂ 60–64 mm, ♀ 54–70 mm. ♀ illustrated in Fig. 15.

Male antenna strongly bristled. Forewing with a subbasal white spot touched with a large white discal patch in some specimens.

Male genitalia: illustrated by Holloway¹⁾. Female genitalia: as in Fig. 47; ductus busae rather short; corpus bursae very large. Intersegmental membrane between seventh and eighth abdominal segments with a pair of large, strongly sclerotized round plates ventrally.

Specimens examined. 2♂, 6♀.

1♂, CM, Doi Pui, ca. 1300 m, 1–4. IX. 1987 (MSAY); 2♀, Doi Inthanon, Mae Klang, ca. 1300 m, 8–12. IX. 1987 (MSAY); 2♀, NN, Khao Yai, ca. 800 m, 19–21. VI. 1983 (KMAY); 2♀, do., 7–9. VIII. 1987 (MSAY); 1♂, CB, Khao Soi Dao, ca. 400 m, 24–25. VIII. 1987 (MSAY).

Distribution. Thailand (Northern and Southeastern); Oriental tropics to New Guinea.

Remarks. This species is quite distinct from any other known Thai species.

9. *Asota paphos* (Fabricius) (Figs. 11, 48)

Noctua paphos Fabricius, 1787, Mant. Ins., 2: 137.

Asota paphos Fabricius; Holloway, 1988: 87¹⁾.

Wing-expanse: ♂ 59–61 mm, ♀ 59 mm. ♀ illustrated in Fig. 11.

Male antenna rather weakly bristled. Forewing with an impressive broad white dorsal streak.

Male genitalia: illustrated by Holloway¹⁾. Female genitalia: as in Fig. 48.

Specimens examined. 2♂, 2♀.

1♂, NN, Khao Yai, ca. 800 m, 26. VIII. 1981 (KMAY); 1♀, CB, Khao Soi Dao, ca. 400 m, 7–8. X. 1985 (KMSY); 1♀, CB, Nam Tok Klong Narai, ca. 200 m, 6–7. X. 1985 (KMSA); 1♂, CB, Phliu, ca. 100 m, 4–7 & 9. X. 1985 (KMSA).

Distribution. Thailand (Central and Southeastern); N.E. Himalayas, S. China, Sundaland.

Remarks. This species is easily recognized by the dark bluish-grey forewing, with white veins and dorsum.

10. *Asota egens* (Walker) (Fig. 12, 49)

Hypsa (Damalis) egens Walker, 1854, List Specimens lepid. Insects Colln Br. Mus., 2: 453.

Asota egens Walker; Inoue, 1988: 659⁰⁾; Holloway, 1988: 88¹⁾.

Wing-expanse: ♂ 49–63 mm, ♀ 55–65 mm. ♂ illustrated in Fig. 12.

Male antenna strongly bristled. Wings nearly unicolorous above, except that the forewing has five black dots on basal area and white or pale yellowish streaks on veins; underside with dark markings, which can be seen through the upperside, especially in the hindwing.

Male genitalia: illustrated by Holloway¹⁾. Female genitalia: as in Fig. 49.

Specimens examined. 21♂, 22♀.

1♀, CM, Doi Pakia, ca. 1500 m, 5. XI. 1985 (MSA); 1♀, CM, Doi Inthanon, Mae Klang, ca. 1300 m, 1 & 3. XI. 1985 (MSA); 1♂, NN, Khao Yai, ca. 800 m, 26. VIII. 1981 (KMAY); 5♂, 7♀, do., 15–22. VI. 1983 (KMAY); 7♂, 9♀, do., 7–10. VIII. 1987 (MSAY); 1♂, do., 23. IX. 1987 (MSAY); 2♂, 1♀, CB, Khao Soi Dao, ca. 400 m, 6–7. VI. 1983 (KMAY); 3♂, do., 24–25. VIII.

1987 (MSAY); 1♂, 1♀, CB, Nam Tok Klong Narai, ca. 200 m, 6–7. X. 1985 (KMSA); 1♂, 1♀, CB, Phliu, ca. 100 m, 10–11. VIII. 1981 (KMAY); 1♀, do., 4–7 & 9. XI. 1985 (MSA).

Distribution. Thailand (Northern, Central and Southeastern); Oriental region to New Guinea.

Remarks. This species cannot be confused with any other described *Asota*.

11. *Asota ficus* (Fabricius) (Figs. 13, 14, 39, 50)

Noctua ficus Fabricius, 1775, Syst. Ent.: 595.

Lacides ficus Fabricius; Inoue, 1982: 660⁹⁾.

Wing-expanse: ♂ 43–55 mm, ♀ 52–63 mm. ♂ illustrated in Fig. 13; ♀ in Fig. 14.

Male antenna with well-developed pectinations.

Male genitalia: as in Fig. 39; valva short; aedeagus with apical part densely set with minute spines; cornutus a strong thorn. Female genitalia: as in Fig. 50; bursa copulatrix very long; corpus bursae with posterior two-thirds narrow.

Specimens examined. 5♂, 6♀.

1♂, Doi Chang Khian, ca. 1250 m, 29. V. 1983 (KMAY); 1♀, CM, Doi Pui, ca. 1300 m, 30. V. 1983 (KMAY); 4♂, 5♀, NN, Khao Yai, ca. 800 m, 16–21. VI. 1983 (KMAY).

Distribution. Thailand (Northern and Central); Oriental region, except in Indo-Malayan subregion.

Remarks. This is a readily distinguishable species.

12. *Asota caricae* (Fabricius) (Figs. 17, 18, 51)

Noctua caricae Fabricius, 1775, Syst. Ent.: 596.

Psephenia caricae Fabricius; Inoue, 1882: 660⁹⁾.

Asota caricae Fabricius; Barlow, 1882: 763⁹⁾; Holloway, 1988: 88¹⁾.

Wing-expanse: ♂ 40–56 mm, ♀ 47–63 mm. ♂ illustrated in Fig. 17; ♀ in Fig. 18.

Male antenna very weakly bristled. Forewing with a very small white discal spot.

Male genitalia: ♂ illustrated by Holloway¹⁾. Female genitalia: as in Fig. 51.

Specimens examined. 81♂, 63♀.

1♂, CM, Fang, ca. 400 m, 17. VII. 1981 (KMAY); 6♂, 1♀, do., 29–31. X. 1985 (MSA); 4♂, 8♀, do., 13–16. IX. 1987 (MSAY); 3♂, 3♀, CM, Doi Pakia, ca. 1500 m, 5–7. IX. 1987 (MSAY); 1♀, CM, Doi Pui, ca. 1300 m, no specific date, 1985 (Native collector); 4♂, 4♀, do., 1–4. IX. 1987 (MSAY); 2♂, 1♀, CM, Doi Inthanon, Mae Klang, ca. 1300 m, 1 & 3. XI. 1985 (MSA); 4♂, 4♀, do., 8–12. IX. 1987 (MSAY); 7♂, 5♀, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 4♂, 1♀, CY, Chulabhorn Dam, ca. 700 m, 14. VIII. 1987 (MSAY); 1♀, KB, Tam Tarn Lod, 21. VIII. 1981 (KMAY); 3♀, KB, Mae La Mun, ca. 400 m, 25–26. XI. 1985 (MSA); 1♂, KB, Erawan, ca. 600 m, 27–28. XI. 1985 (MSA); 2♂, NN, Khao Yai, ca. 800 m, 26. VIII. 1981 (KMAY); 4♂, 3♂, do., 15–21. VI. 1983 (KMAY); 1♂, 1♀, do., 17–19. XI. 1985 (MSA); 8♂, 8♀, do., 7–10. VIII. 1987 (MSAY); 9♂, 4♀, do., 21–23. IX. 1987 (MSAY); 1♂, CB, Khitchakut, ca. 500 m, 5. X. 1985 (KMSA); 1♂, CB, Khao Soi Dao, ca. 400 m, 14. VIII. 1981 (KMAY); 4♂, 1♀, do., 6–7. VI.

1983 (KMAY); 1♂, 1♀, do., 7–8. X. 1985 (KMSA); 3♂, 4♀, do., 24–25. VIII. 1987 (MSAY); 7♂, 3♀, CB, Phliu, ca. 100 m, 4–7 & 9. X. 1985 (KMSA); 3♂, 2♀, do., 23 & 26. VIII. 1987 (MSAY); 1♂, 1♀, CP, Langsuan, 3. VIII. 1981 (KMAY).

Distribution. Thailand (Northern, Northeastern, Eastern, Southwestern, Central, Southeastern and Peninsular); Indo-Australian tropics.

Remarks. In superficial appearance, this species is similar to the next two species, *producta* and *plaginota*, but differs from *producta* in the absence of the white costal streak on the forewing, and from *plaginota* in the much smaller white discal spot on the forewing.

13. *Asota producta* (Butler) (Figs. 19, 20, 33, 52)

Hypsa producta Butler, 1875, Trans. ent. Soc. Lond., 1875: 320.

Asota producta Butler; Barlow, 1882: 76ⁿ; Holloway, 1988: 89ⁿ.

Wing-expanse: ♂ 60–67 mm, ♀ 60–71 mm. ♂ illustrated in Fig. 19; ♀ in Fig. 20.

Male antenna strongly bristled. Forewing with a conspicuous white costal streak. Venation as shown in Fig. 33.

Male genitalia: illustrated by Hollowayⁿ. Female genitalia: as in Fig. 52.

Specimens examined. 26♂, 17♀.

1♀, CM, Fang, ca. 400 m, 13–16. IX. 1987 (MSAY); 2♀, CM, Doi Inthanon, Mae Klang, ca. 1300 m, 1 & 3. XI. 1985 (MSA); 1♂, LI, Phu Rua, ca. 800 m, 15–19. VIII. 1987 (MSAY); 1♀, KB, Mae La Mun, ca. 400 m., 25–26. XI. 1985 (MSA); 9♂, 5♀, NN, Khao Yai, ca. 800 m, 15–22. VI. 1983 (KMAY); 1♂, 1♀, do., 11–19. XI. 1985 (MSA); 9♂, 5♀, do., 7–10. VIII. 1987 (MSAY); 1♂, 1♀, CB, Khao Soi Dao, ca. 400 m, 14. VIII. 1981 (KMAY); 1♂, do., 7–8. X. 1985 (KMSA); 3♂, do., 24–25. VIII. 1987 (MSAY); 1♂, CB, Nam Tok Klong Narai, ca., 200 m, 6–7. X. 1985 (KMSA).

Distribution. Thailand (Northern, Northeastern, Southwestern, Central and Southeastern); Sri Lanka, India to Sundaland.

Remarks. The white costal streak on the forewing is characteristic of this species.

14. *Asota plaginota* (Butler) (Figs. 16, 40, 53)

Hypsa plaginota Butler, 1875, Trans. ent. Soc. Lond., 1875: 320.

Wing-expanse: ♂ 47–55 mm, ♀ 52–62 mm. ♂ illustrated in Fig. 16.

Male antenna strongly bristled. Forewing with a large white distal spot.

Male genitalia: as in Fig. 40; aedeagus with apical third densely set with denticles, and with two distinct spinose cornuti. Female genitalia: as in Fig. 53.

Specimens examined. 15♂, 5♀.

1♂, CM, Doi Pakia, ca. 1500 m, 5–7. IX. 1987 (MSAY); 1♂, CM, Chiang Mai, ca. 300 m, 20. VII. 1981 (KMAY); 1♂, CM, Doi Suthep, ca. 600 m, 20. V. 1983 (KMAY); 2♂, 2♀, LI, Phu Rua, ca. 800 m, 15–17. VIII. 1987 (MSAY); 1♂, NN, Khao Yai, ca. 800 m, 21. VI. 1983 (KMAY); 1♂, do., 11–19. XI. 1985 (MSA); 3♂, 3♀, do., 8–10. VIII. 1987 (MSAY); 2♂, CB, Khao Soi Dao, ca. 400 m, 14. VIII. 1981 (KMAY); 2♂, do., 24–25. VIII. 1987 (MSAY); 1♂, CP, Langsuan, 3. VIII.

1981 (KMAY).

Distribution. Thailand (Northern, Northeastern, Central, Southeastern and Peninsular); Sri Lanka, N.E. Himalayas to S. China, Malaysia.

Remarks. This species is most closely similar in appearance to *A. caricae*, from which it differs in having the much larger white discal spot on the forewing.

15. *Asota subsimilis* (Walker) (Figs. 21, 22, 41, 54)

Hypsa subsimilis Walker, 1865, List lepid. Insects Colln Br. Mus., 31: 212.

Asota subsimilis Walker; Barlow, 1982: 76^o.

Wing-expanse: 43–54 mm, ♀ 47–59 mm. ♂ illustrated in Fig. 41; ♀ in Fig. 54.

Male antenna strongly bristled. Forewing with a large white central blotch.

Male genitalia: as in Fig. 41. Female genitalia: as in Fig. 54.

Specimens examined. 32♂, 23♀.

4♂, 2♀, NN, Khao Yai, ca. 800 m, 15–22. VI. 1983 (KMAY); 1♂, do., 11–19. XI. 1985(MSA); 11♂, 8♀, do., 7–10. VIII. 1987 (MSAY); 3♂, 4♀, do., 21–24. IX. 1987 (MSAY); 1♀, CB, Khitchakut, ca. 500 m, 13. VIII. 1981 (KMAY); 1♂, CB, Khao Soi Dao, ca. 400 m, 14. VIII. 1981 (KMAY); 2♂, do., 24–25. VIII. 1987 (MSAY); 1♂, CB, Nam Tok Klong Narai, ca. 200 m, 6 & 7. X. 1985 (KMSA); 3♂, 2♀, CB, Phliu, ca. 100 m., 10–12. VIII. 1981 (KMAY); 1♀, do., 4. VI. 1983 (KMAY); 3♀, do., 4–7 & 9. X. 1985 (KMSA); 3♂, 3♀, do., 23 & 26. VIII. 1987 (MSAY); 1♂, CP, Lan-gsuan, 3. VIII. 1981 (KMAY); 1♂, RN, Na Kha, ca. 250 m, 15. X. 1985 (KMSA); 1♂, PK, Nam Tok Ton Sai, ca. 300 m, 17–18. X. 1985 (KMSA).

Distribution. Thailand (Central, Southeastern and Peninsular); Peninsular Malaysia.

Remarks. Although superficially similar to the Indo-Australian *A. heliconia* (Linnaeus), this species differs sharply from it in the hindwing yellow instead of white or nearly white. No specimen of the widely distributed species, *heliconia*, could be collected in Thailand.

16. *Asota javana* (Cramer) (Figs. 23, 24, 34)

Phalaena javana Cramer, 1780, Uitl. Kapellen, 3: 146.

Asota javana Cramer; Holloway, 1988: 89^o.

Wing-expanse: ♂ 50–58 mm, ♀ 63–66 mm. ♂ illustrated in Fig. 23; ♀ in Fig. 24.

Male antenna very strongly bristled. Wings yellow bordered dark brown; forewing with two white spots, one at one-third and the other at end of cell, well contrasted with the brown. Wing venation as shown in Fig. 34.

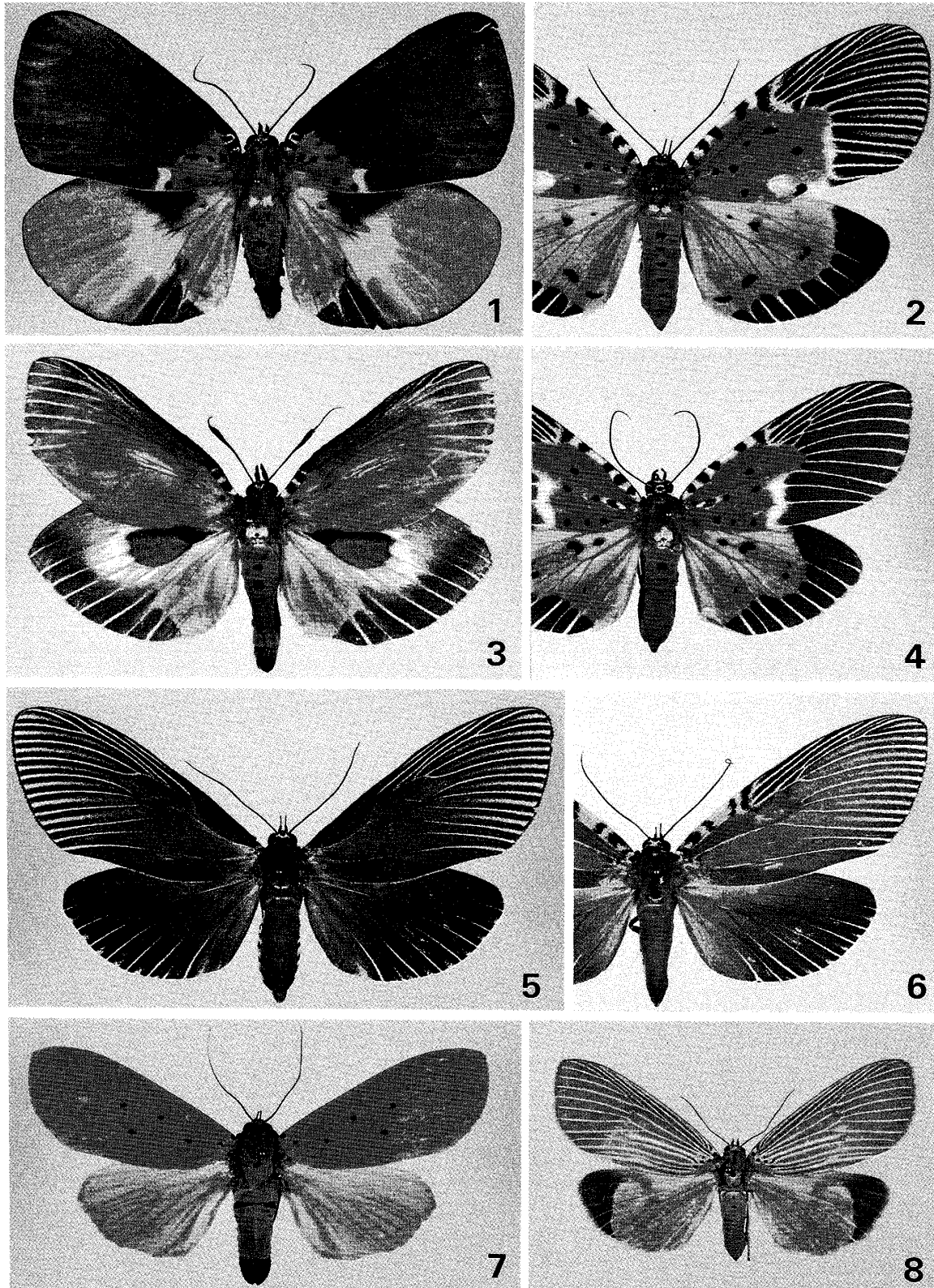
Genitalia of both sexes were illustrated by Holloway^o.

Specimens examined. 5♂, 2♀.

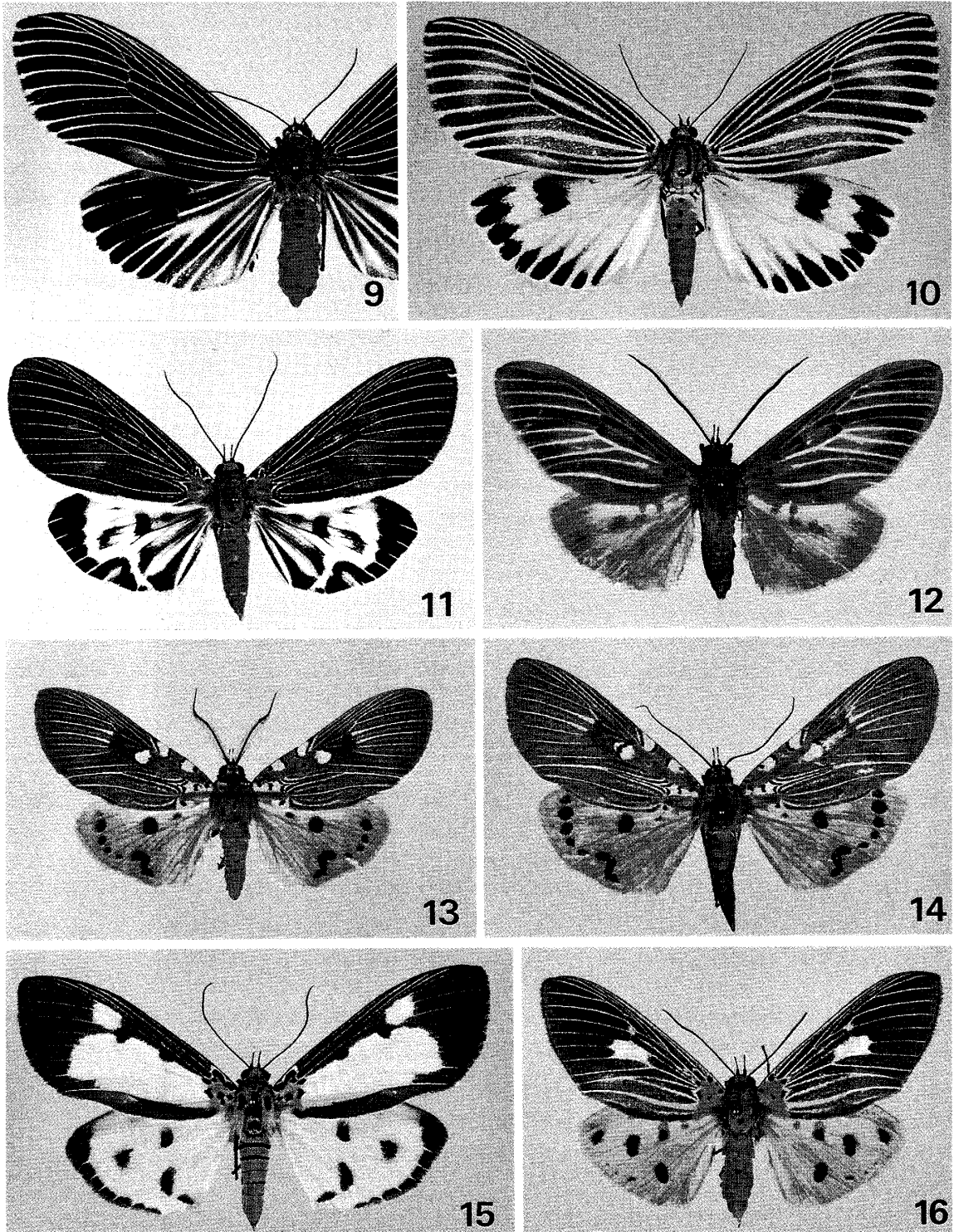
1♀, NN, Khao Yai, ca. 800 m, 26. VIII. 1981 (KMAY); 1♂, do., 21. VI. 1983 (KMAY); 1♂, 1♀, do., 9–10. VIII. 1987 (MSAY); 3♂, CB, Khao Soi Dao, ca. 400 m, 24–25. VIII. 1987 (MSAY).

Distribution. Thailand (Central and Southeastern); Sundaland, Wallacea.

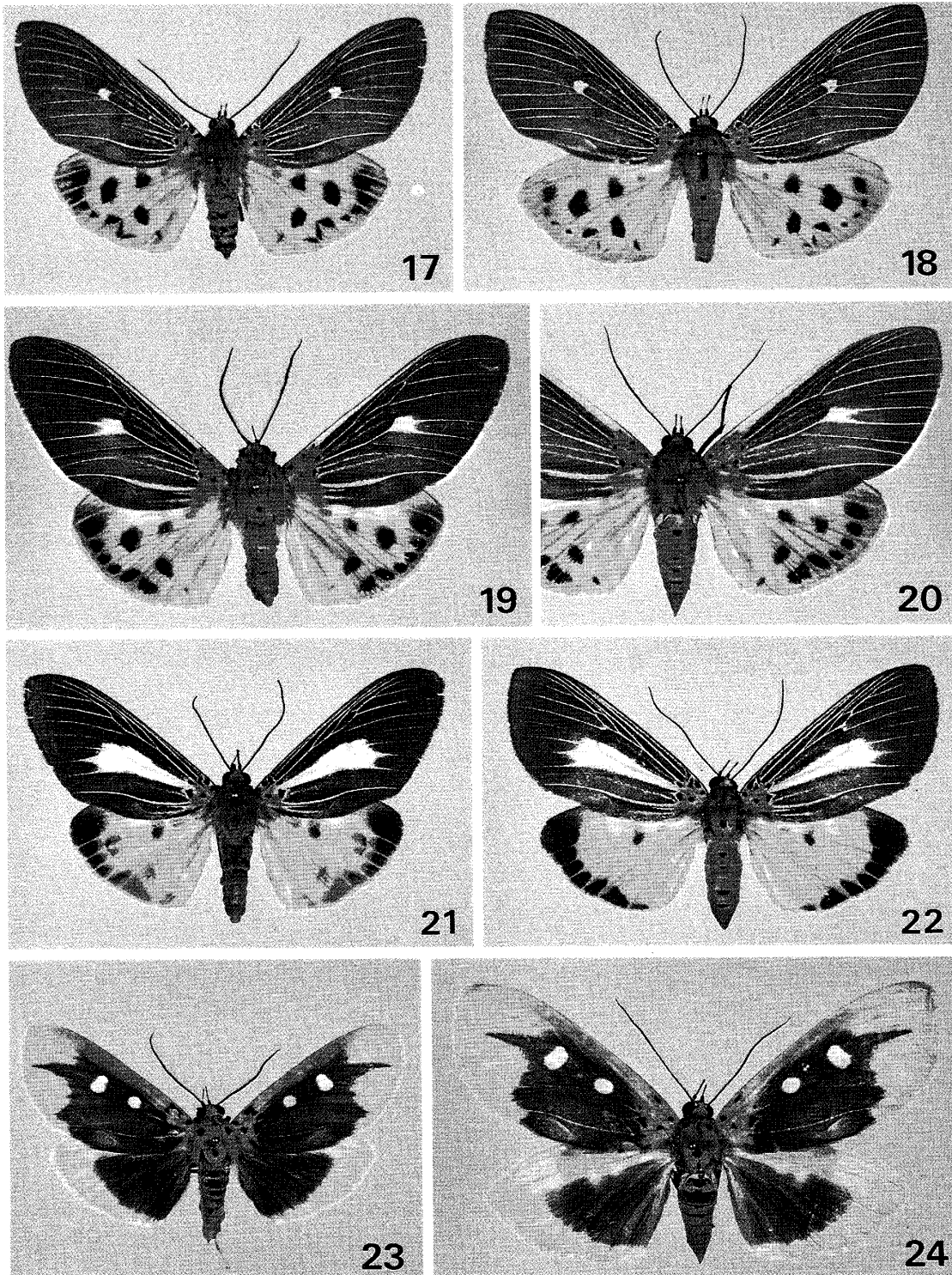
Remarks. This species is immediately distinguished by its diagnostic colour and markings. *A. javana* is the type species of *Asota*.



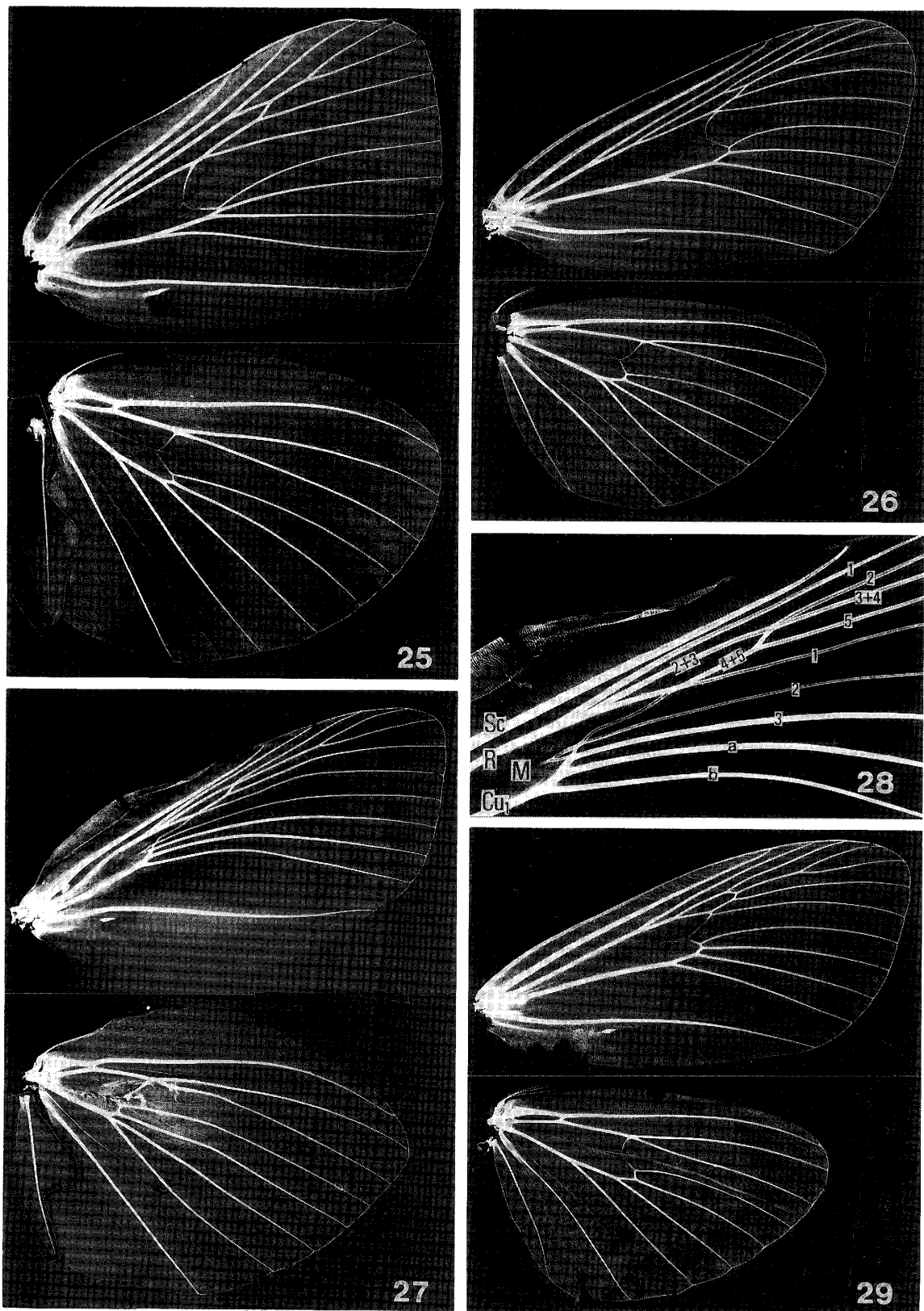
Figs. 1-8. Moths: 1, *Peridrome orbicularis* (Walker), ♂; 2, do., ♀; 3, *P. subfascia* (Walker), ♂; 4, do., ♀; 5, *Euplocia memblaria* (Cramer), ♂; 6, do., ♀; 7, *Agape chloropyga* (Walker), ♀; 8, *Neochera inops* (Walker), ♂. (All of natural size.)



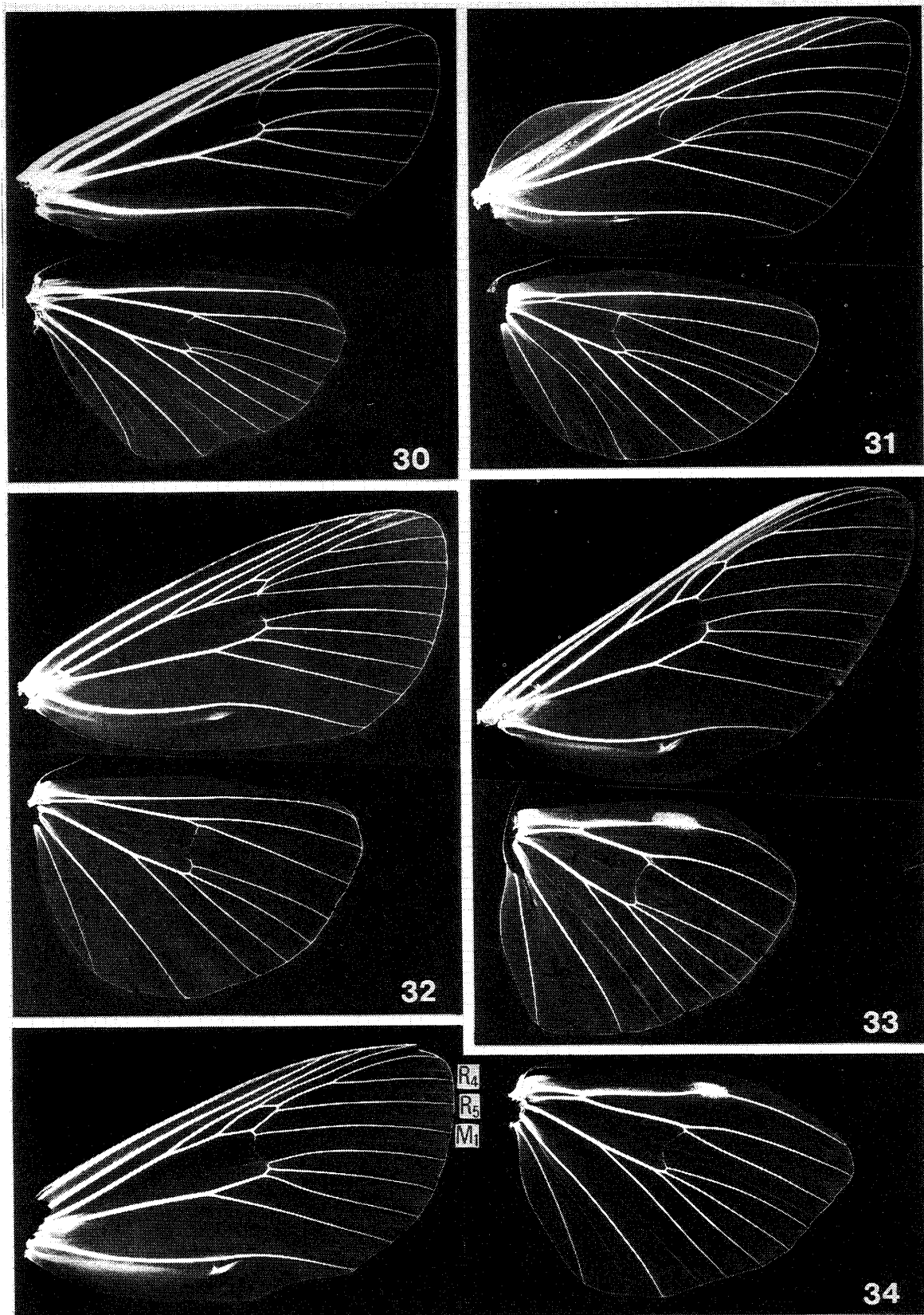
Figs. 9—16. Moths: 9, *Neochera marmorea* (Walker), ♀; 10, *N. dominia* (Cramer), ♀; 11, *Asota paphos* (Fabricius), ♀; 12, *A. egens* (Walker), ♂; 13, *A. ficus* (Fabricius), ♂; 14, do., ♀; 15, *A. plana* (Walker), ♀; 16, *A. plaginota* (Butler), ♂. (All of natural size.)



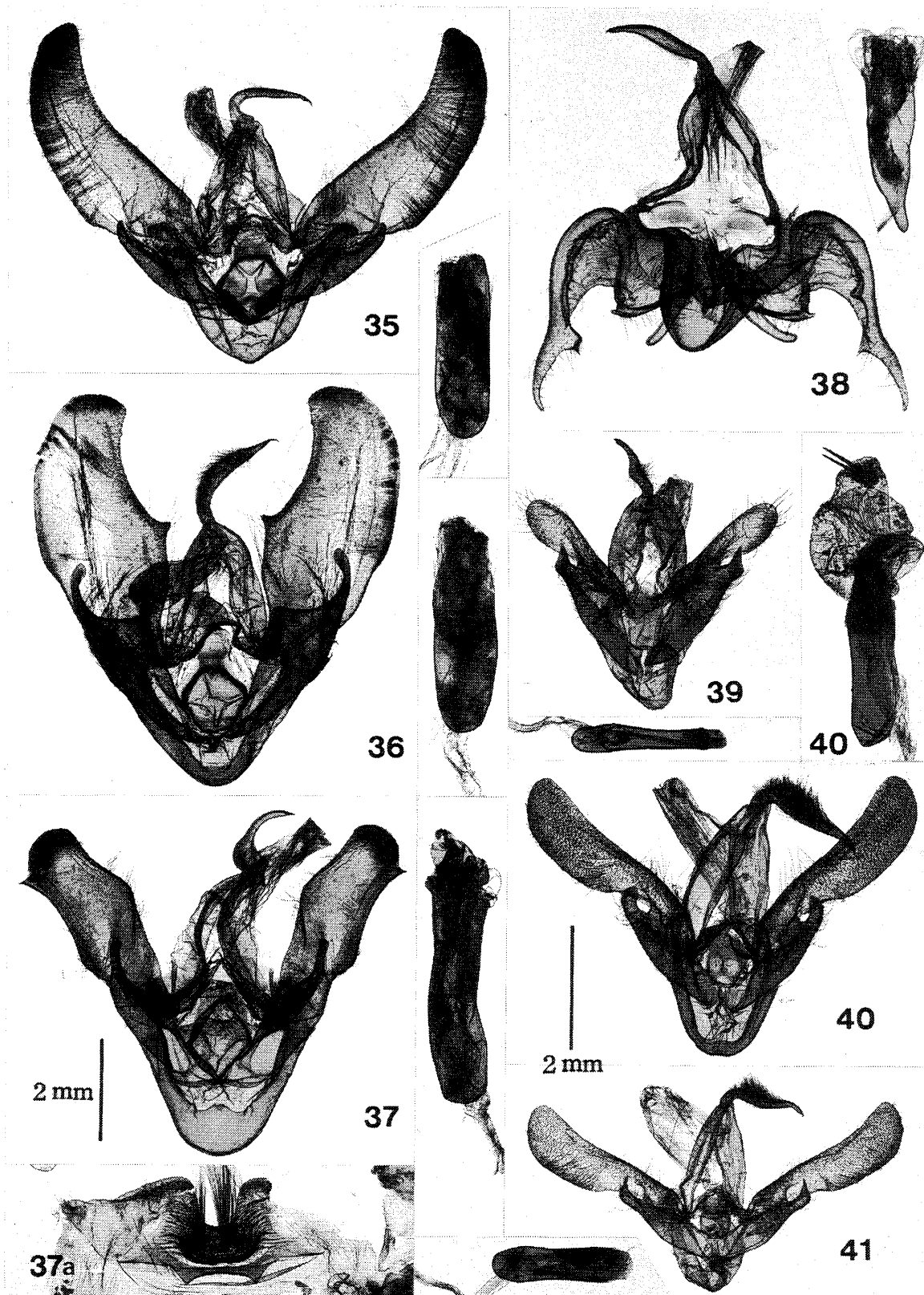
Figs. 17—24. Moths: 17, *Asota caricae* (Fabricius), ♂; 18, do., ♀; 19, *A. producta* (Butler), ♂; 20, do., ♀; 21, *A. subsimilis* (Walker), ♂; 22, do., ♀; 23, *A. javana* (Cramer), ♂; 24, do., ♀. (All of natural size.)



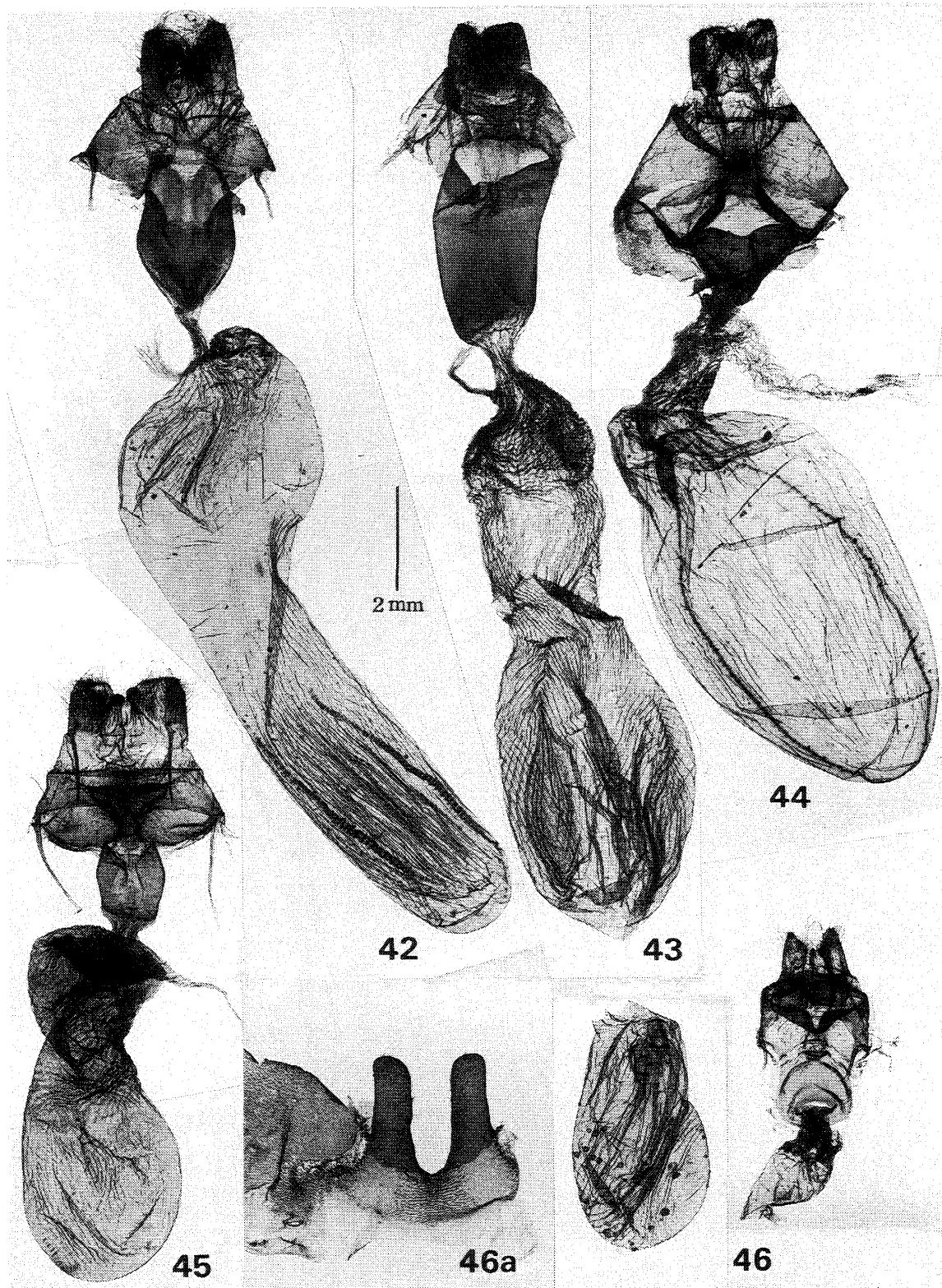
Figs. 25—29. Wing venation: 25, *Peridrome orbicularis* (Wlk.), ♂; 26, do., ♀; 27, *P. subfascia* (Wlk.), ♂; 28, do., ♂, posterior part of discal cell; 29, do., ♀.



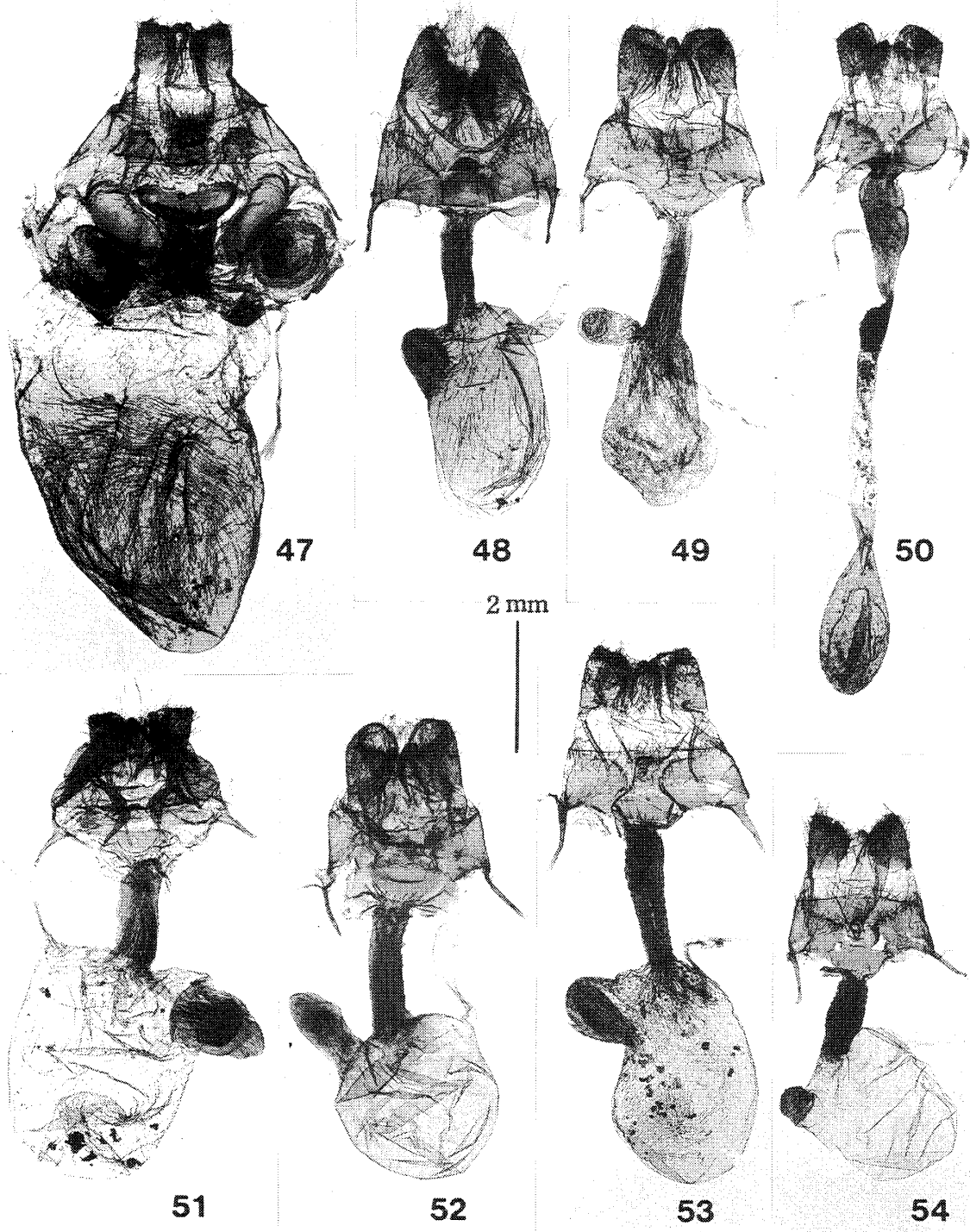
Figs. 30–34. Wing venation: 30, *Agape chloropyga* (Wlk.), ♀; 31, *Euplocia memblaria* (Crm.), ♂; 32, *Neochera inops* (Wlk.), ♂; 33, *Asota producta* (Btl.), ♂; 34, *A. javana* (Crm.), ♀.



Figs. 35-41. Male genitalia: 35, *Peridrome orbicularis* (Wlk.); 36, *P. subfascia* (Wlk.); 37, *Euplocia memblaria* (Crm.); 37a, do., eighth abdominal sternite; 38, *Neochera inops* (Wlk.); 39, *Asota ficus* (F.); 40, *A. plaginota* (Btl.); 41, *A. subsimilis* (Wlk.). (Figs. 35-38 enlarged to one scale; Figs. 39-41 to one scale.)



Figs. 42—46 Female genitalia: 42, *Peridrome orbicularis* (Wlk.); 43, *P. subfascia* (Wlk.); 44, *Euplocia memblaria* (Crm.); 45, *Neochera marmorea* (Wlk.); 46, *Neochera inops* (Wlk.); 46a, do., eighth abdominal sternite. (All enlarged to one scale.)



Figs. 47—54. Female genitalia: 47, *Asota plana* (Wlk.); 48, *A. paphos* (F.); 49, *A. egens* (Wlk.); 50, *A. ficus* (F.); 51, *A. caricae* (F.); 52, *A. producta* (Btl.); 53, *A. plagi-nota* (Btl.); 54, *A. subsimilis* (Wlk.). (All enlarged to one scale.)

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