A Generic Classification of the Tribe Polyommatini of the Oriental and Australian Regions : Lepidoptera, Lycaenidae, Polyommatinae

Bull. Univ. Osaka Pref., Ser. B, Vol. 44, Suppl.
大阪府立大学紀要, 農学・生物学, 1992

A Generic Classification of the Tribe Polyommatini of the Oriental and Australian Regions (Lepidoptera, Lycaenidae, Polyommatinae)

Toshiya HIROWATARI

Entomological Laboratory, Faculty of Agriculture,
Kyushu University, Fukuoka, 812 Japan*

Contents

* Present address: Entomological Laboratory, College of Agriculture, University of Osaka Prefecture, Sakai, Osaka, 593 Japan.

1. Abstract

The Oriental and Australian genera of the tribe Polyommatini (Lepidoptera, Lycaenidae, Polyommatinae) are revised and generic diagnoses based on the male and female genitalia are given. A total of some 200 species were examined and were assigned to 31 genera, including four new ones, i.e., *Tartesa, Perpheres, Nothodanis* and *Sahulana.* Fifteen sections (genus groups) are recognized in the tribe and two of them, the *Prosotas* and *Thaumaina* sections, are newly proposed.

2. Introduction

Polyommatini is one of four tribes of the subfamily Polyommatinae (Lycaenidae), ranging throughout all the zoological regions of the world. It is the largest tribe containing 134 genera, some of which are subjective synonyms, while Lycaenesthini, Candalidini and Niphandini, contain 7, 8 and 1 genera, respectively [1].

The larvae of some species are known as important agricultural pests. *Lampides boeticus* is one of the most important pests of agricultural plants of Leguminosae. Some species of *Jamides* feed on podded crops or cultivated cardamon (*Elittaria cardamonum*) in South-East Asia. Recently, *Nacaduba berenice*[2] and *N. normani*[3] were recorded as pests of cocoa in Sabah, E. Malaysia.

Regarding the generic classification of the Oriental and Australian Polyommatini, little satisfactory work had been done until ELIOT[1] published "The higher classification of the Lycaenidae".

SEITZ (1916-1924) included useful arrangements in "The Macrolepidoptera of the World vol. 9", in which the genera of the Oriental and Australian Polyommatini were revised by SEITZ[4], FRUHSTORFER[5] and GRÜNBERG[6]. Their work is important in listing almost all the described species up to that time. However, their generic classification is not acceptable because they distinguished the genera based only on characters of wing markings and venation. Many genera erected by TOXOPEUS[7] had also been characterized by wing markings and venation.

As ELIOT[1] pointed out, there are many non-related taxa bearing similar wing markings, e.g., "*Danis* pattern" seen in the Papuan taxa such as *Danis, Psychonotis, Perpheres* gen. nov. and the *euchylas* group of *Jamides,* and even the thecline taxa *Hypolycaena danis, Arhopala florinda* etc., with a broad white band running across both wings, and a series of subterminal metallic green or blue markings on the underside of the wings. As for the venation, the condition of veins 11 (R_1) and 12 (Sc) is important in characterizing some genera of Polyommatini. However, it is not always reliable because the condition of the veins sometimes varies from species to species, or individually.

In "The higher classification of Lycaenidae", ELIOT[1] divided the world Polyommatini into 30 sections (genus groups) based on many morphological characters, such as the antenna, labial palpus, leg, wing venation, androconia and male genitalia. His classification is commendable and has been adopted by most authors. However, despite the use of many characters, his classification seems to be still insufficient, especially for the Oriental and Australian genera, since he omitted to use to the female genital structure.

Although the characters of the female genitalia have not been used in the

classification of the Polyommatini, they are significant when considering the natural grouping of this tribe.

In the present study, I examined some 200 species belonging to 13 sections (sensu ELIOT) of the Polyommatini of the Oriental and Australian Regions. The species are assigned to 31 genera, including 4 new ones, based mainly on the male and female genital structures. These genera are divided into 15 sections, in which 2 sections are newly proposed.

The *Lycaenopsis* section (sensu ELIOT) is not treated here since I accept the system of ELIOT & KAWAZOÉ[8]. The following genera are also excluded because they pertain primarily to the Palaearctic or Ethiopian Regions: *Everes, Euchrysops, Polyommatus, Zizeeria* and *Zizula* sections (sensu ELIOT).

The following abbreviations are used for institutions.

ANIC Australian National Insect Collection, CSIRO, Canberra, Australia.
BMNH The Natural Historymy Museum, London, U.K.
ELKU Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.
KMNH Kitakyushu Museum of Natural History, Kitakyushu, Japan.
MZB Museum Zoologicum Bogoriense, Bogor, Indonesia
NIAES Laboratory of Insect Systematics, National Institute of Agro-Environmental Sciences, Tsukuba, Japan.
NSM National Science Museum (Natural History), Tokyo, Japan.
OMNH Osaka Museum of Natural History, Osaka, Japan.
RNH Rijksmuseum van Natuurlijke Historie, Leiden, Holland.
UOP Entomological Laboratory, College of Agriculture, University of Osaka Prefecture, Sakai, Japan.

3. Check list of the genera and species of the Oriental and Australian Polyommatini *

Una section

Genus *Una* de NICÉVILLE, 1890

1. *usta* (DISTANT, 1886)
   usta philippensis SCHRÖDER & TREADAWAY, 1986 **stat. nov.**

Genus *Orthomiella* de NICÉVILLE, 1890

1. *pontis* (ELWES, 1887)
2. *sinensis* (ELWES, 1887)
3. *rantaizana* WILEMAN, 1910

Petrelaea section

Genus *Petrelaea* TOXOPEUS, 1929

1. *dana* (de NICÉVILLE, 1884)
2. *tombugensis* RÖBER, 1886

Nacaduba section

Genus *Nacaduba* MOORE, [1881]

1. *sericina* (C. & R. FELDER, 1865)
2. *sanaya* FRUHSTORFER, 1916
3. *angelae* CASSIDY, 1990
4. *subperusia* (SNELLEN, 1896)
5. *pavana* (HORSFIELD), [1828]
6. *russelli* TITE, 1963
7. *hermus* (C. FELDER, 1860)
8. *ollyetti* CORBET, 1947
9. *nerine* (GROSE-SMITH & KIRBY, 1899) **comb. nov.**
10. *asaga* FRUHSTORFER, 1916
11. *pendleburyi* CORBET, 1938
12. *solta* ELIOT, 1955
13. *angusta* (H. DRUCE, 1873)
14. *pactolus* (C. FELDER, 1860)
15. *berenice* (HERRICH-SCHAEFFER, 1869)
16. *normani* ELIOT, 1969
17. *sinhala* ORMISTON, 1924
18. *cajetani* TITE, 1963
19. *novaehebridensis* H. H. DRUCE 1892
20. *sumbawa* TITE, 1963
21. *kirtoni* ELIOT, 1984
22. *kurava* (MOORE), [1857]
23. *cyanea* (CRAMER), [1775] **comb. nov.**
24. *schneideri* (RIBBE, 1899) **comb. nov.**
25. *mallicollo* (H. H. DRUCE, 1892)
26. *mioswara* TITE, 1963
27. *tahitiensis* HARA & HIROWATARI, 1989
28. *catochloris* (BOISDUVAL, 1832)
29. *lucana* TITE, 1963
30. *beroe* (C. & R. FELDER, 1865)
31. *major* ROTHSCHILD, 1915
32. *ruficirca* TITE, 1963
33. *glauconia* (SNELLEN, 1892)
34. *calauria* (C. & R. FELDER, 1860)
35. *tristis* (ROTHSCHILD, 1915)
36. *dyopa* (HERRICH-SCHAEFFER, 1869)
37. *samoensis* H. H. DRUCE, 1892
38. *deplorans* (BUTLER), [1876]
39. *biocellata* (C. & R. FELDER, 1865)
40. *deliana* (SNELLEN, 1893)

Genus *Tartesa* **gen. nov.**

1. *astarte* (BUTLER, 1882) **comb. nov.**
2. *ugiensis* (H. H. DRUCE, 1891) **comb. nov.**

Genus *Erysichton* FRUHSTORFER, 1916

1. *lineata* (MURRAY, 1874)
2. *palmyra* (C. FELDER, 1860)
3. *albiplaga* TITE, 1963

Danis section

Genus *Danis* FABRICIUS, 1807

1. *danis* (CRAMER), [1775]
2. *phroso* (GROSE-SMITH, 1897)
3. *glaucopis* (GROSE-SMITH, 1894)
4. *wallacei* (C. & R. FELDER), [1865]
5. *melimnos* (H. H. DRUCE & BETHUNE-BAKER, 1893)
   melimunos helga (GROSE-SMITH, 1898) **stat. nov.**
6. *regalis* (GROSE-SMITH & KIRBY, 1895)
7. *hengis* (GROSE-SMITH, 1897) **stat. nov.**
8. *metrophanes* (FRUHSTORFER, 1915)
9. *drucei* (GROSE-SMITH & KIRBY, 1895)
   drucei horsa (GROSE-SMITH, 1898) **stat. nov.**
10. *concolor* (ROTHSCHILD, 1915)

Genus *Perpheres* **gen. nov.**

1. *perpheres* (H. H. DRUCE & BETHUNE-BAKER, 1893) **comb. nov.**

Genus *Psychonotis* TOXOPEUS, 1930

1. *piepersii* (SNELLEN, 1878)
2. *hymetus* (C. FELDER, 1860)
3. *eudocia* (H. H. DRUCE & BETHUNE-BAKER, 1893)
   eudocia synesius (FRUHSTORFER, 1915) **stat. nov.**
4. *hebes* (H. H. DRUCE, 1904)
5. *melane* (JOICEY & TALBOT, 1916)
6. *caelius* (C. & R. FELDER, 1860)
   caelius taygetus (C. & R. FELDER, 1865) **comb. nov.**
   caelius taletum (WATERHOUSE & LYELL, 1914) **comb. nov.**
   caelius salamandri MACLEAY, 1866 **comb. nov.**
7. *browni* (H. H. DRUCE & BETHUNE-BAKER, 1893)

8. *kruera* (H. H. DRUCE, 1891)
9. *purpurea* (H. H. DRUCE, 1902)

Prosotas section
Genus *Prosotas* H. H. DRUCE, 1891
1. *aluta* (H. DRUCE, 1873)
2. *nelides* (de NICÉVILLE, 1895)
3. *nora* (C. FELDER, 1860)
4. *atra* TITE, 1963
5. *talesea* TITE, 1963
6. *papuana* TITE, 1963
7. *felderi* (MURRAY, 1874)
8. *pia* TOXOPEUS, 1929
9. *ella* TOXOPEUS, 1930
10. *norina* TOXOPEUS, 1929
11. *bhutea* (de NICÉVILLE, 1884)
12. *datarica* (SNELLEN, 1892)
13. *gracilis* (RÖBER), [1886]
14. *elsa* (GROSE-SMITH, 1895)
15. *dubiosa* (SEMPER), [1879]
16. *lutea* (MARTIN, 1895)
17. *noreia* (R. FELDER, 1868)

Genus *Nothodanis* **gen. nov.**
1. *schaeffera* (ESCHSCHOLTZ, 1821) **comb. nov.**

Genus *Catopyrops* TOXOPEUS, 1929
1. *ancyra* (C. FELDER, 1860)
2. *zyx* PARSONS, 1986
3. *rita* (GROSE-SMITH, 1895)
4. *florinda* (BUTLER, 1877)
5. *holtra* PARSONS, 1986
6. *keiria* (H. H. DRUCE, 1891)
7. *nebulosa* (H. H. DRUCE, 1892)
8. *kokopona* (RIBBE, 1899)

Genus *Ionolyce* TOXOPEUS, 1929
1. *helicon* (C. FELDER, 1860)
2. *brunnescens* TITE, 1963
3. *selkon* PARSONS, 1986

Genus *Paraduba* BETHUNE-BAKER, 1906
1. *owgarra* BETHUNE-BAKER, 1906
2. *metriodes* (BETHUNE-BAKER, 1911)
3. *siwiensis* TITE, 1963

Theclinesthes section
Genus *Theclinesthes* RÖBER, 1891
1. *onycha* (HEWITSON), [1865]
2. *miskini* (LUCAS, 1889)
3. *albocincta* (WATERHOUSE, 1903)
4. *hesperia* SIBATANI & GRUND, 1978
5. *serpentata* (HERRICH-SCHAEFFER, 1869)
6. *sulpitius* (MISKIN, 1890)

Genus *Sahulana* **gen. nov.**
1. *scintillata* (LUCAS, 1899) **comb. nov.**

Genus *Neolucia* WATERHOUSE & TURNER, 1905
1. *agricola* (WESTWOOD), [1851]
2. *mathewi* (MISKIN, 1890)
3. *hobartensis* (MISKIN, 1890)

Thaumaina section
Genus *Thaumaina* BETHUNE-BAKER, 1908
1. *uranothauma* BETHUNE-BAKER, 1908

Upolampes section
Genus *Upolampes* BETHUNE-BAKER, 1908
1. *evena* (HEWITSON), [1876]

Genus *Caleta* FRUHSTORFER, 1922
1. *elna* (HEWITSON), [1876]
2. *caleta* (HEWITSON), [1876]
3. *argola* (HEWITSON), [1876]
4. *decidia* (HEWITSON), [1876]
5. *roxus* (GODART), [1824]
6. *manovus* (FRUHSTORFER, 1918)
7. *rhode* (HOPFFER), 1871
8. *celebensis* (STAUDINGER, 1889)
9. *mindarus* (C. & R. FELDER), [1865]

Genus *Pistoria* HEMMING, 1966
1. *nigropunctata* (BETHUNE-BAKER, 1908)

Genus *Discolampa* TOXOPEUS, 1929
1. *ethion* (WESTWOOD), [1851]
   negrosiana MURAYAMA, 1983 **syn. nov.**
   (=*D. ethion* ulysses (STAUDINGER, 1889))
2. *ilissus* (C. & R. FELDER, 1859)
3. *albula* (GROSE-SMITH, 1897)

Jamides section
Genus *Jamides* HÜBNER, [1819]
1. *bochus* (STOLL), [1782]
2. *seminiger* GROSE-SMITH, 1895
   seminiger porphyris HOLLAND, 1900 **stat. nov.**
   seminiger tiglath (FRUHSTORFER, 1915) **comb. nov.**
3. *phaseli* (MATHEW, 1889)
4. *purpuratus* GROSE-SMITH, 1894
5. *soemias* H. H. DRUCE, 1891
   soemias timon GROSE-SMITH, 1895 **stat. nov.**
6. *cephion* H. H. DRUCE, 1891
7. *amarauge* H. H. DRUCE, 1891
8. *goodenovii* (BUTLER, 1876)
9. *pulcherrima* BUTLER, 1884
10. *candrena* (HERRICH-SCHAEFFER, 1869)
11. *carissima* (BUTLER), [1876]
12. *walkeri* H. H. DRUCE, 1892
13. *areas* (H. H. DRUCE, 1891)
14. *nitens* (JOICEY & TALBOT, 1916)
15. *cyta* (BOISDUVAL), [1832]
16. *snelleni* (RÖBER), [1886]
17. *puloensis* TITE, 1960
18. *lugine* (H. H. DRUCE, 1895)
19. *limes* (H. H. DRUCE, 1895)
20. *celeno* (CRAMER), [1775]

21. *pura* (MOORE, 1886)
22. *fractilinea* TITE, 1960
23. *zebra* (H. H. DRUCE, 1895)
24. *aratus* (STOLL), [1781]
25. *aetherialis* (BUTLER, 1884) **stat. rev.**
26. *cleodus* (C. & R. FELDER), [1865]
27. *philatus* (SNELLEN, 1878)
28. *anops* (DOHERTY, 1891)
29. *aleuas* (C. & R. FELDER), [1865]
30. *malaccanus* (RÖBER), [1886]
31. *parasaturatus* (FRUHSTORFER, 1916)
32. *suidas* (C. & R. FELDER), [1865]
33. *festivus* (RÖBER), [1886]
34. *cunilda* SNELLEN, 1896
35. *virgulatus* (H. H. DRUCE, 1895)
36. *latimargus* (SNELLEN, 1878)
37. *lucide* (de NICÉVILLE, 1894)
38. *ferrari* EVANS, 1932
39. *coruscans* (MOORE, 1877)
40. *abdul* (DISTANT, 1886)
41. *lacteata* (de NICÉVILLE, 1895)
42. *talinga* (KHEIL, 1884)
43. *alecto* (C. FELDER, 1860)
44. *pseudosias* ROTHSCHILD, 1915
45. *alsietus* (FRUHSTORFER, 1915)
46. *reverdini* (FRUHSTORFER, 1915)
47. *schatzi* (RÖBER), [1886]
48. *elpis* (GODART), [1824]
49. *kankena* (C. FELDER, 1862)
50. *caeruleus* (H. DRUCE, 1873)
51. *rothschildi* H. HAYASHI, 1977
52. *callistus* (RÖBER), [1886]
53. *celebica* (ELIOT, 1969)
54. *euchylas* (HÜBNER), [1819]
55. *aruensis* (PAGENSTECHER, 1884)
56. *coritus* (GUÉRIN-MÉNEVILLE), [1831]
57. *nemophilus* (BUTLER, 1876)

Genus *Epimastidia* H. H. DRUCE, 1891
1. *inops* (C. & R. FELDER, 1860)
2. *arienis* H. H. DRUCE, 1891

Catochrysops section
Genus *Catochrysops* BOISDUVAL, 1832
1. *strabo* (FABRICIUS, 1793)
2. *strabobinna* SWINHOE, 1916 **nom. rev.**
3. *amasea* WATERHOUSE & LYELL, 1914
4. *panormus* (C. FELDER, 1860)
5. *taitensis* (BOISDUVAL), [1832]
6. *nubila* TITE, 1959

Lampides section
Genus *lampides* HÜBNER, [1819]
1. *boeticus* (LINNAEUS, 1767)

Callictita section
Genus *Callictita* BETHUNE-BAKER, 1908
1. *cyara* BETHUNE-BAKER, 1908
2. *lala* PARSON, 1986
3. *albiplaga* JOICEY & TALBOT, 1916
4. *upola* PARSONS & HIROWATARI, 1988
5. *mala* PARSONS, 1986
6. *jola* PARSONS, 1986
7. *felgana* PARSONS, 1986
8. *tifala* PARSONS, 1986
9. *arfakiana* WIND & CLENCH, 1947

Castalius section
Genus *Castalius* HÜBNER, [1819]
1. *rosimon* (FABRICIUS, 1775)
2. *fasciatus* (RÖBER, 1887)

Genus *Tarucus* MOORE, [1881]
1. *ananda* de NICÉVILLE, [1884]
2. *balkanicus* (FREYER, 1844)
3. *callinara* BUTLER, 1886
4. *hazara* EVANS, 1932
5. *indica* EVANS, 1932
6. *nara* (KOLLAR), [1884]
7. *venosus* MOORE, 1882
8. *waterstradti* H. H. DRUCE, 1895

Famegana section
Genus *Famegana* ELIOT, 1973
1. *alsulus* (HERRICH-SCHAEFFER, 1869)

Pithecops section
Genus *Pithecops* HORSFIELD, [1828]
1. *corvus* FRUHSTORFER, [1919]
2. *fulgens* DOHERTY, 1889
3. *mariae* de NICÉVILLE, 1889
4. *phoenix* RÖBER, [1886]
5. *dionisius* (BOISDUVAL), [1832]

Table 1. The generic classification of the Oriental and Australian Polyommatini

ELIOT (1973)	HIROWATARI (1992)
Una section	*Una* section
Una	*Una*
Orthomiella	*Orthomiella*
Petrelaea section	*Petrelaea* section
Petrelaea	*Petrelaea*
(*Pseudonacaduba*)*	
Nacaduba section	*Nacaduba* section
Nacaduba	*Nacaduba*
Prosotas	*Tartesa* gen. nov.
Ionolyce	*Erysichton*
Catopyrops	
Erysichton	*Danis* section
Paraduba	*Danis*
Neolucia	*Perpheres* gen. nov.
Hypojamides	*Psychonotis*
Theclinesthes section	*Prosotas* section
Theclinesthes	*Prosotas*
Thaumaina	*Nothodanis* gen. nov.
	Catopyrops
	Ionolyce
	Paraduba
Upolampes section	*Theclinesthes* section
Upolampes	*Theclinesthes*
Caleta	*Sahulana* gen. nov.
Pycnophallium	*Neolucia*
Discolampa	*Thaumaina* section
Pistoria	*Thaumaina*
Danis section	*Upolampes* section
Danis	*Upolampes*
Psychonotis	*Caleta*
Epimastidia	*Pistoria*
	Discolampa
Jamides section	*Jamides* section
Jamides	*Jamides*
Pepliphorus	*Epimastidia*
Catochrysops section	*Catochrysops* section
Catochrysops	*Catochrysops*
(*Rysops*)*	
Lampides section	*Lampides* section
Lampides	*Lampides*
Callictita section	*Callictita* section
Callictita	*Callictita*
Castalius section	*Castalius* section
Castalius	*Castalius*
Tarucus	*Tarucus*
Famegana section	*Famegana* section
Famegana	*Famegana*
Pithecops section	*Pithecops* section
Pithecops	*Pithecops*
Eupsychellus	

* The genera in parenthesis are African representatives.

4. Morphology and terminology

Terminology is mainly referred to SHIRÔZU & YAMAMOTO[9] and SHIRÔZU[10] for the male genitalia, and KUZNETSOV[11] for the female genitalia.

Head

The general structure of head is constant in the Polyommatini. TSUBUKI[12] pointed out that the Polyommatinae is separable from the other lycaenid subfamilies by the deep proboscidial fossa, the narrow and relatively high production of the antero-lateral part of the vertex, where chaetosema is present, and the rounded posterior part of the vertex. These characters show the uniformity of the Polyommatinae, but differences among genera are not clear.

The condition of the eye provides little information. As already pointed out by some authors[1),5)], smooth and hairy eyes are of little help in classification even at generic level.

The labial palpus is 3-segmented. The 1st segment is nearly the same or slightly shorter than the 3rd. The 2nd segment is 2 - 3 times as long as the 1st, usually with dense scales. The relative length of the segments, and the scaling, especially in the 2nd segment are sometimes useful at the species level, but are useless in the generic classification of Polyommatini.

Leg

The male fore tarsus is fused into a single segment, whereas in the female it is 5-segmented (Fig. 1c-d). In the Polyommatini, the male fore tarsus is as long as the femur, but exceptionally in *Pithecops,* it is short and stout, being 2/3 - 3/4 as long as the femur (Fig. 1 i-l). Although SANDS[13] referred to individual variation in the length of the male fore tarsus seen in *Hypochrysops,* Theclinae, the short fore tarsus of *Pithecops* may provide a good generic character.

Wing venation

The character state of wing venation is useful for generic classification in some cases. Characteristics of the wing venation of Polyommatini are anastomosis or contact of the veins 11 (R_1) and 12 (Sc). In the *Upolampes* section, the condition is variable. In *Caleta,* the bases of veins 10 and 11 are separate in *decidia*, connate in *C. elna* (Fig. 3h), but usually stalked in the other species (Fig. 3i). In *Pistoria,* the veins of forewing represent a terminal condition of the transformation series resulting from anastomosis of 10 and 11 at bases, and of 11 and 12 to the costa (Fig. 3j). In the *Danis* section, condition is as in *Caleta*, but it may originate independently, the bases of 10 and 11 are connate in *Psychonotis*, stalked in *Perpheres* gen. nov. In the *Jamides* section, a short cross-vein linking veins 11 and 12 is usually present. It is sometimes reduced individually, in *Epimastidia* and the *cyta* subgroup of *Jamides.*

Male genitalia

The vinculum is generally narrow in the Polyommatini. But in *Theclinesthes* and *Catopyrops* it is obviously wide. In *Discolampa* it is angled at the middle, and this character is important for the genus.

The saccus is present only in the *Una* and *Petrelaea* sections (Fig. 5,A,F, Fig. 6A).

The tegumen is usually broad at the dorso-lateral portion and rather short dorsally.

The lateral processes of the tegumen are sometimes well developed, in association with a parallel development of the vinculum, as in *Theclinesthes* (Fig. 16A).

The brachium is usually slender and curved. Its apical portion is simply pointed or hooked in almost all species, but in the *bochus* group of *Jamides*, it is flattened and rounded. The basal portion of the brachium is connected with the postero-ventral process of the tegumen and articulated with the ventral corner of the socius. In the *Una, Upolampes* and *Caleta* sections, the brachium is completely reduced or vestigial.

The socius is semicircular, triangular or rectangular in lateral view, usually furnished with long bristly hairs. In *Psychonotis*, it is produced into a club-like process (Figs. 10-12). The socius is separated from the tegumen by a membranous slit or lateral fenestrula.

The juxta is U-, V- or Y-shaped. It shows considerable variation in size among genera, but it is usually constant in shape within the genus. In the *Una* section, the juxta is very small and shield-like. The basal portion of the juxta is articulated with the sacculus, and bears minute hairs on the posterior surface.

The phallus is variable in shape and size. It may provide one of the most important characters for the generic classification of the Polyommatini. The subzonal sheath, i.e., the anterior portion of the zone, is variable in size and its shape is subject to development of the coecum. The attachment point of the bulbus ejaculatorius to the subzonal sheath is also variable. In the *Nacaduba* and *Prosotas* sections, the bulbus ejaculatorius enters on the dorsal surface of the subzonal sheath. In *Tartesa* gen. nov., a membranous area of the bulbus ejaculatrius is extended into the suprazonal sheath (Fig. 8E). The suprazonal sheath is subject to many modifications. The dorsal portion usually bears a single lamella or a pair of filamentous rods. It is usually symmetrical, but asymmetrical in *Orthomiella*, bearing two prominent ridges along the right lateral margin. The ventro-distal portion of the suprazonal sheath generally ends in a Chapman's process, but in some species of *Jamides*, the posterior margin is envaginated at the middle or spatulated latero-apically. The condition of the ventro-distal portion of the suprazonal sheath appears to be correlated to the shape of the female genital plate.

The form of the valva is exceedingly variable throughout the tribe. It is more or less uniform within most of the genera, but in some genera, such as *Jamides* and *Nacaduba*, interspecific differences are enormous. The characters of the valva are useful for identifying the species or considering the phylogenetic relationships of the species.

Female genitalia and internal reproductive systems

The lodix (Fig. 27C), which is sometimes absent, is named for a sclerotized portion on the female 7th abdominal venter.

The apophyses anteriores (Fig. 26A), a pair of antero-lateral processes of the 8th tergum, are not well developed in the Polyommatini, usually being less than 1/2 as long as the 8th tergum.

The intersegmental membrane between the 7th and 8th abdominal venters is usually invaginated into an intersternal pouch. Its ventral wall or bottom is sometimes sclerotized.

The ostium usually opens between the 7th and 8th abdominal venters, but in the *Nacaduba* and *Danis* sections it opens at the middle of 8th abdominal venter, sometimes near the posterior margin of the latter. A genital plate is present surrounding the ostium in almost all the species. The part cephalad or ventrad of the ostium is the lamella antevaginalis, and the part caudad or dorsad of the ostium is the lamella postvaginalis. The lamella antevaginalis is usually triangular or semicircular; sometimes it is well developed, represented by a broad lamellate plate, as in the species of *Jamides*. The

lamella postvaginalis (Fig. 27) is usually a weakly sclerotized portion of the 8th abdominal venter. In *Prosotas, Ionolyce, Paraduba*, and in some species of *Nacaduba,* it is separated into digitate lamellae surrounding the ostium.

The corpus bursae is ellipsoidal or guttiform in almost all genera. In *Nacaduba,* it is nearly globular; in *Tartesa* gen. nov., it is ellipsoidal and very large (Fig. 28). The signa are usually represented by a pair of minute, indistinct sclerites on the corpus bursae, but they are sometimes developed as large discoidal patches with an inwardly pointed process as in *Nacaduba* (Fig. 27) and in some *Jamides* species.

The ductus bursae is a slender membranous tube, its caudal portion is sometimes sclerotized. In *Castalius fasciatus* (Fig. 38,E-F), the caudal portion of the ductus bursae is well sclerotized. Delimitation between the corpus bursae and ductus bursae is usually unclear in the Polyommatini. The attachment point of the ductus seminalis is sometimes considered to be the delimitation. In the present study, the term "ductus bursae" is used to refer to the more or less slender portion of the bursa copulatrix.

The ductus seminalis is a slender membranous tube. In the Lycaenidae, it is usually attached to the caudal portion of the ductus bursae. However, in the *Nacaduba* section the attachment point differs from the other sections and its shape is more or less modified near the point. In *Nacaduba* and *Erysichton*, it is gradually swollen towards the attachment point to the ductus bursae. Especially in *Erysichton*, it is obviously coiled several times near the point (Fig. 29,A,B). As HIROWATARI[14] discussed, the swollen portion of the ductus seminalis can be considered to have originated from the bursa copulatrix and the term "cervix bursae" may be applied to this portion. It sometimes serves as a receptacle for the spermatophore as does the bursa copulatrix. In *Tartesa* gen. nov., the attachment point is nearly at the middle of the dorsal surface of the bursa copulatrix. This is unique in the Polyommatini and is an important character of the genus (Fig. 28).

The duct of the glandula sebaceae opens into the oviduct just caudad of the vestibulum, which is an enlarged chamber of the cephalic portion of the vagina. The vestibulum is generally well developed but in the *bochus* group of *Jamides*, it is small, though the vagina is developed as a long oval chamber.

The spermatheca is one of the receptacle of sperms, which is attached to the oviduct, and almost useless in the generic classification.

The papillae anales are a pair of setose lobes; each bears the apophysis posterioris at the middle of the anterior margin. They are usually triangular or semicircular, but in some genera, such as *Prosotas* and *Perpheres* gen. nov., they are posteriorly produced. Especially in *Catochrysops*, they are modified into an acutely pointed ovipositor.

5. Key to the sections and genera

The characters used in the following keys are based partly on ELIOT[1] and his keys are modified with addition of the characters of the female genitalia.

5.1. Key to the sections of the Oriental and Australian Polyommatini

1. Forewing vein 11 anastomosed with vein 12, or linked to vein 12 by a short cross-vein 2
— Forewing vein 11 completely free from vein 12 18
2. Upperside of male forewing with a large discal brand ..... *Callictita* section
— Upperside of male forewing without a brand 3

3. Male fore tarsus short, 2/3-3/4 as long as tibia ····· *Pithecops* section
— Male fore tarsus slightly longer than femur ····· 4
4. Male genitalia with a prominent saccus ····· 5
— Saccus absent ····· 6
5. Cilia much elongated at hindwing tornus; bulbus ejaculatorius of male genitalia entering on anterior portion of subzonal sheath ····· *Una* section
— Cilia not elongated at hindwing tornus; bulbus ejaculatorius entering on ventral portion of subzonal sheath ····· *Petrelaea* section
6. Forewing vein 11 linked to 12 by a short cross-vein ····· *Jamides* section
— Forewing veins 11 and 12 anastomosed or touching ····· 7
7. Brachia of male genitalia absent or vestigial ····· *Upolampes* section
— Brachium present, except in *Erysichton* (*Nacaduba* section) ····· 8
8. Bulbus ejaculatorius entering on dorsal portion of subzonal sheath, exept in *Nothodanis* (*Prosotas* section) ····· 9
— Bulbus ejaculatorius of male genitalia entering anterior or dorso-anterior portion of subzonal sheath ····· 11
9. Ductus seminalis of female genitalia attached to ductus bursae near ostium; dorsum of male genitalia large; cornuti usually present ····· *Prosotas* section
— Ductus seminalis attached to ductus bursae more or less distant from ostium; dorsum relatively small; cornuti usually absent ····· 10
10. Hindwing tornal margin weakly angled or produced; forewing veins 11 and 12 anastomosed to costa, or near to costa; Underside wing markings of usual pattern with striae ····· *Theclinesthes* section
— Hindwing tornal margin rounded; forewing veins 11 and 12 touching or anastomosed sometimes near to costa; "*Danis* pattern" present exceptionally in *Nacaduba cyanea, N. schneideri* and *N. nerine* ····· *Nacaduba* section
11. Hindwing underside with a series of subterminal metallic green or blue markings (="*Danis* pattern") ····· *Danis* section
— Hindwing underside without metallic markings ····· 12
12. Socius of male genitalia triangular in lateral view; brachium small, represented by a triangular process; corpus bursae globular and very small ····· *Thaumaina* section
— Socius rounded; brachium relativelay long; corpus bursae long ellipsoidal ····· 13
13. Papilla analis of female genitalia produced into an acutely pointed ovipositor ····· *Catochrysops* section
— Papilla analis not produced, usually triangular or semicircular ····· 14
14. Dorsum of male genitalia not divided into socii, represented by a single uncus ····· *Everes* section
— Dorsum divided into socii ····· 15
15. Socius hooked with pointed tip, basal portion clearly separated from tegumen by lateral fenestrula ····· *Famegana* section
— Socius rounded, produced posteriorly or postero-ventrally, basal portion not clearly separated from tegumen ····· 16
16. Phallus of male genitalia slender; valva with inner or costal process ····· *Castalius* section
— Phallus short and stout; valva with bristly process on lateral or posterior margin ····· 17
17. Suprazonal sheath of phallus with a single ventral process (Chapman's process) ····· *Zizeeria* section

— Suprazonal sheath of phallus lanceolate with a free pointed process which is gently curved ventrally ..... *Zizula* section
18. Androconia, when present, of normal battledore-type 19
— Flask-shaped androconia present ..... *Lampides* section
19. Vinculum of male genitalia with a triangular or semicircular projection directed anteriorly; coecum developed ..... *Lycaenopsis* section
— Vinculum not produced anteriorly; coecum undeveloped 20
20. Tegumen of male genitalia reduced; juxta with short lateral arms ..... *Euchrysops* section
— Tegumen not so reduced; socius modified into slender digitate process ..... *Polyommatus* section

5.2. Key to the genera of the Oriental and Australian Polyommatini

Key to the genera of the *Una* section

1. Brachium of male genitalia absent; suprazonal sheath of phallus cylindrical ..... *Una* de NICÉVILLE
— Brachium present; suprazonal sheath of phallus flattened dorso-ventrally ..... *Orthomiella* de NICÉVILLE

Key to the genera of the *Nacaduba* section

1. Ductus seminalis of female genitalia entirely slender, and attached to median portion of bursa copulatrix ..... *Tartesa* gen. nov.
— Ductus seminalis gradually swollen toward ductus bursae, and attached to relativedly caudal portion of bursa copulatrix 2
2. Brachium of male genitalia absent; signa of female genitalia absent; corpus bursae ellipsoidal; ductus seminalis coiled several times near attachment point ..... *Erysichton* FRUHSTORFER
— Brachium present; signa well developed, represented by a pair of projecting horns; corpus bursae globular; ductus seminalis not coiled ..... *Nacaduba* MOORE

Key to the genera of the *Danis* section

1. 1. Base of veins 10 and 11 connate or stalked; linear lamella not present on the dorsal portion of suprazonal sheath in male phallus; ductus bursae entirely slender 2
— Base of veins 10 and 11 separate; linear lamella present on dorsal portion of suprazonal sheath; ductus bursae caudally swollen just cephalad of the attacment point of ductus seminalis ..... *Danis* FABRICIUS
2. Socius of male genitalia with a ventral club-like process; valva without stiff hairs on inner wall ..... *Psychonotis* TOXOPEUS
— Socius without ventral process; valva with a mass of stiff hairs on inner wall ..... *Perpheres* gen. nov.

Key to the genera of the *Prosotas* section

1. Phallus of male genitalia with a truncate branch-like process on ventral portion near zone ..... *Prosotas* H. H. DRUCE
— Phallus without process on ventral portion near zone 2

2. Vinculum of male genitalia extremely narrow; valva long and spatulate ..... *Nothodanis* gen. nov.
— Vinculum moderate in width or broad; valva short and nearly oval 3
3. Ductus bursae of female genitalia swollen (spindle-shaped) near ostium; vinculum moderate in width 4
— Ductus bursae entirely slender; vinculum relatively broad ... *Catopyrops* TOXOPEUS
4. Phallus of male genitalia large and long; valva with a dorsal blunt lobe and a ventral pointed process ..... *Ionolyce* TOXOPEUS
— Phallus relatively stout and short; valva tapering to a single pointed or spatulate apex ..... *Paraduba* BETHUNE-BAKER

Key to the genera of the *Theclinesthes* section

1. Vinculum and lateral process of tegumen broad; valva with a horn-like process on median portion of inner wall; suprazonal sheath cylindrical, represented by a slender tube, usually longer than subzonal sheath ..... *Theclinesthes* RÖBER
— Vinculum and lateral process of tegumen moderate; valva without any process on inner wall; suprazonal sheath not a slender tube 2
2. Valva with two inwardly pointed apical processes; ventral margin of valva without any process ..... *Sahulana* gen. nov.
— Valva without apical process but with a triangular process on ventral margin ..... *Neolucia* WATERHOUSE & TURNER

Key to the genera of the *Upolampes* section

1. Valvae of male genitalia oval or club-like, not fused ventrally 2
— Valvae well fused ventrally 3
2. Vinculum of male genitalia angled at middle; phallus short, suprazonal sheath about 1/5 as long as phallus ..... *Discolampa* TOXOPEUS
— Vinculum not angled at the middle; phallus relatively long; suprazonal sheath about 1/2 as long as phallus ..... *Upolampes* BETHUNE-BAKER
3. Phallus large and stout, barrel-shaped, with prominent thorn-like cornuti ..... *Pistoria* HEMMING
— Phallus small, cylindrical, with very minute spine-like cornuti ..... *Caleta* FRUHSTORFER

Key to the genera of the *Jamides* section

1. Battledore scales usually present; Hindwing usually tailed; ductus bursae of female genitalia sometimes well sclerotized caudally but not flattened ... *Jamides* HÜBNER
— Batlledore scales absent; hindwing tailless; ductus bursae well sclerotized caudally and dorso-ventrally flattened ..... *Epimastidia* H. H. DRUCE

Key to the genera of the *Castalius* section

1. Dorsum of male genitalia moderate in size; lateral process of tegumen well developed, extending to ventral portion of ring, and well fused with basal portion of valva ..... *Tarucus* MOORE
— Dorsum very small, lateral process of tegumen not well developed ..... *Castalius* HÜBNER

6. Descriptions of the sections and genera

6.1. The *Una* section

The *Una* section is characteristic in having elongated cilia at the hindwing tornus, and a short saccus in the male genitalia.

This section contains two genera, *Una* de NICÉVILLE and *Orthomiella* de NICÉVILLE.

Genus *Una* de NICÉVILLE, 1890

Una de NICÉVILLE, 1890, *Butts. India Burma Ceylon* 3: 51.
Type species: *Zizera usta* DISTANT, 1886, *Ann. Mag. nat. Hist.* (5) 17: 531. By original designation.

Wing: Hindwing semicircular, with elongate cilia at tornus. Forewing veins 11 and 12 anastomosed to costa (Fig. 2, A). Underside pale buff brown, prominent brownish spots on costal and basal areas of hindwing. Androconia absent.

Male genitalia: Tegumen narrow, separated from socii by lateral fenestrulae. Vinculum narrow with a prominent and stout saccus. Brachium absent. Juxta small, shield-like, completely fused with succuli. Phallus long and slender, subzonal sheath about 1/2 as long as entire length of phallus; suprazonal sheath weakly curved ventrally; coecum not developed; cornuti absent. Valva with several prominent dentations which are curved inwardly.

Female genitalia: Apophysis anterioris short. Lamella antevaginalis weakly sclerotized. Lamella postvaginalis well developed, fan-shaped, posterior margin emarginate at the middle. Bursa copulatrix long. Corpus bursae ellipsoidal; signa absent. Ductus bursae long and slender. Ductus seminalis relatively short, attached to caudal portion of ductus bursae.

The genus is monotypic, and related to *Orthomiella* in having a short and stout saccus in the male genitalia. However, it is distinct in having a small, shield-like juxta and a phallus whose cylindrical subzonal sheath is curved ventrally. Complete reduction of the brachium is also characteristic of the genus.

1. *Una usta* (DISTANT, 1886) (Fig. 2,A; Fig. 5,A-E; Fig. 26,A-B)
   Zizera usta DISTANT, 1886, *Ann. Mag. nat. Hist.* (5) 17: 531.
   Una usta philippensis SCHRÖDER & TREADAWAY, 1986 **stat. nov.**
   Distribution: India, Myanmar, Thailand, Indo-China, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines.

Recently, SCHRÖDER and TREADAWAY[15] described *philippensis* as a new species from Mindanao. They emphasized the differences of wing markings of underside and the shape of valva, comparing with *usta* DISTANT. However, as TAKANAMI[16] noted, the wing markings of underside are very variable individually in *usta*. Moreover, the valva of *philippensis* is almost identical with that of *usta* from Malaysia (Fig. 5,A). The valva shown by ELIOT[17] (p.553, Fig. 218), which SCHRÖDER and TREADAWAY referred to for comparison, seems more or less depressed to emphasize the marginal dentations in lateral aspect. Since basally broad and rounded valva are characteristic of this taxon, I treat it as subspecies of *usta*.

Genus *Orthomiella* de NICÉVILLE, 1890

Orthomiella de NICÉVILLE, 1890, *Butts. India Burma Ceylon* 3: 15, 125.
Type species: *Chilades pontis* ELWES, 1887, *Proc. zool. Soc. Lond.* 1887 (3): 446. By original designation.

Wing: Hindwing costal margin nearly straight; tornus rounded, tailless. Forewing veins 11 and 12 anastomosed but separate indistinctly near costa (Fig. 2, B). In nominotyical subspecies, upperside of male wing entirely shining purple with thread-like border in *pontis*, with much broader border in *chinensis*; in *rantaizana*, shining blue scales present only on hindwing costal area. Underside brown with catenulated spots; the spots nearly absent in *rantaizana*.

Male genitalia: Tegumen narrow. Vinculum narrow, with a short and stout saccus. Brachium short, stout basally, separated from lateral corner of tegumen by lateral fenestrula which clearly divides tegumen and socius. Juxta Y-shaped. Phallus large, subzonal sheath about 1/2 as long as entire length of phallus; subzonal sheath constricted near zone, curved dorsally in proximal portion; bulbus ejaculatorius on its proximal end; suprazonal sheath extending to apex along right lateral margin. Valva large and broad, distal margin serrate, dorso-distal tooth represented by a prominent hook in *sinensis* and *rantaizana*.

Female genitalia: Apophysis anterioris short and blunt-ended. Intersternal pouch well sclerotized, represented by a stiff genital plate. Bursa copulatrix long. Corpus bursae guttiform; signa absent. Ductus bursae slender. Ductus seminalis relatively short, attached at an acute angle to caudal portion of ductus bursae.

Distribution: India to South China, Taiwan.

FRUHSTORFER[5),18)] regarded *Una* and *Orthomiella* as congeneric. His treatment was highly praiseworthy in discerning the close relationship of these two taxa, but the latter is characteristic in having a unique phallus whose subzonal sheath is dorso-ventrally flattened and sclerotized asymmetrically along the right lateral margin.

The genus contains three species. *O. rantaizana* closely resembles *sinensis* in the male genitalia, and may possibly be a subspecies of the latter. But I treat them as distinct species provisionally here accepting the system of FORSTER[19)].

1. *Orthomiella pontis* (ELWES, 1887) (Fig. 5, F-K; Fig. 26, C-D)
   Chilades pontis ELWES, 1887. *Proc. zool. Soc. Lond.* 1887 (3): 446, Sikkim. (Plate II, 1a-b)
   Distribution: India, Myanmar, Thailand, South China.

In *O. pontis fukienensis* (Fig. 5, K), the apical margin of valva is more pointed than in the nominotypical subspecies.

2. *Orthomiella sinensis* (ELWES, 1887) (Fig. 6, A-D)
   Chilades sinensis ELWES, 1887, *Proc. zool. Soc. Lond.* 1887 (3): 446.
   Distribution: South China, Myanmar.
3. *Orthomiella rantaizana* WILEMAN, 1910
   Orthomiella rantaizana WILEMAN, 1910, *Entomologist* 43: 93, Formosa.
   Distribution: South China, Taiwan.

6.2. The *Petrelaea* section

The *Petrelaea* section is distinct in having a unique phallus which is very large with the bulbus ejaculatorius entering on the ventral portion of the subzonal sheath.

ELIOT[1] included two genera, *Petrelaea* TOXOPEUS and *Pseudonacaduba* STEMPFFER in this section. *Petrelaea* occurs in the Oriental Region, while the latter occurs only in the Ethiopian Region[20].

Genus *Petrelaea* TOXOPEUS, 1929

Petrelaea TOXOPEUS, 1929, *Tijdschr. Ent.* 72: 242.
Type species: *Petrelaea dana varia* TOXOPEUS, 1929, *Ibid.* 72: 242. By monotypy.

Wing: Hindwing rounded, tailless. Forewing veins 11 and 12 anastomosed and separate near costa as in *Orthomiella*. Underside grayish brown, markings obscure. Long paddle-shaped androconia present.

Male genitalia: Dorsum very small, socius lanceolate in lateral view. Vinculum narrow with short succus. Juxta Y-shaped. Phallus very long, about twice as long as the length of valva; subzonal sheath half as long as entire length of phallus, with bulbus ejaculatorius on its ventral portion; suprazonal sheath tapering and terminating in a pointed tip, bearing a lamellate process on its dorsal portion which is nearly parallel-sided, posterior margin bifurcate. Valva large and narrow, with one or two distal processes in *dana*, relatively short, with two or three distal hooked processes in *tombugensis*.

Female genitalia: Apophysis anterioris very short. Lamella antevaginalis trapezoidal, well sclerotized, posterior margin emarginate at the middle. Lamella postvaginalis broad, weakly sclerotized, expanding on ventral surface of 8th abdominal segment. Bursa copulatrix long. Corpus bursae guttiform; signa minute and band-like, situated on median portion of corpus bursae. Ductus seminalis slender, attached to caudal portion of ductus bursae.

Distribution: India, Sundaland to Australia, Micronesia.

Externally the genus resembles *Prosotas*, but the possession of the saccus in the male genitalia shows affinity with the genera of the *Una* section. The genus is distinct in having the long paddle-shaped androconia and a large phallus with a lamellate process, which is nearly parallel-sided and bifurcated posteriorly on the dorsal portion of suprazonal sheath.

The genus was previously known to contain one species *dana* de NICÉVILLE, until FUJIOKA and CHIBA[21] recognized that there exsist two species in the Oriental Region.

1. *Petrelaea dana* (de NICÉVILLE, 1884)
   Nacaduba dana de NICÉVILLE, 1884, *J. asiat. Soc. Bengal* II 52: 73, pl. 1, fig. 5, Bhutan.
   Distribution: India, Bhutan, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Moluccas.
2. *Petrelaea tombugensis* (RÖBER, 1886) (Fig. 2, C)
   Plebeius tombugensis RÖBER, 1886, *Correspbl. ent. Ver. Iris* 1: 63, pl. 5, fig. 18, Ost-Celebes (Tomboegoe).
   Distribution: Sulawesi, Moluccas, New Guinea, North Australia, Micronesia, Ogasawara Is.

Based on differences of the shape of valva, FUJIOKA and CHIBA[21] treated

tombugenensis as a distinct species, distributed eastward of Sulawesi.

6.3. The *Nacaduba* section

ELIOT[1] placed eight genera, i.e., *Nacaduba* MOORE, *Prosotas* H. H. DRUCE, *Ionolyce* TOXOPEUS, *Catopyrops* TOXOPEUS, *Erysichton* FRUHSTORFER, *Paraduba* BETHUNE-BAKER, *Neolucia* WATERHOUSE & TURNER and *Hypojamides* RILEY in the *Nacaduba* section. His association of the above genera was partly based on the male bulbus ejaculatorius which is attached on the dorsal surface of subzonal sheath. However, such a character state is also present in the *Theclinesthes* section.

In the present study, the *Nacaduba* section (sensu ELIOT) is divided into two sections, i.e., the *Nacaduba* and *Prosotas* sections, the latter being newly proposed, on the basis of the male and female genital structure. Recently, *Hypojamides* was synonymized with *Nacaduba* by HIROWATARI[22].

The *Nacaduba* section is distinguished by the following characters: (i) the dorsum of the male genitalia is relatively small, (ii) the attachment point of the ductus seminalis is more or less distant from the ostium, or nearly at the median portion of bursa copulatrix.

This section contains three genera, *Nacaduba* MOORE, *Tartesa* gen. nov. and *Erysichton* FRUHSTORFER.

Genus *Nacaduba* MOORE, [1881]

Nacaduba MOORE, [1881], *Lep. Ceylon* 1 (3: 88).
Type species: *Lampides prominens* MOORE, 1877, *Ann. Mag. nat. Hist.* (4) 20: 341. By original designation.
The nominal species *prominens* MOORE is currently treated as a subspecies of *Lycaena kurava* MOORE, 1857.

**Pepliphorus* HÜBNER, [1819], *Ver. bekannt. Schmett.* (5): 71.
Type species: *Papilio cyanea* CRAMER, [1775], *Util. Kapellen,* 1 (7): 120. Designated by SCUDDER (1875, *Proc. amer. Acad. Arts Sci. Boston* 19: 245)

Hypojamides RILEY, 1929, *Trans. ent. Soc. Lond.* 76: 466.
Type species: *Lycaena*(?) *catochloris* BOISDUVAL, [1832], In d'URVILLE, *Voy. Astrolabe,* 1 (Lép): 78. By original designation.

Wing: Hindwing usually tailed. Underside of wings usually with normal lycaenine pattern with many ochreous and whitish striae, but sometimes with metallic green or blue subterminal markings as in *cyanea, schneideri* and *nerine*; metallic green scales also present in *tahitiensis* and *catochloris*. In the Oriental species, the genus is devided into two groups[17),24)], the *pavana* group and the *berenice* group, the species of the latter group having a forewing subbasal stria. Forewing veins 11 and 12 briefly anastomosed. Battledore androconia usually present.

Male genitalia: Dorsum small. Tegumen narrow, usually well fused with socii. Socius narrow. Juxta Y-shaped, lateral arms slender. Phallus cylindrical, bulbus ejaculatorius on dorso-median portion of subzonal sheath; condition of ventral portion of suprazonal sheath varied, represented by a single Chapman's process, blunt-ended or a pair of prominent horn-like processes near zone. Valva variable in shape; distal or ventro-distal margin usually bears minute serrations or dentations.

---

* I have proposed[23)] to the International Commission on Zoological Nomenclature that the widely used generic name *Nacaduba* MOORE, [1881], should be conserved and given precedence over the name *Pepliphorus* HÜBNER, [1819] whenever the two are considered to be synomymous.

Female genitalia: Apophysis anterioris usually short and slender, about 1/6 - 1/7 as long as 8th tergum. Genital plate developed in some species, usually a pair of digitate lamellae surrouding ostium. Bursa copulatrix very short. Corpus bursae globular or subglobular, sometimes modified to a mushroom-like in shape; signa well developed, usually represented by a pair of inwardly projecting horns. Ductus bursae relatively short. Ductus seminalis long and slender, gradually swollen toward the attachment point to ductus bursae; attachment point sometimes distant from ostium, nearly at the middle of dorsal surface of ductus bursae.

Distribution: India, Sundaland, South China to New Guinea, Solomons, Australia, extending to Fiji, Samoa and Tahiti.

As HIROWATARI[14] pointed out, the genus is distinct and forms a monophyletic group judging from the following characters in the female genitalia: (i) the corpus bursae is globular, (ii) the signa are usually well developed, represented by a pair of inwardly projecting horns, and (iii) the point of attachment of the ductus seminalis is somewhat distant from the ostium, and the ductus seminalis is gradually swollen toward the attachment point.

TITE[25] hesitated to place *biocellata* F. & R. FELDER in *Nacaduba*, but the female genitalia of the species show the characteristic of this genus. Its external diversity and the unique male genitalia may indicate that this is the most isolated species in the genus.

The specific classification listed here basically follows the one proposed by TITE[25], whilst additionally including three "*Danis* pattern" species, *cyanea, schneideri* and *nerine* which are mimetic of *Danis*. Furthermore, two species, *astarte* BUTLER and *ugiensis* H. H. DRUCE are removed to erect a new genus based on the unique characters of the male and female genitalia.

1. *Nacaduba sericina* (C. & R. FELDER, 1865)
   Lycaena sericina C. & R. FELDER, 1865, *Reise Novara* (2): 277, pl. 34, figs. 30, 31, Luzon.
   Distribution: Philippines.
2. *Nacaduba sanaya* FRUHSTORFER, 1916
   Nacaduba pavana sanaya FRUHSTORFER, 1916, *Zool. Meded.* 2: 109, Nias.
   Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas.
3. *Nacaduba angelae* CASSIDY, 1990
   Nacaduba angelae CASSIDY, 1990, *Tyô to Ga* 41 (4): 231, figs. 1-4, 11, 17, N. Sulawesi
   Distribution: N. Sulawesi.

   This species is most closely related to *sanaya*[26].
4. *Nacaduba subperusia* (SNELLEN, 1896) (Fig. 27, A)
   Lycaena subperusia SNELLEN, 1896, *Tijdschr. Ent.* 39: 93, Java.
   Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas, New Guinea.
5. *Nacaduba pavana* (HORSFIELD),[1828]
   Lycaena pavana HORSFIELD, [1828], *Descr. Cat. lepid. Ins.* (1): 77, Java.
   Distribution: India, Myanmar, Thailand, Penisular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines.
6. *Nacaduba russeri* TITE, 1963

Nacaduba russeri TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 72, text-figs. 1-3., Malaya.

Distribution: West Malaysia, North Borneo.

This species has been known to occur in West Malaysia and Singapore. Recently, TAKANAMI[27] recorded this species from North Borneo (Sabah).

7. *Nacaduba hermus* (C. FELDER, 1860) (Fig. 6, E-F)

Lycaena hermus C. FELDER, 1860, *Sber. Akad. Wiss. Wien,* 40: 457, Amboina.

Distribution: India, Sri Lanka, Myanmar, Thailand, Peninsular Malaya, Sumatra, Borneo, Philippines, Moluccas.

This species has been recorded from India to Moluccas. According to M. PARSONS (pers. comm.), this species also occurs in Papua New Guinea.

8. *Nacaduba ollyetti* CORBET, 1947

Nacaduba ollyetti CORBET, 1947, *Proc. R. ent. Soc. Lond.* (B) 16: 1, Ceylon.

Distribution: Sri Lanka.

9. *Nacaduba nerine* (GROSE-SMITH & KIRBY), 1899 **comb. nov.** (Plate I, 3a-d; Fig. 6, G-K).

Thysonotis nerine GROSE-SMITH & KIRBY, 1899, *Rhop. exot.* 3: 54, pl.21, figs. 13, 14, Ron Island.

Psychonotis nerine: D'ABRERA, 1990, *Butterflies of Australian Region,* (3rd revised edition): 326.

Distribution: New Guinea.

The specimen figured here (Plate I, 3c-d) is probably the first known female of this species (deposited in MZB, Bogor). Judging from the shape of male phallus this species appears to be related to *hermus.*

10. *Nacaduba asaga* FRUHSTORFER, 1916

Nacaduba pavana asaga FRUHSTORFER, 1916, *Zool. Meded.* 2: 109, Borneo.

Distribution: Borneo.

11. *Nacaduba pendleburyi* CORBET, 1938

Nacaduba asaga pendleburyi CORBET, 1938, *Trans. R. ent. Soc. Lond.* 87: 129, pl. 1, figs. 26, 29, Pahang, Malaya.

Distribution: Peninsular Malaya.

12. *Nacaduba solta* ELIOT, 1955

Nacaduba asaga solta ELIOT, 1955, *Proc. R. ent. Soc. Lond.* (B) 24: 157, Sumatra.

Distribution: West Malaysia, Sumatra, Borneo.

13. *Nacaduba angusta* (H. DRUCE, 1873)

Cupido angusta H. DRUCE, 1873, *Proc. zool. Soc. Lond.* 1873: 349, pl. 32, fig. 9, Borneo.

Distribution: India, Myanmar, Thailand, Indo-China, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines.

14. *Nacaduba pactolus* (C. FELDER, 1860)

Lycaena pactolus C. FELDER, 1860, *Sber. Akad. Wiss. Wien,* 40: 456, Amboina.

Distribution: India, Sri Lanka, Myanmar, Thailand, South China, Taiwan, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Moluccas, New Guinea.

15. *Nacaduba berenice* (HERRICH-SCHAEFFER, 1869)

Lycaena berenice HERRICH-SCHAEFFER, 1869, *Stett. ent. Ztg.* 30: 74, Rockhampton.

Distribution: India, Sri Lanka, Myanmar, Thailand, South China, Taiwan,

Peninsular Malaya, Sumatra, jawa, Borneo, Sulawesi, Philippines, Moluccas, New Guinea, Solomons, Australia.

HSU[28] recorded this species from Taiwan under the name *bereniee leei.*

16. *Nacaduba normani* ELIOT, 1969

Nacaduba normani ELIOT, 1969, *Entomologist* 102: 273, text-fig. 5, Kalabakan, Borneo.

Distribution: North-east Borneo, North Sulawesi.

PAN and MORISHITA[3] recorded the following host plants of *normani* in Sabah, North Borneo: *Paranephelium nitididum* (Sapindaceae) and cultivated Cocoa, *Theobroma cacao* (Sterculiaeae).

17. *Nacaduba sinhala* ORMISTON, 1924

Nacaduba berenice ceylonica FRUHSTORFER, 1916, (nom. preocc. by *N. pactolus ceylonica*)

Nacaduba sinhala ORMISTON, 1924, *Butt. Ceylon:* 53, addenda, Ceylon.

Distribution: Sri Lanka.

This species is closely related to *berenice,* judging from the shape of valva.

18. *Nacaduba cajetani* TITE, 1963

Nacaduba felderi ROTHSCHILD, 1915, *Novit. zool.* 22: 139. Ceram. (homonym of *Lycaena felderi* MURRAY, 1874)

Nacaduba cajetani TITE, 1963, nom. nov. for *Nacaduba felderi, Bull. Mus. nat. Hist.* (Ent.) 13: 79.

Distribution: East Moluccas (Obi, Bachan, Ceram) to Irian Jaya.

19. *Nacaduba novaehebridensis* H. H. DRUCE, 1892

Nacaduba novaehebridensis H. H. DRUCE, 1892, *Proc. zool. Soc. Lond.* 1892: 438, pl. 27, figs. 7,8, Pentecost I.

Distribution: East Moluccas (Ceram, Ambon, Aru) to North New Guinea, Solomons, Vanuatu (New Hebrides).

20. *Nacaduba sumbawa* TITE, 1963

Nacaduba sumbawa TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 80, text-fig. 27, Sumbawa.

Distribution: Sumbawa.

21. *Nacaduba kirtoni* ELIOT, 1984

Nacaduba kirtoni ELIOT, 1984, *Malay. Nat. J.* 38: 100, fig.1, Taman Negara, West Malaysia.

Distribution: West Malaysia, Nias.

Recently TAKANAMI[27] recorded this species from Nias and Babi, Indonesia.

22. *Nacaduba kurava* (MOORE), [1857]

Lycaena kurava MOORE, 1857, *Cat. lep. Ins. E. India Co.* (1): 22, Java.

Distribution: India, Sri Lanka to South China, Taiwan, Ryukyus, Sundaland to New Guinea, Bismarks, Australia.

23. *Nacaduba cyanea* (CRAMER), [1775] **comb. nov.**

Papilio cyanea CRAMER, [1775], *Pap. exot.* 1: 76, Amboina.

Danis cyanea: COMMON & WATERHOUSE, 1981, *Butterflies of* Australia (revised edition): 576.

Pepliphorus cyanea: HIROWATARI, 1987, *Tyô to Ga* 38 (1): 31

Psychonotis cyanea: D'ABRERA, 1990, *Butterflies of the Australian Region,* (3rd

revised edition): 326.
Distribution: Moluccas, New Guinea, Bismarks, Solomons, Australia.

After careful examination, I have come to the conclusion that there is no reason to place *cyanea* in a separate genus. In my previous paper [29], I treated *Nacaduba* MOORE, [1881] and *Pepliphorus* HÜBNER, [1819] as separate genera, placing *cyanea* in the latter. Although *Pepliphorus* is senior to *Nacaduba,* it has seldom been used for *cyanea,* but has been misused for *euchylas* HÜBNER [1819] by many authors[1),30),31),32)]. For the purpose of stability of the name (ICZN Art. 23b, 79c), I place *cyanea* in *Nacaduba* in this paper, and propose[23)] the conservation of the widely used generic name *Nacaduba.*

The "*Danis* pattern" seems to occur individually in *cyanea, schneideri* and *nerine.*

24. *Nacaduba schneideri* (RIBBE, 1899) **comb. nov.** (Fig. 7, A-E; Fig. 27, B-D)
Pseudonotis schneideri RIBBE, 1899, *Deut. ent. Zeit.* [*Iris*] 12: 240.
Psuchonotis schneideri: D'ABRERA, 1990, *Butterflies of the Australian Region,* (3rd revised edition): 327.
Distribution: Bismarcks.

Judging from the male and female genital structure, there is no doubt that this species belongs to *Nacaduba.*

25. *Nacaduba mallicollo* H. H. DRUCE, 1892
Nacaduba mallicollo H. H. DRUCE, 1892, *Proc. zool. Soc. Lond.* 1892: 439, New Hebrides.
Distribution: Solomons, Vanuatu (New Hebrides).

26. *Nacaduba mioswara* TITE, 1963
Nacaduba mioswara TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 83, pl. I. fig. 3, text-figs. 11, 14, Mioswar, North New Guinea.
Distribution: North New Guinea, Bismarcks.

27. *Nacaduba tahitiensis* HARA & HIROWATARI, 1989 (Plate I, 2)
Nacaduba tahitiensis HARA & HIROWATARI, 1989, *Tyô to Ga* 40: 133, figs. 1-3, plate 1, Tahiti[33)].
Distribution: Tahiti.

D'ABRERA[34)] figured two females of this species under the name *catochloris,* noting that "The two verso specimens show such disparity in wing shape, colouration and markings as to make me suspect the existence of two separate species".

28. *Nacaduba catochloris* (BOISDUVAL, 1832)
Lycaena catochloris BOISDUVAL, 1832, In d'URVILLE, *Voy. Astrolabe* 1 (Lép.): 78,
Hypojamides catochloris: RILEY, 1929, *Trans. ent. Soc. Lond.* 76: 466.
Distribution: Tahiti
Only a few female specimens are known.

29. *Nacaduba lucana* TITE, 1963
Nacaduba lucana TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 83, pl. I, figs 6-8, text-figs. 20, 31, Witu, Bismarcks.
Distribution: Bismarcks.

30. *Nacaduba beroe* (C. & R. FELDER, 1865)
Lycaena beroe C. & R. FELDER, 1865, *Reise Novara* 2: 275, Luzon.
Distribution: India, Myanmar, Thailand, Taiwan, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Sulawesi.

31. *Nacaduba major* ROTHSCHILD, 1915

Nacaduba berenice major ROTHSCHILD, 1915, *Novit. zool.* 22: 139, North Ceram.
Distribution: East Moluccas to New Guinea, Bismarcks.

32. *Nacaduba ruficirca* TITE, 1963
Nacaduba ruficirca TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 85, pl. 1, figs. 19, 20, text-figs. 17, 33, Hydographer Mts., New Guinea.
Distribution: New Guinea.

33. *Nacaduba glauconia* (SNELLEN, 1892)
Nacaduba glauca SNELLEN, 1892, *Tijdschr. Ent.* 35: 142, Java.
Lycaena glauconia SNELLEN, 1901, nom. nov. for *Lycaena glauca, Tijdschr. Ent.* 43: 264.
Distribution: South Sumatra, Jawa.

TAKANAMI[27] recorded this species from South Sumatra.

34. *Nacaduba calauria* (C. & R. FELDER, 1860)
Lycaena calauria C. & R. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 457, Amboina.
Distribution: India, Sri Lanka, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Moluccas, New Guinea.

35. *Nacaduba tristis* ROTHSCHILD, 1915
Nacaduba tristis ROTHSCHILD, 1915, *Novit. zool.* 22: 29, Utakwa River.
Distribution: East Moluccas (Obi, Ceram) to New Guinea.

36. *Nacaduba dyopa* (HERRICH-SCHAEFFER, 1869)
Lycaena dyopa HERRICH-SCHAEFFER, 1869, *Stett. ent. Ztg.* 30: 75, Overlau.
Distribution: Vanuatu (New Hebrides), Fiji, Tonga, Samoa.

37. *Nacaduba samoensis* H. H. DRUCE, 1892
Nacaduba samoensis H. H. DRUCE, 1892, *Proc. zool. Soc. Lond.* 1892: 437, pl. 27, figs. 5, 6, Samoa.
Distribution: Fiji, Samoa.

38. *Nacaduba deplorans* (BUTLER), [1876]
Lampides deplorans BUTLER, [1876], *Proc. zool. Soc. Lond.* 1875: 614, Loyalty Island.
Distribution: Loyalty Island.

39. *Nacaduba biocellata* (C. & R. FELDER, 1865) (Fig. 27, E-F)
Lycaena biocellata C. & R. FELDER, 1865, *Reise Novara* 2: 280, pl. 35, fig. 14, Adelaide.
Distribution: Bali, Lesser Sundas to Australia.

40. *Nacaduba deliana* (SNELLEN,1893)
Lycaena deliana SNELLEN, 1892, *Tijdschr. Ent.* 35: 139, Java.
Distribution: Jawa.

Genus *Tartesa* gen. nov.

Type species: *Lampides astarte* BUTLER, 1882.
Gender: Feminine.

Wing: Forewing veins 11 and 12 briefly anastomosed as in *Nacaduba* (Fig. 2, E). Forewing underside without basal striae as in the *pavana* group of *Nacaduba*; white area present between post-discal and submarginal striae in *astarte* (but variable in each geographic race), uniformly gray with greenish-blue scales basally in *ugiensis*.

Male genitalia: Dorsum small. Tegumen narrow, well fused with socii. Juxta Y-

shaped, proximal portions of lateral arms very slender, distal portions broad and flattened, represented by weakly sclerotized lamellae. Phallus moderate in size, subzonal sheath about 3/5 as long as entire length of phallus, bulbus ejaculatorius very large, attached to entire dorsal surface of subzonal sheath; suprazonal sheath posteriorly tapered, blunt-ended, dorsal half entirely membranous. Valva large, lanceolate-oblong, proximal half broad, gently tapering distally, distal margin rounded.

Female genitalia: Apophysis anterioris short and slender as in *Nacaduba*. Intersternal pouch deep. Genital plate not developed. Bursa copulatrix large. Corpus bursae ellipsoidal, distal half cylindrical, proximal half swollen dorsally, tapered toward ostium; discrimination from ductus bursae unclear. Ductus seminalis short and slender; point of attachment nearly at the middle of dorsal surface of bursa copulatrix.

Distribution: Bismarcks and Solomons.

The genus comprises two species, *astarte* BUTLER and *ugiensis* H. H. DRUCE. These taxa have long been placed in *Nacaduba* since H. H. DRUCE[35] placed them in the latter. TITE[25] also placed them in *Nacaduba* because of their external resemblance. In the present study, a new genus is erected for *astarte* and *ugiensis* based mainly on the female genitalia which are characterized as follows: (i) The corpus bursae is very large, cylindrical in the distal half, swollen dorsally in the proximal half, whereas it is small and simply globular in *Nacaduba,* (ii) the ductus seminalis is uniformly slender and the point of attachment is nearly at the middle of the dorsal surface of the bursa copulatrix, and (iii) the signa are absent, whereas they are well developed in *Nacaduba*. In the male genitalia, the dorsal half of phallus (both subzonal and suprazonal sheath) is entirely membranous. This is also an important character of the genus.

TITE[25] correctly recognized five subspecies of *astarte,* i.e., *astarte, albescens, nissani, plumbata* and *narovona.*

1. *Tartesa astarte* (BUTLER, 1882) **comb. nov.** (Plate I, 1a-c; Fig. 2, E; Fig. 8, A-F; Fig. 28, A-B)
   Lampides astarte BUTLER, 1882, *Ann. Mag. nat. Hist.* (5) 10: 150, New Britain.
   Nacaduba astarte: H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 359, pl. 32, fig. 10, Solomons.
   Nacaduba astarte: TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 76.
   Distribution: Bismarcks, Solomons.
2. *Tartesa ugiensis* (H. H. DRUCE, 1891) **comb. nov.** (Fig. 28, C)
   Nacaduba ugiensis H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 360, pl. 31, fig. 5, Ugi Island.
   Nacaduba ugiensis: TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 78.
   Distribution: Ugi Island, Solomons.

This species is known only by the female. TITE[25] mentioned that *ugiensis* may possibly prove to be the representative of *astarte* on Ugi and San Christoval. However, I treat them as separate species based on differences in the shape of the female bursa copulatrix.

Genus *Erysichton* FRUHSTORFER, 1916

Erysichton Fruhstorfer, 1916, *Nacaduba* Artengruppe *Erysichton* FRUHSTORFER, 1916. *Zool. Meded.* 2: 137. Type species: *Lycaena lineata* MURRAY, 1874, *Trans. ent. Soc. Lond.* 22: 524. By selection by

TITE, (1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 102).

Wing: Forewing veins 11 and 12 anastomosed as in *Nacaduba* (Fig. 2, F). Upperside bluish-gray with whitish hairs in *lineata*. Underside uniformaly brown with fainter markings in *lineata*, very reddish with whitish submarginal area in *palmyra*, and with a broad white discal or postdiscal band in *albiplaga*.

Male genitalia: Dorsum relatively large. Vinculum narrow. Brachium completely obsolete. Juxta Y-, nearly T-shaped, lateral arms short. Phallus cylindrical, subzonal sheath 7/10 - 5/6 as long as entire length of phallus, curved dorsally at the median portion; bulbus ejaculatorius strongly coiled, attached to the dorso-lateral (left) portion of subzonal sheath; coecum developed; suprazonal sheath tapering; vesica with a moderate cornutus composed of minute spines at dorsal limited area. Valva large and lanceolate in *lineata*, small and oval in *palmyra* and *albiplaga*.

Female genitalia: Apophysis anterioris obscure or triangular in lateral view. Intersternal pouch shallow. Bursa copulatrix long. Corpus bursae ellipsoidal or guttiform as in *Jamides*; signa absent. Ductus bursae long and slender. Ductus seminalis also long and slender, gradually swollen with several coils toward the attachment point to ductus seminalis. Vagina relatively short.

Distribution: Moluccas to New Guinea, Solomons, Australia.

FRUHSTORFER[36] used the species-group name *Erysichton* to contain those species of *Nacaduba* (sensu FRUHSTORFER) that do not possess brachia in the male genitalia. TITE[25] raised *Erysichton* to the generic rank, but did not provide any additional diagnosis of the genus. In the present study, it was found that the genus is clearly defined by the female genitalia, especially by the characters of the internal reproductive systems as follows: the ductus seminalis is gradually swollen toward the attachment point to the ductus bursae as in *Nacaduba*, but it is coiled several times. This is a unique character found only in *Erysichton*. The genus contains the following three species.

1. *Erysichton lineata* (MURRAY, 1874) (Fig. 2, F; Fig. 8, G-K; Fig. 29, A)
   Lycaena lineata MURRAY, 1874, *Trans. ent. Soc. Lond.* 22: 524, pl. 10, fig. 9, Queensland.
   Distribution: Moluccas, New Guinea, Bismarcks, Solomons, North-east Australia.
2. *Erysichton palmyra* (C. FELDER, 1860) (Fig. 29, B)
   Lycaena palmyra C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 458, Amboina.
   Distribution: Moluccas, New Guinea, Bismarcks, Solomons, Australia.
3. *Erysichton albiplaga* TITE, 1963
   Erysichton albiplaga TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 104, New Hanover, Bismarcks.
   Distribution: Bismarcks.

6.4. The *Danis* section

This section consists of three genera, *Danis* FABRICIUS, *Perpheres* gen. nov. and *Psychonotis* TOXOPEUS. ELIOT[1] placed *Psychonotis* TOXOPEUS and *Epimastidia* H. H. DRUCE in the *Danis* section. However, judging from the wing venation and genital structure, the latter belongs to *Jamides* section.

The *Danis* section is characteristic in having a relatively short and stout phallus with the ventral part of the suprazonal sheath ending in a pointed process.

Genus *Danis* FABRICIUS, 1807

Danis FABRICIUS, 1807, *Mag. f. Insektenk. (Illiger)* 6: 286.
Type species: *Papilio danis* CRAMER, [1775], *Uitl. Kapellen* 1: 111, pl. 70, figs. E, F. By selection by HEMMING (1964, *Annot. lep.* (3): 105).

Thysonotis HÜBNER, [1819], *Verz. bekannt. Schmett.* (2): 20.
Type species: *Papilio danis* CRAMER, [1775]. By selection by SCUDDER (1875, *Proc. amer. Acad. Arts. Sci., Boston* 10: 284).
Thysonotis HÜBNER, [1819] is a junior objective synomnym of *Danis* FABRICIUS, 1807.

Hadothera BILLBERG, 1820, *Enum. Ins. Mus. Billb.*: 80.
Type species: *Papilio danis* CRAMER, [1775]. Through Section (i) of Article 67.
Hadothera is a junior objective synonym of *Danis* FABRICIUS, 1775.

Damis BOISDUVAL, [1832], In d'URVILLE, *Voy. Astrolabe,* 1 (Lép.): 132.
Type species: *Papilio danis* CRAMER.
Damis BOISDUVAL, 1832 is a junior objective synonym of *Danis* FABRICIUS, 1807.

Wing: Hindwing rounded, tailless. Forewing veins 11 and 12 briefly anastomosed (Fig. 3, A). Hindwing with a series of subterminal metallic green or blue markings.

Male genitalia: Tegumen broad, clearly separated from socii by lateral membranous areas or fenestrulae. Brachium long and slender. Socius very narrow. Juxta Y-shaped. Phallus large, cylindrical, subzonal sheath 2/3—3/4 as long as entire length of phallus, bulbus ejaculatorius on the dorso-proximal portion of subzonal sheath; ventro-distal portion of subzonal sheath blunt-ended, dorsal portion with a linear lamella. Valva moderate in size, basal half relatively broad, with a short hook at dorso-distal margin; distal margin usually bearing minute serration, but in *concolor* distal finger-like processes present.

Female genitalia: Apophysis anterioris very short. Genital plate not well developed. Bursa copulatrix long and large. Corpus bursae very large, ellipsoidal; signa usually represented by a pair of minute patches with inwardly-projecting spines, situated on caudal portion of corpus bursae. Ductus bursae relatively short and stout, caudal portion more or less swollen near the attachment point of ductus seminalis. Ductus seminalis long and slender. Ostium opens at median portion of 8th abdominal segment. Papillae anales nearly triangular, posterior margin rounded.

Distribution: Moluccas to New Guinea.

The genus is distinguished from the other genera by the following characters: (i) the linear lamella present on the dorsal portion of the subzonal sheath in the male genitalia, (ii) the ductus bursae caudally swollen just cephalad of the attachment point of ductus seminalis, and (iii) the discoidal signa present on the caudal portion of corpus bursae in the female genitalia.

The genus is one of the complicated groups which require a further careful analysis. D'ABRERA[34] recognized 13 species in the genus, figuring all of them. However, in the present study, I concluded that 'true *Danis*' contains 10 species as the results of following treatments: (i) two species, *perpheres* H. H. DRUCE & BETHUNE-BAKER and *schaeffera* ESCHSCHOLTS, are removed to newly errected genera, (ii) *hengis* GROSE-SMITH is treated as a distinct species and (iii) *horsa* GROSE-SMITH and *helga* GROSE-SMITH are reduced to subspecies of *drucei* GROSE-SMITH & KIRBY and *melimnos* H. H. DRUSE & BETHUNE-BAKER, respectively.

The genus has contained many deviating taxa with similar wing marking, called

"*Danis* pattern". By the separation of *perpheres* and *schaeffera*, the genus may be considered monophyletic.

1. *Danis danis* (CRAMER), [1775] (Fig. 3A; Fig. 9, A-E)
   Papilio danis CRAMER, [1775], *Util. Kapellen* 1: 111, pl. 70, figs. E, F, Ambon.
   Distribution: Moluccus, New Guinea, Bismarcks, Australia.
2. *Danis phroso* (GROSE-SMITH, 1897) (Fig. 30, A)
   Thysonotis phroso GROSE-SMITH, 1877, *Novit. zool.* 4: 313.
   Distribution: Irian Jaya.
3. *Danis glaucopis* (GROSE-SMITH, 1894)
   Thysonotis glaucopis GROSE-SMITH, 1894, *Novit. zool.* 1: 575.
   Distribution: Irian Jaya.
4. *Danis wallacei* (C. & R. FELDER), [1865]
   Lycaena wallacei, C. & R. FELDER, [1865], *Reise Novara* 2: 265, pl. 33, figs. 8-10, Waigiou.
   Distribution: Waigeo.
5. *Danis melimnos* (H. H. DRUCE & BETHUNE-BAKER, 1893)
   Thysonotis melimnos H. H. DRUCE & BETHUNE-BKUER, 1893, *Proc. zool. Soc. Lond.* 1893: 544, pl. 46, fig. 2, Jobi, Dutch New Gunea.
   Danis melimnos helga (GROSE-SMITH, 1898) **stat. nov.**
   Distribution: New Guinea.

In the present study, *helga* is treated as the subspecies of *melimnos,* judging from the almost identical male genitalia.

6. *Danis regalis* (GROSE-SMITH & KIRBY, 1895) (Fig. 9,F-H; Fig. 30,B)
   Thysonotis regalis GROSE-SMITH & KIRBY, 1895, *Rhop. exot.* 3: 28, pl. 4, figs. 4, 5. New Guinea.
   Distribution: New Guinea.
7. *Danis hengis* (GROSE-SMITH, 1897) (Fig. 29,C) **stat. rev.**
   Thysonotis hengis GROSE- SMITH, 1897, *Ann. Mag. nat. Hist.* (6) 20: 517, Kapaur, South-west Dutch New Guinea.
   Danis drucei hengis: D'ABRERA, 1990, *Butterflies of Australian Resion,* (3rd revised edition): 324.
   Distribution: New Guinea.

Though D'ABRERA[34] regarded *hengis* as a subspecies of *drucei,* the shape of the valva shows much closer relationship to *regalis,* rather than to *drucei.*

8. *Danis metrophanes* (FRUHSTORFER, 1915)
   Thysonotis wallacei metrophanes FRUHSTORFER, 1915, *Soc. ent.* 30: 49, Biak.
   Distribution: New Guinea.
9. *Danis drucei* (GROSE-SMITH & KIRBY, 1895) (Fig. 9, I-K; Fig. 30, C)
   Thysonotis drucei GROSE-SMITH & KIRBY, 1895, *Rhop. exot.* 3: 31, pl. 5, figs. 11-13, Ati On, New Guinea.
   Danis drucei horsa (GROSE-SMITH, 1898) **stat. nov.**
   Distribution: New Guinea.
10. *Danis concolor* (ROTHSCHILD, 1915)
    Thysonotis concolor ROTHSCHILD, 1915, *Lepid. Br. O. U. Exped. New Guinea, Macrolepid.*: 32, Dutch New Guinea.
    Distribution: Irian Jaya.

This species is the most distinctive in the genus, in having the valvae ending in a finger-like process (BM slide G.E.T. 519, 520).

Genus *Perpheres* **gen. nov.**

Type species: *Thysonotis perpheres* H. H. DRUCE & BETHUNE-BAKER, 1893.
Gender: Masculine.

Wing: Hind wing rounded, tailless. Base of forewing veins 10 and 11 stalked, sometimes connate; veins 11 and 12 touching briefly or sometimes not touching (Fig. 3, B). Upperside of male dark or purple blue; white discal band of female much narrower than in *Danis*. Underside *Danis*-like in both sexes.

Male genitalia: Dorsum large, tegumen broad; lateral process of tegumen wide, extending to dorsal 3/4 of ring. Vinculum narrow. Brachium long, relatively stout. Socius very narrow. Juxta Y-shaped. Phallus relatively small; subzonal sheath 3/5 as long as entire length of phallus, slightly depressed laterally, weakly constricted at 1/3 in dorsal view; suprazonal sheath represented by a single Chapman's process, which is aristate in ventral view. Valva large, basal half broad, dorsal half of inner wall bearing a mass of stiff hairs; distal half tapered apically; apical 1/4 curved dorsally, with minute serration along ventral margin.

Female genitalia: Apophysis anterioris very short. Intersternal pouch shallow, with ventral wall weakly sclerotized. Genital plate developed. Bursa copulatrix very long. Corpus bursae guttiform; signa absent. Ductus bursae slender. Ductus seminalis very short, attached to the caudal portion of ductus bursae just cephalad of ostium. Vagina short. Papillae anales nearly triangular, apical portion rounded.

Distribution: New Guinea.

The genus is monotypic, containing a single New Guinean species *perpheres* H. H. DRUCE & BETHUNE-BAKER. Though it is very similar to the *Danis* species in external pattern, the genus is distinct in the following characters: (i) the male suprazonal sheath is represented by a single Chapman's process which is aristate in ventral view, (ii) the valva bears a mass of stiff hairs on the distal half of inner wall, and (iii) the female bursa copulatrix is very long, without signa.

It may be possible to consider that the genus is derived from the common ancestor of *Danis*, but the distinctive male and female genitalia show that *Perpheres* is obviously isolated from *Danis*.

1. *Perpheres perpheres* (H. H. DRUCE & BETHUNE-BAKER, 1893) **comb. nov.** (Plate I, 4a-c; Fig. 3, B; Fig. 10, A-E; Fig. 31, B)

   Thysonotis perperes H. H. DRUCE & BETHUNE-BAKER, 1893, *Proc. zool. Soc. Lond.* 1893: 544, pl. 45, figs. 9, 10, Dorey, New Guinea.

   Danis perpheres: D'ABRERA, 1990, *Butterflies of the Australian Region,* (3rd revised edition): 323.

   Distribution: New Guinea.

Genus *Psychonotis* TOXOPEUS, 1930

Psychonotis TOXOPEUS, 1930, *De soorte als Functie van Plaats en Tijd*: 129
Type species: *Lycaena caelius* C. & R. FELDER, 1860, *Wien. ent. Monats.* 4: 245. By monotypy.

Wing. Hindwing rounded, tailless. Forewing vein 7 terminates just before apex[39]. Base of veins 10 and 11 usually connate. Veins 11 and 12 briefly anastomosed. Underside *Danis*-like, but subterminal metallic green or blue markings of hindwing much narrower than in *Danis.*

Male genitalia: Dorsum small. Vinculum narrow. Brachium hooked, angled at the middle. Socius narrow with a prominent process at ventral portion. Juxta Y-shaped, lateral arms broad. The dorsal half of diaphragma with a strongly sclerotized semi-circular band connected to the lateral processes of tegumen. Phallus cylindrical or spindle-shaped, subzonal sheath about 2/3 as long as entire length of phallus; bulbus ejaculatorius on proximal portion of subzonal sheath; distal portion of suprazonal sheath acuminate. Valva large and broad, distal margin more or less serrate, with pointed, or serrate, or spatulate processes on the dorso-distal margin.

Female genitalia: Apophysis anterioris short. Genital plate well developed, usually depressed and bell-like, surrounding ostium; ventral process of genital plate (lamella antevaginalis) circular in *kruera,* triangular in *browni.* Corpus bursae large, ellipsoidal; signa absent. Ductus bursae short. Ductus seminalis short and slender. Papillae anales usually equilaterally triangular.

Distribution: Sulawesi, Moluccas, New Guinea to Solomons, New Caledonia

The genus is characteristic in having the following characters: (i) a club-like process present on the ventral portion of socius, (ii) the diaphragma bears a sclerotized band on its upper half. ELIOT[1] used the name *Psychonotis* TOXOPEUS to distinguish those species group that bears above characteristics. D'ABRERA[34),37)] and BRIDGES[38)] followed him, but they wrongly place some taxa, i.e., *nerine* (GROSE-SMITH & KIRBY, 1899) and *schneideri* (RIBBE, 1899) in this genus.

The genus is known to occur from Sulawesi to the Solomons and New Caledonia, but has never been reviewed systematically. In the present study, I examined the specimens from these areas and recognized nine species in the genus.

D'ABRERA[34),37)] listed many subspecies of *hymetus* C. FELDER from Moluccas to Australia, but the true *hymetus* is confined to Seram and Ambon (Moluccas). The following subspecies from Australia do not belong to *hymetus* but to *caelius* C. & R. FELDER: *taygetus* C. & R. FEVDER, Mackay to Sydney; *taletum* WATERHOUSE & LYELL, Coen to Ingham; and *salamandri* MACLEAY, Torres Strait Islands, Cape York. The taxon *eudocia* H. H. DRUCE of Bachan and Halmahera has also been regarded as the subspecies of *hymetus.* However, the male genitalia of *eudocia* are distinct, and show that *eudocia* is related to *caelius*, rather than to *hymetus.*

1. *Psychonotis piepersii* (SNELLEN, 1878)
   Cupido piepersii SNELLEN, 1878, *Tijdschr. Ent.* 21: 16, pl. 1, fig. 3.
   Distribution: Sulawesi.
2. *Psychonotis hymetus* (C. FELDER, 1860) (Fig. 11, E-I)
   Thysonotis hymetus C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 459, Amboina.
   Distribution: Ambon, Ceram.
3. *Psychonotis eudocia* (H. H. DRUCE & BETHUNE-BAKER, 1893) (Fig. 11, A-D)
   Thysonotis eudocia H. H. DRUCE & BETHUNE-BAKER, 1893, *Proc. zool. Soc. Lond.* 1893: 548, pl. 46, fig. 4, Batchian.
   Psychonotis eudocia synesius (FRUHSTORFER) **stat. nov.**
   Distribution: Bachan, Halmahera.

The taxon *synesius* FRUHSTORFER from Obi is considered here to be conspecific with *eudocia*.

4. *Psychonotis hebes* (H. H. DRUCE, 1904) (Fig. 10, G-L)
   Danis hebes H. H. DRUCE, 1904, *Ann. Mag. nat. Hist.* (7) 13: 140, Upper Aroa River, British New Guinea.
   Distribution: Papua New Guinea.
5. *Psychonotis melane* (JOICEY & TALBOT, 1916)
   Thysonotis melane JOICEY & TALBOT, 1916, *Ann. Mag. nat. Hist.* (8) 17: 82, pl. 7, fig. 7. Wandammen Mts.
   Distribution: Irian Jaya.
6. *Psychonotis caelius* (C. & R. FELDER, 1860) (Fig. 3,C; Fig. F; Fig. 31,D)
   Lycaena caelius C. & R. FELDER, 1860, *Wien. ent. Monats.* 4: 245, Aru.
   Psychonotis caelius taygetus (C. & R. FELDER, 1865) **comb. nov.**
   Psychonotis caelius taletum (WATERHOUSE & LYELL, 1914) **comb. nov.**
   Psychonotis caelius salamandri MACLEAY, 1866 **comb. nov.**
   Distribution: Aru, Kai, Waigeo, New Guinea, Bismarcks, Australia.
7. *Psychonotis brownii* (H. H. DRUCE & BETHUNE-BAKER, 1893) (Fig. 11, J-N)
   Thysonotis brownii H. H. DRUCE & BETHENE-BAKER, 1893, *Proc. zool. Soc. Lond.* 1893: 547, pl. 46, fig. 8, New Ireland.
   Distribution: Bismarcks.
8. *Psychonotis kruera* (H. H. DRUCE, 1891) (Fig. 12, A-D)
   Thysonotis kruera H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 364, pl. 31, figs. 16, 17, Florida I., Solomons.
   Distribution: Solomons.
9. *Psychonotis purpurea* (H. H. DRKCE, 1902) (Fig. 12, E-G)
   Una purpurea H. H. DRUCE, 1902, *Proc. zool. Soc. Lond.* 1902: 114, pl. 11, fig. 3, Lifu I., Loyalty Is.
   Distribution: Loyalty Is.

6.5. The *Prosotas* section

The *Prosotas* section is proposed for the genera which have the following characters: (i) the dorsum of male genitalia is large, (ii) the female ductus seminalis is attached on the caudal portion of ductus bursae, and it is sometimes swollen near the attachment point.

The *Prosotas* section contains five genera, *Prosotas* H. H. DRUCE, *Nothodanis* gen. nov., *Catopyrops* TOXOPEUS, *Ionolyce* TOXOPEUS, *Paraduba* BETHUNE-BAKER. *Nothodanis* is a newly erected genus, transferred from the *Danis* section (sensu ELIOT). The remaining genera are separated from the *Nacaduba* section (sensu ELIOT).

Genus *Prosotas* H. H. DRUCE, 1891

Prosotas H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 366.
Type species: *Prosotas caliginosa* DRUCE, 1891, *ibid.*: 366. pl. 31, fig. 15. By original designation.
The nominal species caliginosa DRUCE is currently treated as a subspecies of *Lycaena nora* FELDER.

Wing: Hindwing rounded, tailed or tailless. Forewing veins 11 and 12 anastomosed or touching briefly (Fig. 2, J). Forewing underside with subbasal stria as in the *berenice* group of *Nacaduba*.

Male genitalia: Dorsum large. Tegumen broad laterally; lateral fenestrulae rather

broad, extending between tegumen and socii. Brachium hooked. Juxta Y-shaped. Phallus large, slightly constricted at the middle, suprazonal sheath very short, with a truncate branch-like process arising ventrally from just anterior portion of the zone. Valva small, basal half rather broad, distal half terminating in a dorsally pointed hook.

Female genitalia: Apophysis anterioris short, club-like. Intersternal pouch shallow. Lamella antevaginalis not well developed, represented by a small triangular or semicircular lamella. Lamella postvaginalis digitate, situated on both sides of ostium. Bursa copulatrix long. Corpus bursae guttiform; signa absent. Ductus bursae slender. Ductus seminalis slightly swollen near the point of attachment to ductus bursae. Vagina relatively long. Papillae anales elongate, acute apically. Apophysis posterioris long and slender.

Distribution: India, Sundaland to New Guinea, Solomons, Australia.

The genus is externally similar to *Nacaduba*, but clearly distingushed by the following characters: (i) the male valva terminates in a dorsally pointed hook, (ii) the phallus with a truncate branch-like process arising ventrally from just anterior portion of the zone, and (iii) the female ductus seminalis is slightly swollen from the point of attachment.

The genus contains the following 17 species in accordance with the system of TITE[25], except for the status of *caliginosa* (= ssp. of *nora*).

1. *Prosotas aluta* (H. DRUCE, 1873)
   Cupido aluta H. DRUCE, 1873, *Proc. zool. Soc. Lond.* 1873: 349, pl. 32, fig. 8, Borneo.
   Distribution: India, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines.
2. *Prosotas nelides* (de NICÉVILLE, 1895) (Fig. 32, C-D)
   Nacaduba nelides de NICÉVILLE, 1895. *J. Bombay nat. Hist. Soc.* 9: 280, pl. O, fig. 24, North-east Sumatra.
   Distribution: Peninsular Malaya, Sumatra.
3. *Prosotas nora* (C. FELDER, 1860) (Fig. 2, J)
   Lycaena nora C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 458, Amboina.
   Prosotas nora caliginosa: HEMMING, 1967, *Bull. Br. Mus. nat. Hist.* (Ent.) Suppl. 9: 379
   Distribution: India, Sri Lanka, Myanmar, Taiwan, Ryukyus, Sundaland to Moluccas, New Guinea, Bismarcks, Solomons, Australia.
4. *Prosotas atra* TITE, 1963
   Prosotas atra TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 92, pl. 1, figs. 10, 11, text-fig. 49, Talesea, New Britain.
   Distribution: Ceram, New Guinea, Bismarcks.
5. *Prosotas talesea* TITE, 1963
   Prosotas talesea TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 93, pl. 1, figs. 12, 13, text-fig. 50, Talesea, New Britain.
   Distribution: Bismarcks.
6. *Prosotas papuana* TITE, 1963
   Prosotas papuana TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 93, pl. 1, figs. 14, 15, text-fig. 51, Hydrographer Mts., New Guinea.
   Distribution: New Guinea.
7. *Prosotas felderi* (MURRAY, 1874)
   Lycaena felderi MURRAY, 1874, *Trans. ent. Soc. Lond.* 22: 527, pl. 10, figs. 4, 6, Queensland.
   Distribution: Australia.

8. *Prosotas pia* TOXOPEUS, 1929
   Prosotas pia Toxopeus, 1929, *Tijdschr. Ent.* 72: 239, West Java.
   Distribution: India, Myanmar, Thailand, Indo-China, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Moluccas.
9. *Prosotas ella* TOXOPEUS, 1930
   Prosotas ella TOXOPEUS, 1930, *De Soort als Functie*: 188, Palu, Central Celebes.
   Distribution: Sulawesi.
10. *Prosotas norina* TOXOPEUS, 1929
    Prosotas norina TOXOPEUS, 1929, *Tijdschr. Ent.* 72: 239, Java.
    Distribution: Jawa.
11. *Prosotas bhutea* (de NICÉVILLE), [1884]
    Nacaduba bhutea de NICÉVILLE, [1884], *J. Asiat. Soc. Bengal* 52: 72, pl. 1, fig. 13, Sikkim.
    Distribution: India, Myanmar, Thailand, Indo-China, Peninsular Malaya, Borneo.
12. *Prosotas datarica* (SNELLEN, 1892)
    Lycaena datarica SNELLEN, 1892, *Tijdschr. Ent.* 35: 140, Java.
    Distribution: Jawa.
13. *Prosotas gracilis* (RÖBER), [1886]
    Plebeius gracilis RÖBER, [1886], *Correspbl. ent. Ver. Iris* 1: 67, pl. 5, fig.1, Ceram.
    Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Moluccas, New Guinea, Bismarcks.
14. *Prosotas elsa* (GROSE-SMITH, 1895)
    Nacaduba elsa GROSE-SMITH, 1895, *Novit. zool.* 2: 509, Amboina.
    Distribution: Ambon.
15. *Prosotas dubiosa* (SEMPER), [1879]
    Lampides dubiosa SEMPER, [1879], *J. Mus. Godeffroy* 5: 159, Queensland.
    Distribution: India, Sri Lanka, Sundaland to New Guinea, Solomons, Australia.
16. *Prosotas lutea* (MARTEN, 1895)
    Nacaduba lutea MARTEN, 1895, *Einige neue Tagsschmett. Nord.-Sumatra*: 1, North-east Sumatra.
    Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra.
17. *Prosotas noreia* (R. FELDER, 1868)
    Lycaena noreia R. FELDER, 1868, *Verh. zool.-bot. Ges. Wien* 18: 282, Ceylon.
    Distribution: India, Sri Lanka, Thailand, Sumatra, Jawa.

Genus *Nothodanis* **gen. nov.**

Type species: *Lycaena schaeffera* ESCHSCHOLTZ, 1821.
Gender: Feminine.

Wing: Hindwing rounded, tailless. Forewing veins 11 and 12 touching or anastomosed briefly (Fig. 2, K). Hindwing underside *Danis*-like, but submarginal spots usually blackish, darker than ochreous ground color.

Male genitalia: Dorsum large as in *Prosotas*. Tegumen broad, separated from socii by lateral fenestrulae; lateral process of tegumen broad. Vinculum very narrow. Socius narrow, ventro-distal corner posteriorly produced. Juxta Y-shaped. Phallus long and slender, subzonal sheath 3/4 as long as entire length of phallus; bulbus ejaculatorius on the dorso-proximal corner of subzonal sheath. Valva long, spatulate, distal 1/3 gently

curved dorsally.

Female genitalia: Apophysis anterioris short. Genital plate not developed. Ostium opens at the posterior portion of 8th abdominal venter. Bursa copulatrix long but relatively small. Corpus bursae guttiform; signa absent. Ductus seminalis slender, but swollen as large as ductus bursae near the point of attachment. Papillae anales triangular, apically pointed in lateral view.

The genus contains a single species which has been placed in *Danis*. The genus is distinct in having the following characters: (i) the male dorsum is large and the lateral process of tegumen is broad, and (ii) the female ductus seminalis is swollen, as large as ductus bursae near the attaching point.

These characters show that *Nothodanis* represents a link between *Danis* and *Prosotas*.

1. *Nothodanis schaeffera* (ESCHSCHOLTZ, 1821) **comb. nov.** (Plate 1, 5; Fig. 2, K; Fig. 12H-K; Fig. 32, A-B)

   Lycaena schaeffera ESCHSCHOLTZ, 1821, In KOTZEBUE, *Endeck. Reise. Sud-See* 3: 216, pl. 5, fig. 25a,b.

   Distribution: Indo-China, Borneo, Sulawesi, Philippines, Moluccas to New Guinea, Bismarcks, Solomons, Vanuatu (New Hebrides), New Caledonia.

Genus *Catopyrops* TOXOPEUS, 1929

Catopyrops TOXOPEUS, 1929, *Tijdschr. Ent.* 72 (3/4): 230.
Type species: *Lycaena ancyra* C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 457. By monotypy.

Wing: Forewing veins 11 and 12 touching or briefly anastomosed (Fig. 2, I). Underside usually grayish-white with distinct striae; in *nebulosa* ground color very whitish and the markings very faint.

Male genitalia: Dorsum large, lateral processes of tegumen broad, extending to ventral portion of ring. Vinculum wide. Socius well fused with tegumen; distal margin of socius straight in lateral view. Juxta U-shaped, lateral arms short and narrow. Phallus cylindrical in the *ancyra* group, nearly spindle-shaped in the *keiria* and *kokopona* groups; suprazonal sheath tapered, curved ventrally, with apical portion pointed in the *ancyra* group, curved ventrally with apical portion blunt-ended in the *keiria* and *kokopona* groups. Valva small, ventro-distal corner with a hooked process in the *ancyra* group (it is shortest in *rita*, long and slender in *florinda*), without any process in the *keiria* group; in the *kokopona* group, distal margin of valva sagittate, curved inwardly.

Female genitalia: Apophysis anterioris very short, blunt-ended or triangular in lateral view. Genital plate well developed, trapezoidal with lateral foldings in the *ancyra* group, crater-like in *kokopona*; shield-like lamella postvaginalis present in *keiria*. Corpus bursae guttiform, with minute discoidal signa situated on distal portion of corpus bursae. Ductus bursae slender. Ductus seminalis relatively short and slender, the point of attachment usually caudad of ductus bursae.

Distribution: India, Sundaland to New Guinea, Solomons, Australia, extending to Fiji.

TITE[25] included *keiria* and *kokopona* in *Catopyrops* with some hesitation because they have divergent genitalia. However, judging from the wide vinculum and the broad lateral process of the tegumen, these two species are reasonably placed in this genus.

PARSONS[40] recently discribed two new species, i.e., *zyx* and *holtra*, being closely

related to *ancyra* and *keiria,* respectively. The genus contains the following eight species.

(i) The *ancyra* group

1. *Catopyrops ancyra* (C. FELDER, 1860) (Fig. 2, J)
   Lycaena ancyra C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 457, Amboina. (Plate 2, 3a-c)
   Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Moluccas, New Guinea, Bismarcks, Solomons, Fuji.
2. *Catopyrops zyx* PARSONS, 1986
   Catopyrops zyx PARSONS, 1986, *Tyô to Ga,* 37 (3): 138, figs. 46, 136-138, Bougainville, Solomons.
   Distribution: Solomons.
3. *Catopyrops rita* (GROSE-SMITH, 1895) (Fig. 14, A-D; Fig. 32, F-E)
   Nacaduba rita GROSE-SMITH, 1895, *Novit. zool.* 2: 508, Wetter. (Plate II, 4a-c)
   Distribution: Jawa, Lesser Sundas, South Sulawesi.
4. *Catopyrops florinda* (BUTLER, 1877) (Fig. 14, E-J)
   Lampides florinda BUTLER, 1877, *Ann. Mag. nat. Hist.* (4) 20: 354, Lifu. (Plate II, 5a-b)
   Distribution: Timor, Wetar to North-east Australia, New Caledonia.

(ii) The *keiria* group

5. *Catopyrops holtra* PARSONS, 1986
   Catpopyrops holtra PARSONS, 1986, *Tyô to Ga,* 37 (3): 139, figs. 47, 139, Keravat, New Britain.
   Distribution: New Britain.
6. *Catopyrops keiria* (H. H. DRUCE, 1891) (Fig. 15; A-D)
   Nacaduba keiria H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 362, pl. 31, figs. 13, 14, Solomons. (Plate II, 6a-c)
   Distribution: Solomons.
7. *Catopyrops nebulosa* (H. H. DRUCE, 1892) **comb. nov.** (Plate I, 6)
   Nacaduba nebulosa H. H. DRUCE, 1892, *Proc. zool. Soc. Lond.* 1892: 440, pl. 27, figs. 10, 11, New Hebrides.
   Nacaduba nebulosa: TITE, 1963. *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 88.
   Distribution: Vanuatu (New Hebrides).

In its original description, DRUCE[41] noted that *nebulosa* is "allied to *keiria*". TITE[25] placed *keiria* in *Catopyrops,* however, he left *nebulosa* in *Nacaduba.* Recently I confirmed that *nebulosa* should be placed in *Catopyrops* after examining the genitalia of both sexes. Independently, A. SIBATANI (pers. comm.) had found that it is *Catopyrops.* As predicted by DRUCE, this species is most closely related to *keiria,* judging from the genital structure.

(iii) The *kokopona* group

8. *Catopyrops kokopona* (RIBBE, 1899) (Fig. 15, E-I)
   Nacaduba kokopona RIBBE, 1899, *Deut. ent. Zeit.* (*Iris*) 12: 232, pl. 4, fig. 7, New Pommern.
   Distribution: Bismarcks.

Genus Ionolyce TOXOPEUS, 1929

Ionolyce TOXOPEUS, 1929, *Tijdschr. Ent.* 72: 236.
Type species: *Ionolyce helicon javanica* TOXOPEUS, 1929, *ibid.* 72: 236. By monotypy.

Wing: Forewing usually elongate and apex more pointed than in any other genera of this section. Forewing veins 11 and 12 anastomosed. Small ribbon-like androconia present.

Male genitalia: Dorsum large. Brachium hooked, basal portion widely connected with postero-ventral process of tegumen. Juxta U-shaped. Phallus large, cylindrical; subzonal sheath about 4/5 as long as entire length of phallus, gently curved at the middle; bulbus ejaculatorius on dorso-proximal portion of subzonal sheath; ventral portion of suprazonal sheath tapering apically; vesica with prominent cornuti composed of several groups of large stiff spines. Valva relatively small, nearly oval with a blunt process on distal portion.

Female genitalia: Apophysis anterioris short and slender. Intersternal pouch very shallow. Lamella antevaginalis not developed. Lamella postvaginalis digitate, situated on both sides of ostium. Bursa copulatrix very long. Corpus bursae guttiform; signa absent. Ductus bursae long and slender, caudal portion near ostium well sclerotized inwardly and nearly spindle-shaped. Ductus seminalis slender and very short. Papillae anales elongate as in *Prosotas*.

Distribution: India, Sundaland to New Guinea, Solomons, Australia.

The genus is characteristic in having a large phallus with strongly sclerotized cornuti in the male genitalia, a spindle-shaped ductus bursae at the caudal portion in the female genitalia, and small ribbon-like androconia.

1. *Ionolyce helicon* (C. FELDER, 1860) (Fig. 2, G; Fig. 13, H-K)
   Lycaena helicon C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 457, Amboina. (Plate II, 7a-c)
   Distribution: India, Sri Lanka, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Moluccas, New Guinea, Bismarcks, Australia.
2. *Ionolyce brunnescens* TITE, 1963 (Plate II, 8a-b; Fig. 33, C-D)
   Ionolyce brunnescens TITE, 1963, *Bull. Br. Mus. nat. Hist.* (Ent.) 13: 101, pl. 2, figs. 1-4, text-figs. 69, 71, 72, Isabel Island, Solomons.
   Distribution: Solomons.
3. *Ionolyce selkon* PARSONS, 1986
   Ionolyce selkon PARSONS, 1986, *Tyô to Ga,* 37 (3): 136, figs. 45, 134, 135, Bougainville, Solomons.
   Distribution: Solomons.

Genus *Paraduba* BETHUNE-BAKER, 1906

Paraduba BETHUNE-BAKER, 1906, *Ann. Mag. nat. Hist.* (7) 17: 103.
Type species: *Paraduba owgarra* BETHUNE-BAKER, 1906, *ibid.* (7) 17: 104. By original designation.

Wing: Hindwing nearly triangular, shortly tailed. Forewing veins 11 and 12 anastomosed and separate near costa (Fig. 2,H).

Male genitalia: Dorsum large and broad, dorsal portion narrow; lateral fenestrulae

extended dorso-proximal portions of dorsum. Vinculum very short and narrow. Brachium slender and hooked. Juxta U-shaped, basal portion completely fused with sacculi. Phallus cylindrical, stout; subzonal sheath about 2/3 as long as entire length of phallus; bulbus ejaculatorius conspicuously long, 5 times as long as phallus; vesica with a mass of cornuti composed of many stiff spines. Valva rather small, basal portion broad, tapering apically, and terminating in a pointed or spatulate tip.

Female genitalia: Apophysis anterioris short and slender. Genital plate not developed. Bursa copulatrix long. Corpus bursae guttiform; signa absent. Ductus bursae long and slender, caudal portion near ostium sclerotized inwardly, and nearly spindle-shaped as in *Ionolyce*. Ductus seminalis slender and short. Papillae anales nearly triangular and less pointed than in *Ionolyce*.

Distribution: New Guinea.

Originally, BETHUNE-BAKER[42] distinguished *Paraduba* from *Nacaduba* by its forewing venation. TITE[25] pointed out that the characters of the venation are insufficient to distinguish the genus. However, he continued to use *Paraduba* for the species which have simple, clavate, densely haired valvae and many stiff-spined cornuti. Though the systematic position of this genus has been unclear, the general shape of the female genitalia, especially the caudal portion of ductus bursae which is spindle-shaped, and the stiff cornuti in the male phallus show a close relationship of *Paraduba* and *Ionolyce* (Fig. 33, A-D).

1. *Paraduba owgarra* BETHUNE-BAKER, 1906 (Plate I, 7a-b; Fig. 2, H; Fig. 13, A-D; Fig. 33, A-B)
   Paraduba owgarra BETHUNE-BAKER, 1906, *Ann. Mag. nat. Hist.* (7) 17: 104, Owgarra, New Guinea.
   Distribution: New Guinea.
2. *Paraduba metriodes* (BETHUNE-BAKER, 1911) (Fig. 13,E-G)
   Nacaduba metriodes BETHUNE-BAKER, 1911, *Ann. Mag. nat. Hist.* (8) 8: 452, Dinawa, New Guinea. (Plate II, 9a-c)
   Distribution: New Guinea.
3. *Paraduba siwiensis* TITE, 1963 (Plate II, 10a-c)
   Paraduba siwiensis TITE, 1963, *Bull. Br. Mus nat. Hist.* (Ent.) 13: 100, pl. 2, fig. 19, text-figs. 66, 73, Mt. Siwi, Arfak Mts., Dutch New Guinea.
   Distribution: Irian Jaya.

6.6. The *Theclinesthes* section

The *Theclinesthes* section is characterized by the shape of the hindwing tonal margin which is weakly angled or produced. Veins 11 and 12 of forewing are usually anastomosed to costa or nearly to costa.

This section contains three genera, *Theclinesthes* RÖBER, *Sahulana* gen. nov. and *Neolucia* WATERHOUSE & TURNER.

Genus *Theclinesthes* RÖBER, 1891

Theclinesthes RÖBER, 1891, *Tijdschr. Ent.* 34: 316.

Type species: *Plebeius eremicola* RÖBER, 1891, *ibid.* 34: 316. By monotypy. The nominal species *eremicola* RÖBER was subjectively synonymized with *Theclinestis miskini gaura* (DOHERTY), 1891 by SIBATANI and GRUND[43].

Utica HEWITSON, [1865], *Ill. diurn. Lep. Lycaenidae* 1: 56.
Type species: *Utica onycha* HEWITSON, [1865], *ibid.* 1: 56. By monotypy.
Utica HEWITSON is a junior homonym of *Utica* WHITE, 1847, *List. Crust. Coll. Br. Mus.*: 45.

Wing: Hindwing tornal margin produced. Forewing veins 11 and 12 anastomosed near to costa.

Male genitalia: Dorsum large, broad at dorsal portion, lateral fenestrulae narrow but clearly separate tegumen and socii. Lateral process of tegumen broad, extending to ventral portion of ring. Vinculum wide. Brachium hooked. Socius wide in dorsal view. Juxta U-shaped. Phallus rather small, subzonal sheath stout, 3/5 as long as entire length of phallus, with bulbus ejaculatorius on its dorso-proximal portion; suprazonal sheath slender, tapering toward apex, weakly curved ventrally. Valva small, triangular in inner view, with a horn-like process on the median portion of inner wall.

Female genitalia: Apophysis anterioris short. Genital plate tube-like, and nearly 2/3 as long as 8th venter. Bursa copulatrix short and slender. Signa absent. Ductus seminalis slender, attached to ductus bursae relatively distant from ostium. Papillae anales semicircular in lateral view.

Distribution: Lesser Sundas, New Guinea, Australia.

The genus is distinguished by the following characters: (i) the valva is triangular with a horn-like process on its inner wall, (ii) the suprazonal sheath of phallus is long and slender, tapering and slightly curved ventrally.

The genus contains the following six species.

1. *Theclinesthes onycha* (HEWITSON), [1865]
   Utica onycha HEWITSON, [1865], *Ill. diurn. Lep. Lycaenidae* 1: 56, Australia.
   Distribution: Australia.
2. *Theclinesthes miskini* (LUCAS, 1889) (Fig. 3, F; Fig. 16, A-E; Fig. 34, A-B)
   Lycaena miskini LUCAS, 1889, *Proc. R. Soc. Queensland* 6: 156.
   Distribution: Lesser Sundas, New Guinea, Bismarcks, Australia.
3. *Theclinesthes albocincta* (WATERHOUSE, 1903)
   Utica albocincta WATERHOUSE, 1903. *Proc. linn. Soc. N. South Wales*: 28 (I), Australia.
   Distribution: Australia.
4. *Theclinesthes hesperia* SIBATANI & GRUND, 1978.
   Theclinesthes hesperia SIBATANI & GRUND, 1978, *Tyô to Ga* 29 (1): 30, figs. 31, 52, 157, Bunbury, West Australia.
   Distribution: South-west Australia.
5. *Theclinesthes serpentata* (HERRICH-SCHAEFFER, 1869)
   Lycaena serpentata HERRICH-SCHAEFFER, 1869, *Stett. ent. Ztg:* 74.
   Distribution: South Australia, Tasmania.
6. *Theclinesthes sulpitius* (MISKIN, 1890)
   Lycaena sulpitius MISKIN 1890, *Proc. linn. Soc. N. South Wales* (2) 5: 37.
   Distribution: East Australia.

Genus *Sahulana* **gen. nov.**

Type species: *Lycaena scintillata* LUCAS, 1889.
Gender: Feminine.

Wing: Forewing shape as in *Theclinesthes.* Hindwing tornal margin weakly produced. Forewing veins 11 and 12 anastomosed to costa. Upperside of male brownish purple.

Male genitalia: Dorsum moderate in size. Tegumen broad at dorsal portion; lateral process of tegumen narrow, not extending to lower portion of ring. Vinculum narrow. Juxta Y-shaped; lateral arms very small. Phallus moderate in size; subzonal sheath 2/3 as long as entire length of phallus; bulbus ejaculatorius on anterior half of dorsal portion of subzonal sheath; posterior portion of suprazonal sheath acuminate, weakly curved ventrally; vesica without cornutus. Valva nearly oval in inner view, inner surface entirely membranous, with two inwardly pointed processes at posterior margin.

Female genitalia: Apophysis anterioris short and slender. Intersternal pouch relatively deep, with its bottom laterally sclerotized. Lamella postvaginalis well developed, semicircular, with weak submarginal ridges. Bursa copulatrix long. Corpus bursae guttiform; signa absent. Ductus bursae long and slender. Ductus seminalis relatively short, attached to caudal portion of ductus bursae, somewhat distant from ostium. Papillae anales semicircular in lateral view.

Sahulana is proposed for a single species, *Lycaena scintillata* LUCAS, which has previously been placed in *Theclinesthes.* The new genus is characterized by the following characters: (i) the vinculum is narrow in *Sahulana,* but it is very wide in *Theclinesthes,* (ii) the valva is neary oval with two prominent process at the posterior margin in *Sahulana,* but it is triangular, with a pointed process in the median portion of inner wall in *Theclinesthes.*

The deviant feature of *scintillata* was pointed out by COMMON and WATERHOUSE[44] and SIBATANI and GRUND[43] suggested that it could be regarded as representing a new genus probably belonging to the *Nacaduba* section (sensu ELIOT).

The genus does not relate to any genera of *Nacaduba* section (sensu ELIOT), but may form a link between *Theclinesthes* and *Neolucia,* when judged from weakly produced hindwing tornal margin, well anastomosed forewing veins 11 and 12, and the female ductus seminalis attached to caudal portion of the ductus bursae, somewhat distant from ostium.

1. *Sahulana scintillata* (LUCAS, 1899) **comb. nov.** (Plate I, 8a-b; Fig. 3, E; Fig. 16, F-K; Fig. 34, C-D)

   Lycaena scintillata LUCAS, 1899, *Proc. Roy. Soc. Queensland* 6: 157.

   Theclinesthes scintillata: SIBATANI & GRUND, 1978. *Tyô to Ga* 29 (1): 1.

   Theclinesthes scintillata: D'ABRERA, 1990. *Butterflies of the Australian Region* (3rd revised edition): 361

   Distribution: North and east Australia, New Guinea.

Genus *Neolucia* WATERHOUSE & TURNER, 1905

Neolucia WATERHOUSE & TURNER, 1905, *Proc. linn. Soc. N. S. Wales* 29 (4): 803.

Type species: *Lucia agricola* WESTWOOD, [1851], in DOUBLEDAY, *Gen. diurn. Lep.* (2): pl. 76, fig. 4. By original designation.

Wing: Hindwing tornus weakly angled, tailless. Forewing veins 11 and 12 anastomosed to costa.

Male genitalia: Dorsum large, dorsal portion narrow, lateral fenestrulae extending to

subdorsal portions of dorsum. Brachium slender and hooked. Juxta U-shaped, lateral arms slender. Phallus cylindrical, subzonal sheath about 4/5 as long as entire length of phallus; bulbus ejaculatorius on dorsal portion of proximal half of subzonal sheath; subzonal sheath with a narrow sclerotized lamella on dorsal portion, and a relatively broad lamella ventrally; vesica with cornuti, comprising dense minute lateral groups of spines. Valva large, broad at basal portion, tapering apically, terminating in an inwardly-pointed hook; a triangular process usually present on the basal portion of inner margin.

Female genitalia: Genital plate well developed. Bursa copulatrix long. Corpus bursae guttiform; signa absent. Ductus seminalis long and slender, attached to caudal portion of ductus bursae, somewhat distant from ostium.

Distribution: Australia, Tasmania.

The genus contains the following three species.

1. *Neolucia agricola* (WESTWOOD), [1851] (Fig. 3, D; Fig. 17, A-G; Fig. 34, E)
   Lucia agricola WESTWOOD, [1851], *Gen. diurn. Lep.* (2): 496, pl. 76, fig. 4.
   Distribution: South Queensland to South Australia, West Australia, Tasmania.
2. *Neolucia mathewi* (MISKIN, 1890) (Fig. 17, H-I)
   Lycaena mathewi MISKIN, 1890, *Proc. linn. Soc. N. S. Wales* (2): 38.
   Distribution: South-east Australia, Tasmania.
3. *Neolucia hobartensis* (MISKIN, 1890) (Fig. 17, J-K)
   Lycaena hobartensis MISKIN, 1890, *Proc. linn. Soc. N. S. Wales* (2): 38.
   Distribution: South-east Australia, Tasmania.

6.7. The *Thaumaina* section

As SIBATANI and GRUND[43] pointed out, diagnosis of the *Theclinesthes* section (sensu ELIOT) applies only to *Theclinesthes*. In the present study, the genus *Thaumaina* is treated as an independent section, but its systematic position remains unclear.

Genus *Thaumaina* BETHUNE-BAKER, 1908

Thaumaina BETHUNE-BAKER, 1908, *Proc. zool. Soc. Lond.* 1908 (1): 116.
Type species: *Thaumaina uranothauma* BETHUNE-BAKER, 1908, *ibid.* 1908 (1): 116, pl. 9, figs. 8, 9.
By original designation.

Wing: Veins 7 and 9 stalked shortly. Forewing veins 11 and 12 briefly touching.

Male genitalia: Dorsum small. Tegumen broad, dorsal portion of tegumen broad. Vinculum broad. Brachium vestigial, represented by a short pointed process. Phallus small, subzonal sheath about 1/2 as long as entire length of phallus; bulbus ejaculatorius rather small, attached to the proximal portion of subzonal sheath. Valva rectangular, ventro-distal portion produced posteriorly with apical portion acuminate.

Female genitalia: Apophysis anterioris not developed. Intersternal pouch relatively deep, with bottom well sclerotized. Lamella antevaginalis well developed, represented by a large trapezoidal plate with its posterior margin emerginate. Bursa copulatrix small. Corpus bursae globular; signum forming a weakly sclerotized patch, situated on the median portion of corpus bursae. Ductus seminalis slender, attached to the caudal portion of ductus bursae. Papillae anales triangular, posterior margin rounded. Apophysis posterioris relatively short and slender.

The genus contains a single species which occurs only at high elevations in

montainous areas of New Guinea.

1. *Thaumaina uranothauma* BETHUNE-BAKER, 1908 (Fig. 33,E)
   Thaumaina uranothauma BETHUNE-BAKER, 1908, *Proc. zool. Soc. Lond.* 1908 (1): 116, New Guinea.
   Distribution: New Guinea.

6.8. The *Upolampes* section

The *Upolampes* section is distinguished by the following characters: (i) the male brachium absent or vestigial, (ii) the phallus is usually short and stout.

This section contains four genera, *Upolampes* BETHUNE-BAKER, *Caleta* FRUHSTORFER, *Pistoria* HEMMING and *Discolampa* TOXOPEUS.

Genus *Upolampes* BETHUNE-BAKER, 1908

Upolampes BETHUNE- BAKER, 1908, *Proc. zool. Soc. Lond.* 1908: 118.
Type species: *Upolampes striata* BETHUNE-BAKER, 1908, *ibid.* 1908: 118, pl. 9, fig. 15. By original designation.
Upolampes striata is a junior subjective synonym of *Lycaena evena* HEWITSON,[1876], *Ill. exot. Butts.* 5:[87], pl. 1, figs. 2, 3.

Wing: Hindwing very shortly tailed. Forewing veins 7 and 9 stalked as in other genera of the tribe Polyommatini, but almost anastomosed and separate near apex. Forewing veins 11 and 12 anastomosed and separate near costa (Fig. 3,G). Underside white with blackish subbasal, discal and submarginal striae.

Male genitalia: Dorsum moderate in size. Tegumen broad. Brachium very small and hooked or vestigial. Socius nearly quadrate, separated by a transverse inner ridge. Juxta Y-shaped. Phallus relatively short; subzonal sheath about 1/2 as long as entire length of phallus, weakly constricted at posterior 1/3; bulbus ejaculatorius on proximal portion of subzonal sheath; suprazonal sheath weakly tapered; vesica without cornutus. Valva broad, posterior portion pointed.

Female genitalia: Apophysis anterioris not developed. Intersternal pouch deep. Lamella antevaginalis a well developed, trapezoidal with anterior margin weakly emarginate. Lamella postvaginalis a weakly sclerotized, semicircular plate. Bursa copulatrix large, constricted at caudal 1/4. Corpus bursae nearly spindle-shaped; signa absent. Ductus bursae relatively stout, caudal portion near ostium weakly sclerotized. Papillae anales semicircular in lateral view.

The genus has been considered to be monotypic and is characterized in having small brachia in the male genitalia. However, M. PARSONS (pers. comm.) suggested that the genus may contain an undescribed species which does not possess brachia. Examination of the specimens of *Upolampes evena* in BMNH revealed that the size of the brachia varies to some extent, being sometimes obsolete. In the present study, the genus is previsionally treated as monotypic.

1. *Upolampes evena* (HEWITSON), [1876] (Fig. 3, G)
   Lycaena evena HEWITSON, [1876], *Ill. exot. Butts.* 5: 87 pl. 1, figs. 2, 3, New Guinea.
   Distribution: New Guinea.

Genus *Caleta* FRUHSTORFER, [1922]

Caleta FRUHSTORFER, [1922], in SEITZ, *Gross-Schmett. Erde* 9: 890.

Type species: *Lycaena caleta* HEWITSON, [1876], *Ill. exot. Butts.* 5: [87], pl. [46], fig. 1. By monotypy.

Pycnophallium Toxopeus, 1929, *Tijdschr. Ent.* 72: 228.

Type species: *Polyommatus roxus* GODART, [1824], *Ency. méth* 9: 657. By selection by HEMMING (1964, *Annot. Lep.* (4): 133).

Wing: Base of forewing veins 10 and 11 separate in *decidia*, connate in *elna* (Fig. 3, H), and stalked in *roxus* and the other species (Fig. 3, I). Forewing veins 11 and 12 briefly anastomosed. Underside creamy white with a blackish subbasal stria from the middle of costa to base of dorsum in forewing, conjoined to basal blackish area of hindwing. Postdiscal stria usually present; in *mindarus,* discal area white without blackish striae.

Male genitalia: Dorsum moderate in size. Vinculum narrow. Brachium absent, but in some species, an inwardly-pointed process present on inner surface of ventral portion of socius. Socius semicircular or triangular, posterior portion usually produced postero-ventrally. Juxta Y-shaped, usually not well developed. Phallus small and short; subzonal sheath cylindrical, 2/3 - 4/5 as long as entire length of phallus; suprazonal sheath short, postero-ventral margin produced at the middle; vesica with cornuti which are composed of many minute spines. Valvae quite unique, well fused with each other ventrally, with a process of varying length at antero-dorsal portion.

Female genitalia: Apophysis anterioris short. Lamella antevaginalis well developed, tongue-shaped in ventral view. Lamella postvaginalis semicircular, expanding over nearly entire surface of 8th venter. Bursa copulatrix long. Corpus bursae guttiform; signa absent. Ductus bursae slender, caudal portion swollen near ostium. Papillae anales trapezoid in lateral view.

Distribution: India to Sundaland, Sulawesi, Philippines, Moluccas, New Guinea.

The genus has never been revised since it was established by FRUHSTORFER[5]. TOXOPEUS[7] erected *Pycnophallium* including *roxus* and *elna*. Later, HEMMING[4,5] selected the former as type species. In case the genus *Pycnophallium* is adopted, *Caleta* (s. lat.) should be divided into more than three genera, *Caleta* (*caleta, argola*), *Pychophallium* (*roxus, manovus,* and others) and additional new genera for *elna* and *decidia*. In the present study, *Pycnophallium* is not adopted because these species mentioned above may form a monophyletic group, judging from the ventrally fused valvae.

The following nine species are recognized in the genus partly in accordance with the treatment of TAKANAMI[46].

1. *Caleta elna* (HEWITSON), [1876] (Fig. 3, H)
   Lycaena elna HEWITSON, [1876], *Ill. exot. Butts.* 5, pl. 1, fig. 8, Java.
   Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Philippines.
2. *Caleta caleta* (HEWITSON), [1876] (Plate I, 9; Fig. 3, I; Fig. 18, A-D)
   Lycaena caleta HEWITSON, [1876], *Ill. exot. Butts.* 5, pl. 1. fig. 1, Celebes. (Plate III, 1a-b)
   Distribution: Sulawesi.
3. *Caleta argola* (HEWITSON), [1876] (Plate I, 10)

Lycaena argola HEWITSON, [1876], *Ill. exot. Butts.* 5, pl. 1, fig. 7, Mindanao. (Plate III, 2a-b)

Distribution: Mindanao.

It is obvious that *caleta* and *argola* are most closely related, (occasionally being treated as conspecific[5),47),48)]) and also isolated from the others judging from the male genital structure. Habitats of these sister species are restricted to Sulawesi (*caleta*) and Mindanao (*argola*). The biogeographic relationship of Sulawesi and Mindanao (Philippines) has also been pointed out on the basis of the distribution patterns of some Lepidoptera, such as Notodontidae, Limacodidae[49)] and Tineidae[50)]. These data may indicate the evolution of a faunal "component" in North Sulawesi and Mindanao, probably prior to the low sea level of the Pleistocene.

4. *Caleta decidia* (HEWITSON), [1876]
   Lycaena decidia HEWITSON, [1876], *Ill. exot. Butts.* 5, pl. 1. fig. 4, India.
   Distribution: India to Myanmar, Thailand.
5. *Caleta roxus* (GODART), [1824] (Fig. 18, E-G; Fig. 35, B-C)
   Polyommatus roxus GODART, [1824], *Ency. meth.* 9: 659, Kangean, West Java.
   Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Philippines.
6. *Caleta manovus* (FRUHSTORFER, 1918.) (Fig. 18, H-J)
   Castalius roxus manovus FRUHSTORFER, 1918, *Tijdschr. Ent.* 61: 34, Nord Borneo, Kina Balu.
   Distribution: North Borneo.
7. *Caleta rhode* (HOPFFER), 1871
   Lycaena rhode HOPFFER, 1871, *Stett. ent. Ztg.* 35: 27, Celebes
   Distribution: Sulawesi, Lesser Sundas.
8. *Caleta celebensis* (STAUDINGER, 1889)
   Castalius roxus var. *celebensis* STAUDINGER, 1899, *Deut. ent. Zeit.* [*Iris*] 2: 96, Sud Celebes.
   Distribution: Sulawesi.
9. *Caleta mindarus* (C. & R. FELDER), [1865]
   Lycaena mindarus C. & R. FELDER, [1865], *Reise Novara* (2): 286, pl. 33, figs. 13, 14, New Guinea. (Plate III, 3a-c)
   Distribution: New Guinea.

Genus *Pistoria* HEMMING, 1964

Pistoria HEMMING, 1964, *Annot. lep.* (4): 141.
Type species: *Mambara nigropunctata* BETHUNE-BAKER, 1908, *Proc. zool. Soc. Lond.* 1908: 120, pl. 8, fig. 5. Through Section (i) (replacement names) of Article 67, by HEMMING (1964).

Mambara BETHUNE-BAKER, July 1908, *Proc. zool. Soc. Lond.* 1908: 119.
Type species: *Mambara nigropunctata* BETHUNE-BAKER, 1908, *ibid.* 1908: 120, pl. 8, fig. 5. By original designation.
Mambara is a junior homonym of Limacoid name *Mambara* BETHUNE-BAKER, June 1908.

Wing: Base of forewing veins 10 and 11 anastomosed; veins 11 and 12 anastomosed to costa. Underside creamy-white with costal spot, sometimes connecting to basal spot; postdiscal spot broad between veins 2 and 4, surrounding apical spot.

Male genitalia: Dorsum relatively large. Tegumen narrow. Vinculum narrow. Socius

semicircular. Juxta small, well fused with postero-ventral portion of valvae. Phallus large and stout, barrel-shaped; vesica with many prominent thorn-like cornuti. Valvae well fused ventrally, with a short pointed process at antero- dorsal portion as in *Caleta.*

Female genitalia: Not examined.

The genus is monotypic, containing a single species which occurs in the mountain range of New Guinea. As TITE[51] noted, it is possible to regard some subspecies described by him as distinct species.

The genus is closely related to *Caleta* judging from the structure of the valvae. However, it is distinguished by the barrel-shaped phallus with many thorn-like spines of cornuti.

1. *Pistoria nigropunctata* (BETHUNE-BAKER, 1908)
   Mambara nigropunctata BETHUNE-BAKER, 1908, *Proc. zool. Soc. Lond.* 1908: 120, New Guinea. (Plate III, 4a-b)
   Distribution: New Guinea.

Genus *Discolampa* TOXOPEUS, 1929

Discolampa TOXOPEUS, 1929, *Tijdschr. Ent.* 72: 232.
Type species: *Lycaena ethion* WESTWOOD, [1851], in DOUBLEDAY, *Gen. diurn. Lep.* (2), pl. 76. fig. 3. By monotypy.

Ethion SHIRŌZU & SAIGUSA, 1962, *Nature Life Southeast Asia* 2: 63.
Type species: *Lycaena ethion* WESTWOOD, [1851]. By original designation.
Ethion is a junior objective synonym of *Discolampa* TOXOPEUS, 1929.

Wing: Forewing veins 11 and 12 anastomosed. Upperside of male blue with black border and white discal band. Forewing underside creamy-white with two submarginal blackish stripes and postdiscal striae; discal striae absent in *albula.*

Male genitalia: Dorsum moderate in size. Vinculum narrow, angled at the middle. Brachium vestigial or completely reduced. Socius semicircular in lateral view. Juxta U-shaped, with distal portions of lateral arms dilated. Phallus short and stout; subzonal sheath 4/5 as long as entire length of phallus; subzonal sheath swollen at the middle; suprazonal sheath short with a process which is short and curved ventrally in *ethion* and *albula,* longer and more slender in *ilissus*; vesica with minute spinuli. Valva long and slender in *ethion* and *ilissus,* small with a short process at distal portion in *albula.*

Female genitalia: Apophysis asterioris short. Lamella antevaginalis weakly sclerotized, semicirculr or triangular in ventral view. Lamella postvaginalis not developed. Bursa copulatrix very long. Corpus bursae guttiform; signa absent. Ductus bursae long and slender, caudal portion slightly swollen near the attachment point of ductus seminalis. Papillae anales nearly equilaterally triangular.

Distribution: India, Sundaland, Philippines to New Guinea.

The genus is distinct in having a narrow vinculum which is angled at the middle, and a unique phallus which is short and stout. The genus contains the following three species.

1. *Discolampa ethion* (WESTWOOD), [1851] (Fig. 1, H; Fig. 19, A- C; Fig. 35, A)
   Lycaena ethion WESTWOOD, [1851], *Gen. diurn. Lep.* (2): 490. (Fig. 3, 5a-b)
   Discolampa negrosiana MURAYAMA, 1983 **syn. nov.** *New Ent.* 32 (2): 18, figs. 9, 19. (= *D. ethion ulysses* (STAUDINGER, 1889)).

Distribution: India, Myanmar, Thailand, Indo-China, South China, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas.

MURAYAMA[52] described *negrosiana* from Negros, Philippines, but the taxon exhibit no differences even at subspecies level from *ulysses* STAUDINGER from Palawan.

2. *Discolampa ilissus* (C. & R. FELDER, 1859) (Fig. 19, D-E)
Danis ilissus C. & R. FELDER, 1859, *Wien. ent. Monats.* 3: 186.
Distribution: Sulawesi.
3. *Discolampa albula* (GROSE-SMITH, 1897) (Fig. 19, F-G)
Thysonotis albula GROSE-SMITH, 1897, *Proc. zool. Soc. Lond.* 1895: 617.
Distribution: New Guinea.

6.9. The *Jamides* section

The *Jamides* section is characteristic in having a short cross-vein linking veins 11 and 12 of forewing.

The section contains two genera, *Jamides* HÜBNER and *Epimastidia* H. H. DRUCE.

Genus *Jamides* HÜBNER, [1819]

Jamides HÜBNER, [1819], *Verz. bekannt. Schmett.* (5): 71.
Type species: *Papilio bochus* STOLL, [1782], *Uitl. Kapellen* 4 (33): 210, pl. 391, figs. C, D.
By selection by SCUDDER (1865, *Proc. amer. Acad. Arts Sci. Boston* 10: 199)

Wing: Forewing vein 11 linked to 12 by a short cross-vein (Fig. 4, A). Underside ochreous or grayish-brown with pale buff markings in the *bochus* group, grayish-white or brownish-gray with whitish markings in the *celeno* group; in the *celebica* and the *euchylas* subgroups, discal and basal markings are faded, and the pattern is *Danis*-like in the latter. Subbasal striae usually absent as in the *pavana* group of *Nacaduba.*

Male genitalia: Dorsum moderate in size. Tegumen narrow; dorsal portion narrow, extremely narrow band-like in the *bochus* group. Vinculum narrow. Brachium usually hooked and pointed, exceptionally apical portion rounded and flattened in the *bochus* group. Socius variable in shape, semicircular, triangular or rectangular in lateral view, separated by indistinct lateral fenestrula from tegumen. Juxta Y- or V-shaped, sometimes bearing minute or long hairs on the posterior surface. Phallus large and cylindrical, or long and apically tapered; coecum rounded, produced antero-ventrally; suprazonal sheath terminating in a Chapman's process in most species, but posterior margin of ventro-distal portion invaginated at the middle in the *elpis* group, spatulate latero-apically in the *aratus* subgroup. Valva variable, broad and spoon-like in the *bochus* group, bifid in the *celeno* and *euchylas* subgroups, thin and needle-like costal process present in the *aleuas* subgroup, broad with a stout, long or short costal process in the *elpis* subgroup, and bifid with a sickle-shaped hook on the dorsal arm in the *cyta* subgroup.

Female genitalia: Apophysis anterioris relatively long, especially in the *elpis* subgroup. Intersternal pouch well developed and deep in the *celeno* subgroup. Genital plate usually well developed. Corpus bursae ellipsoidal in the *bochus* group, nearly guttiform in the *celeno* group; signa present except in the *elpis* subgroup, usually being represented by a pair of minute sclerites or by large discoidal patches with a pointed process. Ductus bursae long and slender; caudal portion more or less sclerotized. Ductus seminalis long and slender, attached to caudal portion of ductus bursae. Vagina relatively long, and

forming a long oval chamber in the *bochus* group.

Distribution: India, Sundaland, South China, Taiwan, Ryukyus, Philippines, Sulawesi to New Guinea, Australia, Solomons extending to Fiji.

The genus is one of the most complicated groups in the Polyommatini, and it has never been revised systematically. In the present study, I recognized 57 species based on examination of type specimens of various taxa in BMNH, and some additional 200 specimens.

The species which occur in the Malay Peninsula were studied by RILEY & CORBET[53], and ELIOT[17]. They recognized several species groups in the genus based on the wing markings. However, some taxa are not always reliable upon their external characters for phylogenetical classification.

In the present study, the genus is revised, primarily on the male and female genital structures. As HIROWATARI[54] pointed out, the structures of the female genitalia are useful not only in identifying species, but also for assessing their phylogenetic relationships. As a result, the genus is divided into two groups , i.e., the *bochus* and *celeno* groups. The latter is further divided into seven subgroups (*cyta, aratus, aleuas, elpis, celebica* and *euchylas* subgroups).

I. The *bochus*-group.

1. *Jamides bochus* (STOLL), [1782] (Fig. 1, A-D; Fig. 4, A)
   Papilio bochus STOLL, [1782], *Uitl. Kapellen* 4 (3): 210, pl. 391, figs. C, D.
   Distribution: India, Myanmar, Thailand, Taiwan, Ryukyus, Sundaland, Sulawesi, Philippines, Moluccas to Micronesia.
2. *Jamides seminiger* GROSE-SMITH, 1895 (Fig. 20, A-D)
   Jamides seminiger GROSE-SMITH, 1895, *Novit. zool.* 2: 509, Bachan. (Plate III, 6)
   Jamides seminiger porphyris HOLLAND, 1900 **stat. nov.**
   Jamides seminiger tiglath (FRUHSTORFER, 1915) **comb. nov.** (Plate III, 7)
   Distribution: Moluccas.
3. *Jamides phaseli* (MATHEW, 1889)
   Lampides phaseli MATHEW, 1889, *Trans. ent. Soc. Lond.* 37: 312, North Australia. (Plate III, 8)
   Distribution: North-east Australia.
4. *Jamides purpuratus* GROSE-SMITH, 1894
   Jamides purpurata GROSE-SMITH, 1894, *Novit. zool.* 1: 574, New Guinea.
   Distribution: New Guinea.
5. *Jamides soemias* H. H. DRUCE, 1891 (Fig. 36, D)
   Jamides soemias H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 367, pl. 32, figs. 4, 5, Alu I., Fauro I., Florida I., N. W. Bay, Malaita I. (Plate III, 9a-c)
   Jamides soemias timon GROSE-SMITH, 1895 **stat. nov.**
   Distribution: Bismarcks, Solomons.

I treat *timon* as a subspecies of *soemias* after examining the genitalia of the holotype (BM.v.1154), and of other topotypical specimens.

6. *Jamides cephion* H. H. DRUCE, 1891
   Jamides cephion H. H. DRUCE, 1891, *Proc. zool. Soc. Lond*: 367, pl. 31, fig. 19, Aola, Guadalcanar Island.
   Distribution: Solomons.
7. *Jamides amarauge* H. H. DRUCE, 1891 (Fig. 36, C)

Jamides amarauge H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 366, pl. 31, figs. 20, 21, Aru I., Guadalcanar I., Florida I.
Distribution: New Guinea, Bismarcks, Solomons.

8. *Jamides goodenovii* (BUTLER, 1876)
Lampides goodenovii BUTLER, 1876, *Proc. zool. Soc. Lond.* 1876: 252, Espirito Santo, New Hebrides.
Distribution: Vanuatu (New Hebrides).

9. *Jamides pulcherrima* BUTLER, 1884
Jamides pulcherrima BUTLER, 1884, *Ann. Mag. nat. Hist.* (5) 13: 347, Tanna, New Hebrides.
Distribution: New Hebrides.

I regard *kava* H. DRUCE, 1892 and *morphoides* BUTLER, 1884 as being conspecific with *pulcherrima* BUTLER. The former two taxa are symonym with, or subspecies of the latter, but I prefer to address this in another study.

10. *Jamides candrenus* (HERRICH-SCHAEFFER, 1869)
Lycaena candrena HERRICH-SCHAEFFER, 1869, *Stett. ent. Ztg.* 30: 74, Fiji.
Distribution: Fiji.

11. *Jamides carrissima* (BUTLER), [1876]
Lampides carissima BUTLER, [1876], *Proc. zool. Soc. Lond.* 1875: 615, pl. 67, figs. 4, 5, Erromango, New Hebrides.
Distribution: Vanuatu (New Hebrides).

I tentatively treat this taxon as a distinct species. However, more detailed comparison of *carrissima* with *pulcherrima* and *candrenus* will be required to ascertain the exact statuses of all of these taxa.

12. *Jamides walkeri* H. H. DRUCE, 1892
Jamides walkeri H. H. DRUCE, 1892, *Proc. zool. Soc. Lond.* 1892: 443, pl. 27, figs. 13, 14, Aitutaki I., Rarotonga I., Cook Is. (Plate III,10a-b)
Distribution: Cook Islands.

II. The *celeno* group

(i) The *cyta* subgroup

13. *Jamides areas* (H. H. DRUCE, 1891) (Fig. 20, E-H)
Lampides areas H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 368, pl. 32, figs. 7, 8, Alu I., Aola, Guadalcanar I.
Distribution: Solomons.

14. *Jamides nitens* (JOICEY & TALBOT, 1916) (Fig. 20, I-L)
Lampides nitens JOICEY & TALBOT, 1916, *Ann. Mag. nat. Hist.* (8) 17: 80, pl. 8, fig. 5, Wandammen Mtns.
Distribution: New Guinea.

15. *Jamides cyta* (BOISDUVAL), [1832]
Catochrysops cyta BOISDUVAL, [1832], In d'URVILLE, *Voy. Astrolabe* 1(Lép): 87, New Ireland.
Distribution: Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas, New Guinea, Bismarcks, North-east Australia.

16. *Jamides snelleni* (RÖBER),[1886]
Plebejus snelleni RÖBER, [1886], *Correspbl. ent. Ver. Iris* 1: 54, pl. 4, fig. 9, Sud-

Celebes (Bonthain), Ost-Celebes (Tomboegoe).
Distribution: Sulawesi.

TAKANAMI[55] synoymized *ohtai* H. HAYASHI, 1976 with *snelleni.*

17. *Jamides puloensis* TITE, 1960
Jamides puloensis TITE, 1960, *Bull. Br. Mus. nat. Hist.* (Ent.) 9 (5): 333, text-figs. K, L, M, Pulo Laut, Borneo.
Distribution: Borneo.
18. *Jamides lugine* (H. H. DRUCE, 1895) (Fig. 21, A-F)
Nacaduba lugine H. H. DRUCE, 1895, *Proc. zool. Soc. Lond.* 1895: 557, pl. 32. fig. 15, Labuan.
Distribution: Borneo.
19. *Jamides limes* (H. H. DRUCE, 1895) (Fig. 37, A-B)
Lampides limes H. H. DRUCE, 1895, *Proc. zool. Soc. Lond.* 1895: 577, pl. 32, fig. 16, Kina Balu.
Distribution: Borneo.

(ii) The *celeno* subgroup

20. *Jamides celeno* (CRAMER),[1775]
Papilio celeno CRAMER, [1775], *Uitl. Kapellen* 1: 51, pl. 31, figs. C, D, Surinamen.
Distribution: India, Sundaland, Taiwan, Sulawesi, Philippines, Moluccas, New Guinea, Bismarcks, Solomons Vanuatu (New Hebrides) .
21. *Jamides pura* (MOORE, 1886)
Lampides pura MOORE, 1886, *J. Linn. Soc.* (*Zool.*) 21: 41, Mergui.
Distribution: India, Myanmar, Thailand, Indo-China, Peninsular Malaya, Sumatra, Jawa, Borneo, Palawan.
22. *Jamides fractilinea* TITE, 1960
Jamides fractilinea TITE, 1960, *Bull. Br. Mus. nat. Hist.* (Ent.) 9 (5): 335, text-figs. C, F, G, Macassar, Celebes.
Distribution: South Sulawesi.

(iii) The *aratus* subgroup

23. *Jamides zebra* (H. H. DRUCE, 1895)
Lampides zebra H. H. DRUCE, 1895, *Proc. zool. Soc. Lond.* 1895: 583, pl. 32, fig. 18, Kina Balu, Labuan, Sarawak.
Distribution: Thailand, Peninsular Malaya, Sumatra, Borneo.
24. *Jamides aratus* (STOLL),[1781]
Papilio aratus STOLL, [1781], *Uitl. Kapellen* 4: 144, pl. 365, figs. A, B, Amboina.
Distribution: Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Palawan, Moluccas.

Though there has been confusion between the status of *aratus* and the next species *aetherialis,* real *aratus* occurs from Peninsular Malaya eastwards to the Moluccas.

25. *Jamides aetherialis* (BUTLER, 1884) (Fig. 21, G-L) **stat. rev.**
Lampides aetherialis BUTLER, 1884, *Ann. Mag. nat. Hist.* (5)13: 195, Kai. (Plate III, 12a-b)
Distribution: East Moluccas, New Guinea, Bismarcks, Solomons.

This species is easily distinguished from *aratus* by the shape of its valva (Fig. 21, H,

I). FRUHSTORFER[32] treated these species correctly. Nevertheless, representatives of *aetherialis* from New Guinea and its adjacent islands have long been regarded as *aratus* by subsequent authors.

26. *Jamides cleodus* (C. & R. FELDER), [1865]
Lycaena cleodus C. & R. FELDER, [1865], *Reise Novara* 2: 272, pl. 34, figs. 20-22, Luzon.
Distribution: Philippines.

There are three specimens from "Formosa" collected by FRUHSTORFER in BMNH, but the record seems to have never been published. No further specimens have been recorded from Taiwan.

(iv) The *aleuas* subgroup

27. *Jamides philatus* (SNELLEN, 1878)
Cupido philatus SNELLEN, 1878, *Tijdschr. Ent.* 21: 21, pl. 1, fig. 5, Celebes.
Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas, Irian Jaya.
28. *Jamides anops* (DOHERTY, 1892) (Fig. 22, A-D)
Lampides anops DOHERTY, 1892, *J. asiat. Soc. Bengal* 60(2): 183, Sumba, Sumbawa.
Distribution: Sumba, Sumbawa.
29. *Jamides aleuas* (C. & R. FELDER), [1865] (Fig. 22, E-H)
Lycaena aleuas C. & R. FELDER, [1865], *Reise Novara* 2: 268, pl. 33, figs. 15,16, Misol.
Distribution: Aru, Mysol, New Guinea, Bismarcks, North Australia.

TITE[56] included *aleuas* in "the *euchylas* complex", but this species is closely related to *philatus* and *anops*.

30. *Jamides malaccanus* (RÖBER), [1886]
Plebeius malaccanus RÖBER, [1886], *Correspbl. ent. Ver. Iris* 1: 57, pl. 4, fig. 3, Malacca (Perak).
Distribution: Thailand, Peninsular Malaya, Sumatra, Jawa.
31. *Jamides parasaturatus* (FRUHSTORFER, 1915)
Lampides suidas f. *parasaturatus* FRUHSTORFER, 1915, *Arch. Naturgesch.* (A)81(6): 8, fig. 5, Sumatra.
Distribution: Peninsular Malaya, Sumatra, Jawa.
32. *Jamides suidas* (C. & R. FELDER), [1865]
Lycaena suidas C. & R. FELDER, [1865], *Reise Novara* 2: 373, pl. 34, figs. 18, 19, Luzon.
Distribution: Philippines.
33. *Jamides festivus* (RÖBER), [1886] (Fig. 23, A-D)
Plebeius festivus RÖBER, [1886], *Correspbl. ent. Ver. Iris* 1: 58, pl. 4. fig. 17, Ost- und Sud-Celebes (Tomboegoe, Bantimoerang).
Distribution: Sulawesi.

(v) The *elpis* subgroup

34. *Jamides cunilda* SNELLEN, 1896
Jamides cunilda SNELLEN, 1896, *Tijdschr. Ent.* 39: 91, pl. 1, fig. 4, West Java.
Distribution: Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa.

35. *Jamides virgulatus* (H. H. DRUCE, 1895)
Lampides virgulatus H. H. DRUCE, 1895, *Proc. zool. Soc. Lond.* 1895: 581, pl. 32, fig. 17, S. E. Borneo.
Distribution: Borneo, Palawan.

I tentatively regard representatives from Borneo and Palawan (*cunilda sekii* TAKANAMI, 1988[47]) as *virgulatus*.

36. *Jamides latimargus* (SNELLEN, 1878)
Cupido latimargus SNELLEN, 1878, *Tijdschr. Ent.* 21: 19, pl. 1, fig. 4, Celebes.
Distribution: Sulawesi.

37. *Jamides lucide* (de NICÉVILLE, 1894) (Fig. 23, E-I)
Lampides lucide de NICÉVILLE, 1894, *J. asiat. Soc. Bengal* 63(1): 33,pl. 5, fig. 3, Sumatra.
Distribution: Sumatra.

38. *Jamides ferrari* EVANS, 1932
Jamides ferrari EVANS, 1932, *Ident. Indian Butt.* (2nd ed.): 238, Nicobars.
Distribution: Peninsular Malaya, Nicobars, Sumatra.

39. *Jamides coruscans* (MOORE, 1877)
Lampides coruscans MOORE, 1877, *Ann. Mag. nat. Hist.* (4) 20: 341, Ceylon.
Distribution: Sri Lanka.

40. *Jamides abdul* (DISTANT, 1886)
Lampides abdul DISTANT, 1886, *Rhop. Malayana*: 456, pl. 44., fig. 22, Malay Peninsula; Malacca.
Distribution: Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo.

41. *Jamides lacteata* (de NICÉVILLE, 1895)
Lampides lacteata de NICÉVILLE, 1895, *J. Bombay nat. Hist. Soc.* 10(1): 36, pl. S, figs. 25, 26, Ceylon.
Distribution: India, Sri Lanka.

42. *Jamides talinga* (KHEIL, 1884)
Plebeius talinga KHEIL, 1884, *Rhop. Nias*: 29, pl. 5, figs. 32, 33. Nias.
Distribution: Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo.

43. *Jamides alecto* (C. FELDER, 1860)
Cupido alecto C. FELDER, 1860, *Sber. Akad. Wiss Wien* 40: 456, Amboina.
Distribution: India, Sri Lanka, Myanmar, South China, Indo-China, Taiwan, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas.

44. *Jamides pseudosias* ROTHSCHILD, 1915 (Fig. 37,C-D)
Jamides pseudosias ROTHSCHILD, 1915, *Novit. zool.* 22: 138, Misol.
Distribution: Sulawesi, Moluccas, Irian Jaya.

45. *Jamides alsietus* (FRUHSTORFER, 1915)
Lampides alsietus FRUHSTORFER, 1915, *Arch. Naturgesch.* (A)81(6): 15, fig. 11, Bazilan.
Distribution: Philippines.

46. *Jamides reverdini* (FRUHSTORFER, 1915)
Jamides reverdini FRUHSTORFER, 1915, *Zool. Meded.* 1: 143, New Guinea.
Distribution: New Guinea.

47. *Jamides schatzi* (RÖBER), [1886]
Plebeius schatzi RÖBER, [1886], *Correspbl. ent. Ver. Iris* 1: 53, pl. 4, fig. 1, Batjan.
Distribution: Philippines, Moluccas.

48. *Jamides elpis* (GODART),[1824] (Fig. 1,E)
Polyommatus elpis GODART, [1824], *Ency. méth.* 9 (Ins.): 654, Java.
Distribution: India, Myanmar, Thailand, Peninsular Malaya, Indo-China, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas.
49. *Jamides kankena* (C. FELDER, 1862)
Lycaena kankena C. FELDER, 1862, *Verh. zool. bot. Ges. Wien* 12: 481.
Distribution: Nicobars.

This taxon has been considered to be conspecific with *caerulea*[32),52)], but its genital structure shows its close relationships with *elpis*.

50. *Jamides caeruleus* (H. DRUCE, 1873)
Cupido caerulea H. DRUCE, 1873, *Proc. zool. Soc. Lond.* 1873: 349, pl. 32. fig. 6, Borneo.
Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo.
51. *Jamides rothschildi* H. HAYASHI, 1977 (Fig. 37, E-F)
Jamides rothschildi H. HAYASHI, 1977, *Tyô to Ga*, 28: 167, Figs. 1, 2.
Distribution: Mindanao, Moluccas.

"*Jamides rothschildi*" is an unpublished name by TOXOPEUS and the first author to use the name and figure the species was D'ABRERA, 1971. However, TAKANAMI[27)] regarded the first author as H. HAYASHI, 1977 because D'ABRERA gave no satisfactory description (ICZN Art. 13).

52. *Jamides callistus* (RÖBER), [1886]
Plebeius callistus RÖBER, [1886], *Correspbl. ent. Ver. Iris* I: 55, pl. 4, fig. 13, Philippinen (Luzon).
Distribution: Borneo, Philippines.

(vi) The *celebica* subgroup

53. *Jamides celebica* (ELIOT, 1969) (Plate I, 11a-b; Fig. 22, I-J; Fig. 36, A-B)
Epimastidia celebica ELIOT, 1969, *Entomologist* 102: 274, pl. 9, figs. 1a, 1b, Paloe, West Celebes.
Distribution: Sulawesi.

This species was originaly described by ELIOT[58)] based on a single female. The male has long been unknown, but several male specimens were recently collected by A. CASSIDY (pers. comm.).

(vii) The *euchylas* subgroup

54. *Jamides euchylas* (HÜBNER), [1819]
Pepliphorus euchylas HÜBNER, [1819], *Verz. bekannt. Schmett.* (5): 71, Ceram, Amboina.
Distribution: Moluccas.
55. *Jamides aruensis* (PAGENSTECHER, 1884)
Cupido euchylas v. *aruensis* PAGENSTECHER, 1884, *Jb. nass. Ver. Nat.* 37: 190, Aru.
Distribution: Aru, Kai, Waigeo, New Guinea.
56. *Jamides coritus* (GUÉRIN-MÉNEVILLE), [1831]
Polyommatus coritus GUÉRIN-MÉNEVILLE, [1831], *Voy. Coquille* (Zool.) 2(2): t. 18, fig. 3, Dory.
Distribution: New Guinea.

57. *Jamides nemophilus* (BUTLER, 1876)
Danis nemophila BUTLER, 1876, *Ann. Mag. nat. Hist.* (4) 18: 245, Pt. Moresby.
Distribution: New Guinea.

Genus *Epimastidia* H. H. DRUCE, 1891

Epimastidia H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 365.
Type species: *Lycaena inops* C. & R. FELDER, 1860, *Wien. ent. Monats.* 4: 244. By original designation.

Wing: Hindwing rounded, tailless. Forewing veins 11 and 12 linked by a short cross-vein or sometimes touching briefly. Underside white or creamy-white, with marginal blackish border; postdiscal striae absent.

Male genitalia: Dorsum moderate in size. Vinculum narrow. Brachium hooked, slender. Juxta U-shaped, lateral arms very slender. Phallus long and slender, subzonal sheath 6/7 as long as entire length of phallus; bulbus ejaculatorius on the proximal portion of subzonal sheath; vesica without cornuti. Valva narrow at proximal portion and distal end, widest at posterior 3/5 of whole valva.

Female genilatia: Apophysis anterioris short. Genital plate not developed. Bursa copulatrix long. Corpus bursae guttiform; signa very minute, situated on rather anterior portion of corpus bursae. Ductus bursae long, caudal portion well sclerotized and depressed dorso-ventrally. Ductus seminalis relatively short, attached just cepharad of sclerotized portion of ductus bursae. Vestibulum large. Papillae anales triangular.

Distribution: New Guinea, Bismarcks, Solomons.

The genus is distinguished by the ductus bursae of the female genitalia which is well sclerotized caudally and depressed dorso-ventrally.

ELIOT[1] placed *Epimastidia* in his *Danis* section. However, the male and female genitalia of this genus show no close relationship with *Danis*. I place this genus in the *Jamides* section, based on wing venation and female genitalia.

The genus contains the following two species.

1. *Epimastidia inops* (C. & R. FELDER, 1860) (Fig. 4, C)
Lycaena inops C. & R. FELDER, 1860, *Wien. ent. Monats.* 4(8): 244, Aru.
Distribution: New Guinea, Aru.
2. *Epimastidia arienis* H. H. DRUCE, 1891 (Fig. 35, D)
Epimastidia arienis H. H. DRUCE, 1891, *Proc. zool. Soc. Lond.* 1891: 365, pl. 32, fig. 6, Florida Island.
Distribution: Bismarcks, Solomons.

6.10. The *Catochrysops* section

ELIOT[1] combined *Catochrysops* BOISDUVAL and *Rysops* ELIOT to form the *Catochrysops* section. *Catochrysops* occurs in the Oriental and Australian Regions, while *Rysops* contains a single Madagascar species. In the present study, I follow ELIOT because *Catochrysops* is distinct in having a papilla analis which is modified into an acutely pointed ovipositor.

Genus *Catochrysops* BOISDUVAL, 1832

Catochrysops BOISDUVAL, 1832, In d'URVILLE, *Voy. Astrolabe* 1(Lép.): 87.

Type species: *Hesperia strabo* FABRICIUS, 1793, *Ent. syst.* 3 (1): 287. By selection by SCUDDER (1875, *Proc. amer. Acad. Arts Sci. Boston* 10: 136).

Wing: Forewing veins 11 and 12 briefly touching. Underside grayish white with white-edged postdiscal striae; hindwing with two black costal spots and postdiscal striae.

Male genitalia: Dorsum large. Vinculum narrow. Brachium hooked. Juxta Y-shaped. Phallus long, somewhat flattened dorso-ventrally; subzonal sheath 6/7 as long as entire length of phallus; bulbus ejaculatorius on the proximal portion of subzonal sheath; vesica with two groups of cornuti comprising minute spinules. Valva with basal half broad, distal half tapering into a slender pointed process.

Female genitalia: Apophysis anterioris short. Lamella antevaginalis well developed, semicircular in ventral view. Lamella postvaginalis undeveloped. Corpus bursae ellipsoidal; signa minute band-like, situated on the median portion of corpus bursae. Papilla analis triangular, well elongated posteriorly, modified into an acutely pointed ovipositor.

Distribution: India, Sundaland, Philippines to New Guinea, Australia, Solomons, extending to Samoa and Tahiti.

Adopting the classification of TITE[59], the following six species are contained in the genus.

1. *Catochrysops strabo* (FABRICIUS, 1793)
   Hesperia strabo FABRICIUS, 1793, *Ent. syst.* 3: 287, India.
   Distribution: India, Sri Lanka, Myanmar, Thailand, South China, Indo-China, Taiwan, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Moluccas.
2. *Catochrysops strabobinna* SWINHOE, 1916 **nom. rev.**
   Catochrysops strabo-binna SWINHOE, 1916, *Ann. Mag. nat. Hist.* (8) 18: 209.
   Catochrysops binna: TITE, 1959, *Entomologist* 92: 205, pl. 10, 11, fig. 3, text-fig. H.
   Distribution: Moluccas.
3. *Catochrysops amasea* WATERHOUSE & LYELL, 1914
   Catochrysops amasea WATERHOUSE & LYELL, 1914, *Butts. Australia*: 103, Cairns, Queensland.
   Distribution: New Guinea, Bismarcks, Solomons, Australia.
4. *Catochrysops panormus* (C. FELDER, 1860) (Fig. 4,E)
   Lycaena panormus C. FELDER, 1860, *Sber. Akad. Wiss. Wien* 40: 455, Amboina.
   Distribution: India, Sri Lanka, Sundaland, Taiwan, Sulawesi, Philippines, Moluccas, New Guinea, Bismarcks, Solomons, Vanuatu (New Hebrides), Australia, Micronesia.
5. *Catochrysops taitensis* (BOISDUVAL), [1832]
   Lycaena taitensis BOISDUVAL, [1832], In d'URVILLE, *Voy. Astrolabe* 1 (Lép.): 77, Tahiti.
   Distribution: Vanuatu (New Hebrides) , Fiji, Samoa, Tahiti.
6. *Catochrysops nubila* TITE, 1959
   Catochrysops nubila TITE, 1959, *Entomologist* 92: 212, pl. 10,11, fig. 8, text-figs. C, G, Ysabel Island.
   Distribution: Solomons, Vanuatu (New Hebrides).

6.11. The *Lampides* section

This section contains a single genus, *Lampides* HÜBNER, and is characterized by the

"long flask scales" on the upperside of the male wing, and a pair of auricular lamellae on the lodix.

Genus *Lampides* HÜBNER, [1819]

Lampides HÜBNER, [1819], *Verz. bekannt. Schmett.* (5): 70.
Type species: *Papilio boeticus* LINNAEUS, 1767, *Syst. nat.* 1 (2): 789. By selection by GROTE (1873, *Bull. Buffala Soc. nat. Sci.* (3): 173).

Cosmolyce TOXOPEUS, 1927, *Tijdschr. Ent.* 70: 268, nota.
Type species: *Papilio boeticus* LINNAEUS, 1767, *Syst. nat.* 1 (2): 789. By monotypy.
Cosmolyce TOXOPEUS, 1929 is a junior objective synonym of *Lampides* HÜBNER, [1819].

Lampidella HEMMINBG, 1933, *Entomologist* 66: 224.
Type species: *Papilio boeticus* LINNAEUS, 1767, *Syst. nat.* 1 (2): 789. By original designation.
Lampidella, HEMMING, 1933 is a junior objective synonym of *Lampides* HÜBNER, [1819].

Wing: Forewing veins 11 and 12 completely free. Underside pale brown with white fascia between postdiscal and submarginal striae. Long flask scales present on male wing.

Male genitalia: Dorsum small. Brachium small and short, proximal portion broad, distal half short and slender. Socius narrow. Juxta Y-shaped, lateral arms narrow. Phallus cylindrical; subzonal sheath 3/4 as long as entire length of phallus; ventro-distal portion of phallus rounded, posteriorly produced. Valva large, basal half broad, distal half narrow and flattened, distal portion hooked, posterior margin serrate.

Female genitalia: Lodix unique, a pair of auricular lamellae. Apophysis anterioris short. Lamella antevaginalis well developed; posterior half circular, median portion constricted in ventral view. Lamella postvaginalis small, represented by a pair of short linear sclerites. Corpus bursae ellipsoidal; signa absent.

The genus contains a single cosmopolitan species.

1. *Lampides boeticus* (LINNAEUS, 1767) (Fig. 4, F)
Papilio boeticus LINNAEUS, 1767, *Syst. nat.* 1 (2): 789.
Distribution: Europe, North Africa, and the Palaearctic, Oriental and Australian Regions, extending to islands of South Pacific, including Hawaii.

6.12. The *Callictita* section

The *Callictita* section is distinct in the possetion of forewing discoidal brands by the males.

This section contains a single genus, *Callictita* BETHUNE-BAKER.

Genus *Callictita* BETHUNE-BAKEM, 1908

Callictita BETHUNE-BAKER, 1908, *Proc. zool. Soc. Lond.* 1908 (1): 118.
Type species: *Callictita cyara* BETHUNE-BAKER, 1908, *ibid.* 1908 (1): 119, pl. 8, fig. 1. By original designation.

Wing: Forewing veins 11 and 12 briefly anastomosed. Male forewing upperside with a large or small discoidal brand (vestigial or absent in some species). Underside creamy-white with 4 brown bands on both wings, but hindwing bands usually diffuse in discal area, except for *upola.*

Male genitalia: Dorsum very small. Brachium relatively large and hooked. Socius

very narrow. Juxta Y-shaped. Phallus slender; subzonal sheath cylindrical, 1/3 as long as entire length of phallus suprazonal sheath slender and tapered. Valva large, basal half usually rectangular with a short costal process, distal half fan-shaped with several spines at postero-distal corner or posterior margin.

Female genitalia: Not examined.

The genus was regarded as monotypic, until PARSONS[60] revised the genus and recognized eight species, which is acceptable as being correct here. In addition, one new species from Irian Jaya, *upola* PARSONS & HIROWATARI[61] was added to the genus. The genus is confined to mountain peaks of New Guinea.

1. *Callictita cyara* BETHUNE-BAKER, 1908
   Callictita cyara BETHUNE-BAKER, 1908, *Proc. zool. Soc. Lond.* 1908: 119. pl. 8, fig. 1, Owgarra, New Guinea.
   Distribution: Papua New Guinea.
2. *Callictita lara* PARSONS, 1986
   Callictita lara PARSONS, 1986, *Bull. Allyn Mus.* 103: 9, Mt. Kaindi, Papua New Guinea.
   Distribution: Irian Jaya (Weyland Mts.) to Papua New Guinea.
3. *Callictita albiplaga* JOICEY & TALBOT, 1916
   Callictita cyara albiplaga JOICEY & TALBOT, 1916, *Ann. Mag. nat. Hist.* (8) 17: 80, pl. 7. fig. 5, Wandammen Mts., Dutch New Guinea.
   Distribution: Irian Jaya (Wandammen Mts.).
4. *Callictita upola* PARSONS & HIROWATARI, 1988
   Callictita upola PARSONS & HIROWATARI, 1988, *Tyô to Ga,* 39(4), 259, 259, figs. 1, 2, Weyland Mtns, Irian Jaya.
   Distribution: Irian Jaya.
5. *Callictita mala* PARSONS, 1986
   Callictita mala PARSONS, 1986, *Bull. Allyn Mus.* 103: 12, figs. 7, 45, 94, 95, Biagi, Mambare River, British New Guinea.
   Distribution: Papua New Guinea (Owen Stanley Mts.).
6. *Callictita jola* PARSONS, 1986
   Callictita jola PARSONS, 1986, *Bull. Allyn Mus.* 103: 13, figs. 46-49, 91-101, Tapini, Loloipa River, New Guinea.
   Distribution: Papua New Guinea (Tapini).
7. *Callictita felgara* PARSONS, 1986
   Callictita felgara PARSONS, 1986, *Bull. Allyn Mus.* 103: 13, figs. 8, 50, 51, 102, 103, Weyland Mts., Dutch New Guinea.
   Distribution: Irian Jaya (Weyland Mts. to Snow Mts.).
8. *Callictita tifala* PARSONS, 1986
   Callictita tifala PARSONS, 1986, *Bull. Allyn Mus.* 103: 14, figs. 52, 53, 104-109, Telefomin, Papua New Guinea.
   Distribution: Papua New Guinea (Telfomin to Tari).
9 *Callictita arfakiana* WIND & CLENCH, 1947
   Callictita arfakiana WIND & CLENCH, 1947, *Psyche* 54: 60, Mt. Siwi, Arfak, Dutch New Guinea.
   Distribution: Irian Jaya (Arfak Mts.).

6.13. The *Castalius* section

The *Castalius* section is characterized by the following characters: (i) the male juxta is fused with the lamella which enfolds the phallus at the zone, (ii) the valva bears the inner or costal process.

This section contains two genera, *Castalius* HÜBNER and *Tarucus* MOORE, both of which occur in the Ethiopian and Oriental Regions.

Genus *Castalius* HÜBNER, [1819]

Castalius HÜBNER, [1819], *Ver. bekannt. Schmett.* (5): 70.
Type species: *Papilio rosimon* FABRICUS, 1775, *Syst. Ent.*: 523. By selection by SCUDDER (1875, *Proc. amer. Acad. Arts Sci. Boston* 10: 135).

Wing: Forewing veins 11 and 12 briefly touching. Forewing underside pale yellow with basal band along vein 12, but with 4 striae in *fasciatus*; discal striae (or spot) discontinuous in *rosimon.*

Male genitalia: Dorsum small. Tegumen very narrow. Vinculum relatively wide in *rosimon,* but narrow in *fasciatus.* Brachium well developed and hooked. Socius long and narrow in *rosimon,* nearly semicircular in *fasciatus.* Juxta large and broad in *rosimon,* while U-shaped in *fasciatus.* Phallus long and slender, extremely slender in *fasciatus.* Valva long, basal portion broad, tapering apically, with bifid apex in *rosimon*; in *fasciatus*, it is bifid basally, represented by a pair of long slender processes.

Female genitalia: Apophysis anterioris relatively long and slender. Genital plate well developed; in *rosimon*, it is semicircular with median lobe, while in *fasciatus* it is sagittate and well fused with caudal portion of ductus bursae. Corpus bursae guttiform; signa absent. Ductus bursae slender; caudal portion well sclerotized in *fasciatus.* Papillae anales trapezoid.

Distribution: Africa, Europe to India, Sundaland, Philippines, Sulawesi, Lesser Sundas.

Most species of the genus occur in Africa, and from Europe to India. D'ABRERA[20] listed seven species from Africa, but ELIOT[17] suggested that these African species should be removed from the genus on the basis of genitalia. Two species, *rosimon* and *fasciatus,* are distributed in the Oriental Region.

1. *Castalius rosimon* (FABRICIUS, 1775) (Fig. 38, C-D)
   Papilio rosimon FABRICIUS, 1775, *Ent. Syst.*: 523.
   Distribution: India, Myanmar, Thailand, South China, Peninsular Malaya, Sumatra, Jawa, Borneo, Sulawesi, Philippines, Lesser Sundas.
2. *Castalius fasciatus* (RÖBER,1887) (Plate I, 12a-c; Fig. 38, F-E)
   Plebeius fasciatus RÖBER, 1887, *Correspbl. ent. Ver. Iris* 1: 194, pl. 9. fig. 15, Bangkai.
   Distribution: Sulawesi, Banggai.

As described above, the male and female genitalia of *fasciatus* show deviant features in comparison with those of *rosimon.* However, *fasciatus* is provisionally retained here in *Castalius* based on the wing venation and genital structure.

Genus *Tarucus* MOORE, [1881]

Tarucus MOORE, [1881], *Lep. Ceylon* 1 (3): 81.

Type species: *Hesperia theophrastus* FABRICIUS, 1793, *Ent. Syst.* 3 (1): 281. By original designation.

Wing: Forewing veins 11 and 12 free. Forewing underside pale yellow with basal blackish band along vein 12 as in *Castalius,* and with some discal striae; a series of metallic blue spots marginally on hindwing.

Male genitalia: Dorsum moderate in size. Tegumen broad, dorsal portion narrow. Socius narrow, ventro-distal portion posteriorly produced. Phallus relatively long and slender, subzonal sheath gently curved ventrally, apical portion pointed; bulbus ejaculatorius on the proximal portion of subzonal sheath. Valva variable in shape, with several types of process present on inner surface of valva.

Female genitalia: Apophysis anterioris relatively short and slender. Intersternal pouch deep, well sclerotized ventrally. Genital plate large, trapezoid, with weak projection at the median portion. Corpus bursae guttiform; signa absent. Ductus bursae long and slender. Ductus seminalis atttached to the caudal portion of ductus bursae. Papilla analis nearly semicircular in lateral view.

Distribution: Africa, Europe to India, Myanmar, Thailand, Penisular Malaya, Sumatra, Jawa, Borneo.

The genus is characterized by the broad lateral process of tegumen which is well fused with basal portion of the valva.

The following eight species are distributed in the Oriental Region[62),63)].

1. *Tarucus ananda* de NICÉVILLE, [1884] (Fig. 38, A-B)
   Tarucus ananda de NICÉVILLE, [1884], *J. Asiat. Soc. Bengal* 52: 75, pl. 1. figs. 11, 11a.
   Distribution: India, Myanmar, Thailand.
2. *Tarucus balkanicus* (FREYER, 1844)
   Lycaena balkanicus FREYER, 1844, *Neuere Beitr. Schmett.* 5 (71): 63, pl. 421, figs. 1, 2.
   Distribution: Balkan Peninsula, North Africa to India.
3. *Tarucus callinara* BUTLER, 1886 (Fig. 24, A-B)
   Tarucus callinara BUTLER, 1886, *Ann. Mag. nat. Hist.* (5) 18: 185.
   Distribution: India, Nepal, Myanmar, Thailand.
4. *Tarucus hazara* EVANS, 1932 (Fig. 24, C-E)
   Tarucus venosus hazara EVANS, 1932, *Ident. India. Butts.* (2nd ed.): 215, Abbottabad.
   Distribution: India, Myanmar.
5. *Tarucus indica* EVANS, 1932 (Plate III, 13a-b; Fig. 24, F-H)
   Tarucus theophrastus indica EVANS, 1932, *Ident. India. Butts.* (2nd ed.): 216.
   Distribution: India.
6. *Tarucus nara* (KOLLAR), [1884]
   Lycaena nara KOLLAR, [1844], In *HUGEL's Kashmir,* 4(2): 421, pt. 2: 421.
   Distribution: India, Nepal, Sri Lanka, Myanmar.
7. *Tarucus venosus* MOORE, 1882 (Fig. 25, A-B)
   Tarucus venosus MOORE, 1882, *Proc. zool. Soc. Lond.* 1882: 245, pl. 12, figs. 6, 6a.
   Distribution: India, Bangladesh.
8. *Tarucus waterstradti* H. H. DRUCE, 1895
   Tarucus waterstradti H. H. DRUCE, 1895, *Proc. zool. Soc. Lond.* 1895: 585, pl. 32, fig. 21., Kina Balu.
   Distribution: India, Myanmar, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo,

Philippines.

6.14. The *Famegana* section

The *Famegana* section is distinguished by the following characters: (i) the dorsum is broad, swollen laterally, and (ii) the socius is weakly hooked, apically pointed, basal portion curved ventrally.

Genus *Famegana* ELIOT, 1973

Famegana ELIOT, 1973, *Bull. Br. Mus. nat. Hist.* (Ent.) 28: 453.
Type species: *Lycaena alsulus* HERRICH-SHAEFFER, 1869, *Stett. ent. Ztg.* 1869: 75. By monotypy.

Wing: Forewing veins 11 and 12 briefly touching. Underside grayish white with only submarginal spots.

Male genitalia: Dorsum broad, swollen laterally. Brachium short and hooked, basal portion swollen laterally. Socius weakly hooked, basal portion curved ventrally with pointed tip, clearly separated from tegumen. Juxta U-shaped, lateral arms slender. Phallus long, subzonal sheath 1/2 as long as entire length of phallus; ventral portion of suprazonal sheath elongate posteriorly with apical portion acuminate. Valva rather broad, dorsal portion well produced posteriorly.

Female genitalia: Apophysis anterioris very short. Genital plate triangular, relatively large, weakly sclerotized. Corpus bursae globular; signa absent. Ductus bursae long and slender, caudal portion weakly sclerotized. Papillae anales very long and slender. Apophysis posterioris very long and slender.

The genus is monotypic. It is externally similar to the genera of the *Zizeeria* section, but is distinguished by the characters described above.

1. *Famegana alsulus* (HERRICH-SCHAEFFER, 1869)
   Lycaena alsulus HERRICH-SCHAEFFER, 1869, *Stett. ent. Ztg.* 30: 75, Rockhampton.
   Distribution: South China, Taiwan, Philippines, North Australia, Vanuatu (New Hebrides), New Caledonia, Fiji, Samoa.

6.15. The *Pithecops* section

The *Pithecops* section is characteristic in having a short male fore tarsus. This section contains a single genus, *Pithecops* HORSFIELD.

Genus *Pithecops* HORSFIELD, [1828]

Pithecops HORSFIELD, [1828], *Descr. Cat. lep. Ins. EastIndia Coy.* (I): 66.
Type species: *Pithecops hylax* HORSFIELD, [1828], *ibid.*(I), fig. 2. Designated by the Commission under its Plenary Powers.

Eupsychellus RÖBER, 1891, *Tijdschr. Ent.* 34: 316.
Type species: *Lycaena dionisius* BOISDUVAL, [1832], in d'URVILLE, *Voy. Astrolabe* 1 (Lép.) 1: 82. By monotypy.

Wing: Hindwing rounded, tailless. Forewing veins 11 and 12 briefly anastomosed in *phoenix* and *dionisius*, anastomosed almost to costa in other species. Origin of hinding vein 5 situated at middle of veins 4 and 6 in *corvus, fulgens, mariae*, close to 6 in *phoenix*, and much closer in *dionisius*.

Male genitalia: Dorsum moderate in size, but exceptionally small in *phoenix*. Brachium weakly curved in *corvus* and *fulgens*, flattened and apical portion hooked in *mariae*, completely obsolete in *phoenix* and *dionisius*. Juxta Y-shaped, extremely large and broad in *phoenix*. Phallus long and slender, except *phoenix*, subzonal sheath 2/3 - 3/4 as long as entire length of phallus; in *phoenix*, it is very small, subzonal sheath shorter than suprazonal sheath. Valva long and narrow in *corvus*, *fulgens* and mariae, broad in *phoenix* and *dionisius*.

Female genitalia: Apophysis anterioris obscure. Intersternal pouch relatively deep. Genital plate triangular or lanceolate in *corvus* and *fulgens*, crater-like in *dionisius*; in *phoenix* it is long and club-like, and situated inside anterior portion of 7th abdominal segment extending to papillae anales. Bursa copulatrix long and guttiform in *corvus* and *fulgens*, short in *dionisius*. Ductus seminalis long and slender.

Distribution: India to Sundaland, Philippines, Taiwan, Tsushima Is., Sulawesi to New Guinea, Solomons, Vanuatu (New Hebrides).

RÖBER[64] erected *Eupsychellus* for *dionisius* because origins of hinding veins 5 and 6 are so close. However, the venation of *phoenix* is intermediate between *dionisius* and remaining three species. These five species appear to comprize a monophyletic group, and cannot be separated, because all have a short fore tarsus in the male, and an elongated abdomen in both sexes. I regard these as congeneric, accepting the treatment of FRUHSTORFER[65] and COWAN[66].

1. *Pithecops corvus* FRUHSTORFER, [1919] (Fig. 1, I)
   Pithecops corvus FRUHSTORFER, [1919], *Arch. Naturgesch.* (A)83(1): 79, fig. 1, Sumatra, Nias, Nord-Borneo, Perak.
   Distribution: India, Myanmar, South China, Indo-China, Taiwan, Ryukyus, Thailand, Peninsular Malaya, Sumatra, Jawa, Borneo, Philippines.
2. *Pithecops fulgens* DOHERTY, 1889 (Fig. 1, J)
   Pithecops fulgens DOHERTY, 1889, *J. asiat. Soc. Bengal* 58(1): 127, pl. 10, fig. 6, Assam.
   Distribution: India, Peninsular Malaya, Taiwan, Tsushima Is.
   Only a single male has been recorded from Peninsular Malaya[67].
3. *Pithecops mariae* de NICÉVILLE, 1894
   Pithecops mariae de NICÉVILLE, 1894, *J. Asiat. Soc. Bengal* 63(1): 30, pl. 4, figs. 2, 9, Sumatra. (Plate III, 14a-b)
   Distribution: Sumatra.
4. *Pithecops phoenix* RÖBER, [1886] (Fig. 1, K; Fig. 25, C-D; Fig. 33, G-H)
   Pithecops phoenix RÖBER, [1886], *Coresspbl. ent. Ver. Iris* 1(1): 61, Ost-Celebes (Tomboegoe).
   Distribution: Sulawesi, Banggai, Sula, Sangihe, Talaud.
5. *Pithecops dionisius* (BOISDUVAL), [1832] (Fig. 1, L; Fig. 25, E-F)
   Lycaena dionisius BOISDUVAL, [1832], In d'URVILLE, *Voy. Astrolabe* 1 (Lép.): 82.
   Distribution: Moluccas, New Guinea, Bismarcks, Solomons, Vanuatu (New Hebrides).

7. Acknowledgements

I wish to express my sincere gratitude to Emer. Prof. Y. HIRASHIMA (ELKU) for his critical review of the manuscript and continuous guidance in the course of this study. My cordial thanks are due to Prof. K. MORIMOTO (ELKU) for his constant guidance and encouragement. I extend my sincere thanks to Lt. Col. J. N. ELIOT of Taunton, England; Mr. M. PARSONS, California, U.S.A.; Prof. A. SIBATANI, Kyoto Seika University and Prof. T. A. UCHIDA, Kyushu University for their kind reading of this manuscript and for their valuable suggestions.

My thanks are also extended to Prof. T. YASUDA, Dr. S. MORIUTI and Dr. M. ISHII (UOP) for their kind help in many respects.

I am also much indebted to the following entomologists for their kind help, and for giving me the opportunities to examine valuable specimens: Messrs. R. I. VANE-WRIGHT, P. ACKERY, C. SMITH (BMNH), Drs. E. S. NIELSEN, M. HORAK, E. D. EDWARDS (ANIC), Dr. R. de JONG, (RNH), Drs. M. AMIR, R. S. YAYUK, N. WORO (MZB), Dr. K. UEDA (KMNH), Messrs. Y. MIYATAKE, I. KANAZAWA (OMNH), Drs. S. UÉNO, M. OWADA (NSM), Dr. S. YOSHIMATSU, Mr. K. KONISHI (NIAES).

Specimens examined for this study were also personally provided by the following entomologists, to whom I am also much indebted: Emer. Prof. Y. HIRASHIMA, Assoc. Prof. M. T. CHUJO, Dr. O. TADAUCHI, Dr. T. YASUNAGA (ELKU), Prof. A. SIBATANI (Kyoto Seika University), Messrs. A. C. CASSIDY (Berkshire, England), K. MORISHITA (Zushi, Kanagawa), Y. NISHIYAMA (Tokyo), S. KATO (Takarazuka, Hyogo), M. NAKAYAMA (Kitakyushu).

8. References

1) ELIOT, J. N. (1973). The higher classification of the Lycaenidae (Lepidoptera): a tentative arrangement. *Bull. Br. Mus. nat. Hist.* (Ent.), **28**, 375-505.
2) FUJII, H. (1987). *Behaviour of butterflies in Sabah.* Studies on the behaviour and the life-cycle strategies of arboreal insects in the humid tropics, 1985, 35-44. Dept. Zool. Kyoto Univ., Kyoto.
3) PAN, T. S. and MORISHITA, K. (1990). Notes on *Nacaduba normani* ELIOT in Sabah, North Borneo (Lepidoptera, Lycaenidae). *Tyô to Ga,* **41**(3), 149-154.
4) SEITZ, A. (1923). In SEITZ, A. *Die Gross-Schmetterlinge der Erde,* **9**, 901-931. Stuttgart.
5) FRUHSTORFER, H. (1922-1923). In SEITZ, A. *Die Gross-Schmetterlinge der Erde,* **9**, 856-901. Stuttgart.
6) GRÜNBERG, K. (1916). In SEITZ, A. *Die Gross-Schmetterlinge der Erde,* **9**, 824-832. Stuttgart.
7) TOXOPEUS, L. J. (1929). De Riodinidae en Lycaenidae van het eiland Java. Lycaenidae Australasiae VI. *Tijdschr. Ent.,* **72**, 215-244.
8) ELIOT, J. N. and KAWAZOÉ, A. (1983). Blue butterflies of the *Lycaenopsis* group. *Br. Mus. (Nat. Hist.),* 309 pp., Hampshire.
9) SHIRÔZU, T. and YAMAMOTO, H. (1956). A generic revision and phylogeny of the tribe Theclini (Lepidoptera: Lycaenidae). *Sieboldia,* **1**, 329-421.
10) SHIRÔZU, T. (1960). *Butterflies of Formosa in color,* Hoikusha, Osaka. (*in*

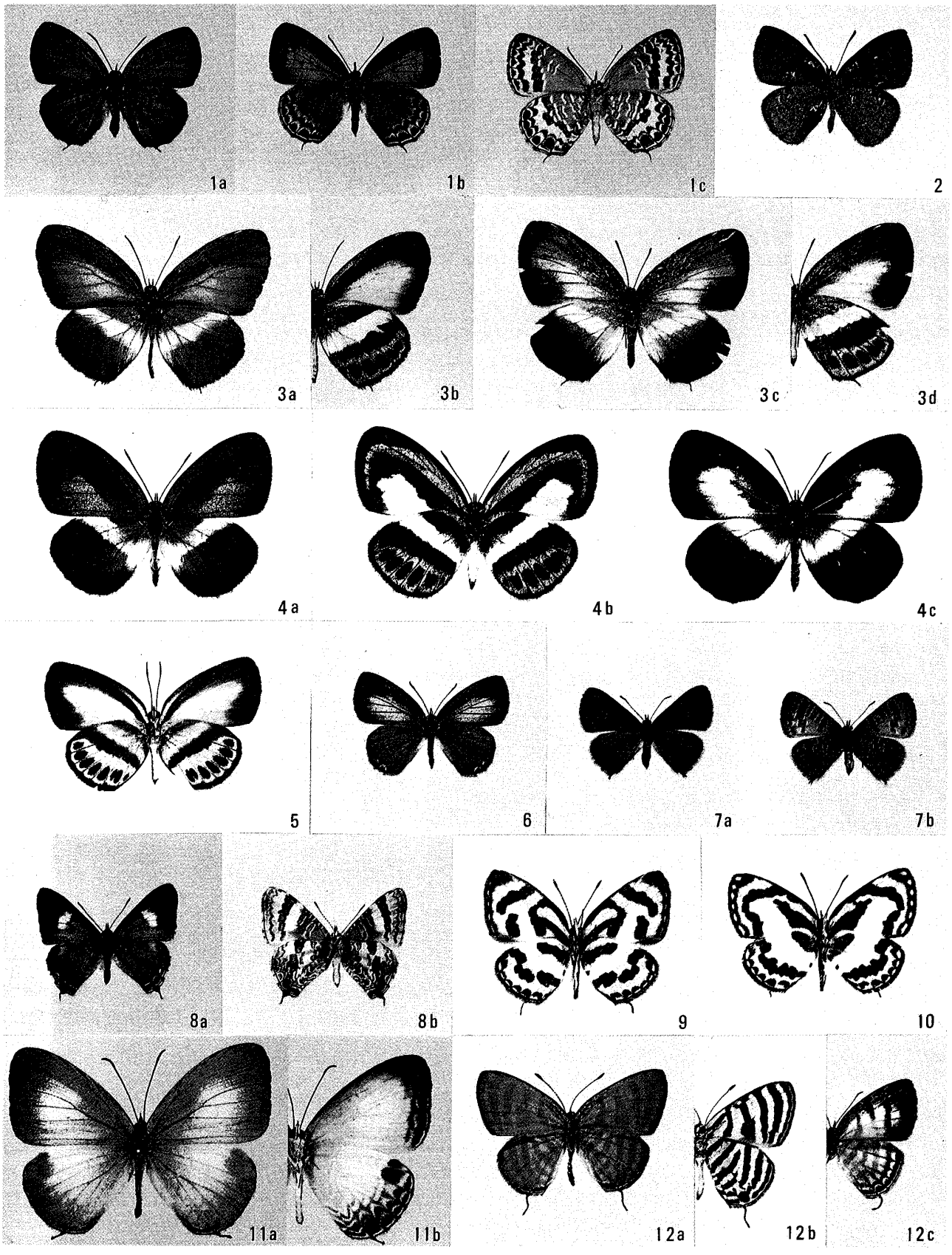
Japanese)
11) KUZNETSOV, N. Ya. [English translation: (1967). *Fauna of Russia and adjacent countries. Lepidoptera,* **1.** Jerusalem.
12) TSUBUKI, T. (1990). The comparative morphology of posterior parts of head in Papilionoidea from Japan. *Bull. Jumonji High School,* **12**, 1-149. (*in Japanese*)
13) SANDS, D. P. A. (1986). A revision of genus *Hypochrysops* C. & R. FELDER (Lepidoptera: Lycaenidae). *Entomonograph,* **7**, 116 pp. E. J. Brill/ Scandinavian Science Press, Leiden, Copenhagen.
14) HIROWATARI, T. (1986). Morphology and taxonomic importance of the female genitalia of the genus *Nacaduba* MOORE (Lepidoptera, Lycaenidae). *Tyô to Ga,* **37** (2), 51-60.
15) SCHRÖDER, H. and TREADAWAY, C. G. (1986). Neue Taxa in den Gattungen *Eliotia, Deramas* und *Una* (Lepidoptera: Lycaenidae). *Ent. Zeit.,* **96** (21), 312-319.
16) TAKANAMI, Y. (1986). New records of *Una usta* (DISTANT) and *Loxura atymnus* (STOLL) from Sulawesi (Lepidoptera, Lycaenidae). *Gekkan-Mushi,* **189**, 23-25. (*in Japanese*)
17) ELIOT, J. N. (1978). In CORBET, A. S. and Pendlebury, H. M. *The Butterflies of the Malay Peninsula,* edn.3., xiv + 578 pp., 36 pls., 146 + 438 figs. Kuala Lumpur.
18) FRUHSTORFER, H. (1918). Eine neue Rasse aus der bisherigen Gattung *Orthomiella. Tijdschr. Ent.,* **61**, 54-56.
19) FORSTER, W. (1941). Neue Lycaeniden-Formen aus China. II. *Mitt. münchn. ent. Ges.,* **31,** 593-627.
20) D'ABRERA, B.(1980). *Butterflies of the Afrotropical Region.* Melbourne, Lansdowne Editions, 593 pp.
21) FUJIOKA T. and CHIBA H. (1988). Note on the distributions of some Japanese butterflies. *Spec. Bull. Lep. Soc. Jap.,* (**6**): 141-149. (*in Japanese*)
22) HIROWATARI, T. (1990). Systematic position of *Hypojamides catochloris* (Boisduval) (Lepidoptera, Lycaenidae) *Esakia, Special Issue,* **1**, 173-176.
23) HIROWATARI, T. (in press) *Nacaduba* MOORE, [1881] (Insecta, Lepidoptera): proposed precedence over *Pepliphorus* HÜBNER, [1819]. *Bull. zool. Nomen.*
24) CORBET, A. S. (1938). A revision of the Malayan species of the *Nacaduba* group of genera (Lepidoptera: Lycaenidae). *Trans. R. ent. Soc. Lond.,* **87**, 125-146.
25) TITE, G. E. (1963). A synonymic list of the genus *Nacaduba* and allied genera (Lepidoptera: Lycaenidae). *Bull. Br. Mus. nat. Hist.* (Ent.), **13**, 69- 116.
26) CASSIDY, A. C. (1990). On *Nacaduba* and allied genera (Lepidoptera, Lycaenidae) from the Sulawesi Region. *Tyô to Ga,* **41** (4), 227-241.
27) TAKANAMI, Y. (1990). Miscellaneous note on Lycaenidae (Lepidoptera) from South- east Asia (I). *Tyô to Ga,* **41** (2), 67-77.
28) HSU, Y. F. (1990). The *berenice* complex of the genus *Nacaduba* in Taiwan (Lepidoptera: Lycaenidae). *J. Taiwan Mus.,* **41** (1), 11-17.
29) HIROWATARI, T.(1987). Systematic position of *Pepliphorus cyanea* (CRAMER) (Lepidoptera, Lycaenidae). *Tyô to Ga,* **38** (1), 31-37.
30) WATERHOUSE, G. E. and LYELL, G. (1914). *The Butterfleis of Australia.* Angus and Robertson, Sydney.
31) JOICEY, J. J. and TALBOT, G. (1917). New Lepidoptera from Waigeu, Dutch New Guinea and Biak. *Ann. Mag. nat. Hist.,* (8) **20**, 216-229.
32) FRUHSTORFER, H. (1915). Revision der Gattung *Lampides* auf Grand anatomischer Untersuchungen. *Arch. Naturgesch.,* (A)**81**(6), 1-46.

33) HARA, M. and HIROWATARI, T. (1989). A new species of the genus *Nacaduba* MOORE (Lepidoptera, Lycaenidae). *Tyô to Ga,* **37**(2), 51-60.
34) D'ABRERA, B. L. (1990). *Butterflies of the Australian Region.* (3rd revised edition), Lansdowne, Melbourne.
35) DRUCE, H. H. (1891). On the Lycaenidae of the Solomon Islands. *Proc. zool. Soc. Lond.,* **1891**: 357-372.
36) FRUHSTORFER, H. (1916). Revision der Gattung *Nacaduba* auf Grund der Morphologie der Generationsorgane. *Zool. Meded.,* **2**, 103-140.
37) D'ABRERA, B. L. (1978). *Butterflies of the Australian Region* (2nd edition), Lansdowne, Melbourne.
38) BRIDGES, C. A. (1988). *Catalogue of Lycaenidae & Riodinidae (Lepidoptera: Rhopalocera).* Charles A. Bridges, Illinois.
39) DRUCE, H. and BETHUNE-BAKER, G. T. (1893). A monograph of the butterflies of the genus *Thysonotis. Proc. zool. Soc. Lond.,* **1893,** 536-553.
40) PARSONS, M. (1986). A new genus and twenty-six new species of butterflies (Lepidoptera: Hesperiidae, Lycaenidae, Nymphalidae) from Papua New Guinea and Irian Jaya. *Tyô to Ga,* **37** (3): 103-177.
41) DRUCE, H. H. (1892). A list of the Lycaenidae of the South Pacific Islands East of the Solomon group, with descriptions of several new species. *Proc. zool. Soc. Lond.,* **1892**, 434-446.
42) BETHUNE-BAKER, G. T. (1906). New species of Lycaenide from British New Guinea. *Ann. Mag. nat. Hist.,* (7)**17**, 100-104.
43) SIBATANI, A. and GRUND, R. B. (1978). A revision of the *Theclinesthes onycha* Complex (Lepidopterea: Lycaenidae). *Tyô to Ga,* **29** (1), 1-34.
44) COMMON, I. F. B. and WATERHOUSE, D. F. (1978). *Butterflies of Australia.* 498 pp. Angus & Robertson, Sydney.
45) HEMMING, A. F. (1967). The generic names of butterflies and their type-species (Lepidoptera: Rhopalocera). *Bull. Br. Mus. nat. Hist.* (Ent.) Suppl., **9**. 509 pp.
46) TAKANAMI, Y. (1989). On some type specimens of Lycaenidae from South East Asia (Lepidoptera). *Tyô to Ga,* **40** (1), 23-80.
47) FRUHSTORFER, H. (1918). Revision der Gattung *Castalius* auf Grund der Morphologie der Generationsorgane. *Tijdschr. Ent.,* **61**, 17-44.
48) D'ABRERA, B. (1986). *Butterflies of the Oriental Region,* Part 3. Lycaenidae and Riodinidae, Victoria, Australia, Hill House.
49) HOLLOWAY, J. D. (1987). In WHITMORE, T.C. Biogeographical evolution of the Malay Archipelago, **9**. Lepidoptera patterns involving Sulawesi: what do they indicate of past geography ? pp.103-118. Clarendon Press, Oxford.
50) HEPPNER, J. B. (1989). Lepidoptera diversity in North Sulawesi. *Oriental Insect,* **23**, 349-364.
51) TITE, G. E. (1962). The geographical distribution of *Mambara nigropunctata* BETHUNE-BAKER (Lepidoptera: Lycaenidae). *Entomologist,* **95**, 127-130.
52) MURAYAMA, S. (1983). Notes on some new or unrecorded butterflies from Indonesia and Philippines. *New Ent.,* **32** (2), 39-42.
53) RILEY, N. D., and CORBET, A. S. (1938). A revision of the Malaysian species of *Jamides* HÜBNER. *Trans. R. ent. Soc. Lond.,* **87** (5), 147-159.
54) HIROWATARI, T. (1986). Study on the Genus *Jamides* HÜBNER (Lepidoptera, Lycaenidae). I. Description of the female genitalia of sixteen species from the Malay Peninsula. *Tyô to Ga,* **36** (3), 113-132.

55) TAKANAMI, Y. (1987). A list of Lycaenidae (Lepidoptera) from Kepulauan Talaud in Indonesia. *Gekkan-Mushi,* (**191**), 27-31.
56) TITE, G. E. (1960). The *Jamides euchylas* Complex (Lepidoptera: Lycaenidae). *Bull. Br. Mus. nat. Hist.* (Ent.), **9** (5), 321-332.
57) TAKANAMI, Y. (1988). A new species and a new subspecies of Lycaenidae (Lepidoptera) from the Philippines. *Kontyu to Shizen* (Nature & Insects), **23** (4), 38-40.
58) ELIOT, J. N. (1969). More revisional notes on Oriental Butterflies. *Entomologist*, **102**, 269-278.
59) TITE, G. E. (1959). The genus *Catochrysops* Lepidoptera: Lycaenidae. *Entomologist*, **92**, 201-212.
60) PARSONS, M. (1986). A revision of the genus *Callictita* BETHUNE-BAKER (Lepidoptera: Lycaenidae) from the mountains of New Guinea. *Bull. Allyn Mus.* **103**, 1-27.
61) PARSONS, M. and HIROWATARI, T. (1988). A new species of *Callictita* BETHUNE-BAKER (Lepidoptera, Lycaenidae) from Irian Jaya, Indonesia. *Tyô to Ga*, **39**(4), 259-262.
62) BETHUNE-BAKER, G. T. (1917). A revision of the genus *Tarucus. Trans. ent. Soc. Lond.*, **65**, 269-296.
63) EVANS, W. H. (1955). A revision of the genus *Tarucus* (Lepidoptera: Lycaenidae) of Europe, North Africa and Asia. *Entomologist*, **88**, 179-187.
64) RÖBER, J. (1891). Beitrag zur kenntniss der Indo-Australischen lepidopteren fauna. *Tijdschr. Ent.*, **34**, 261-334.
65) FRUHSTORFER, H. (1919). Revision der Artengruppe *Pithecops* auf Grund der Morphologie der Klammerorgane. *Arch. Naturgesch.*, (A)**83**(1), 77-84.
66) COWAN, C. F. (1966). The nomenclature of *Pithecops corvus* and allied species. *Ann. Mag. nat. Hist.*, (13)**8**, 421-425.
67) SHIRÔZU, T., UEDA, K. and HIROWATARI, T. (1986). Discovery of *Pithecops fulgens* DOHERTY from the Malay Peninsula (Lepidoptera, Lyacaenidae). *Tyô to Ga,* **37**(4), 195-197.

Explanation of Plate I

Plate I. Oriental and Australian Polyommatini, Lycaenidae.
1. *Tartesa astarte* (BUTLER) comb. nov., Solomons, a: ♂, b-c: ♀, ANIC. 2. *Nacaduba tahitiensis* HARA & HIROWATARI, Tahiti, paratype ♂, UOP. 3. *Nacaduba nerine* (GROSE-SMITH & KIRBY) comb. nov., New Guinea, a-b: ♂, c-d: ♀, MZB. 4: *Perpheres perpheres* (H. H. DRUCE & BETHUNE-BAKER) comb. nov., New Guinea, a-b: ♂, c: ♀, ANIC. 5: *Nothodanis schaeffera* (ESCHSCHOLTZ) comb. nov., Palawan, ♂. 6. *Catopyrops nebulosa* (H. H. DRUCE), Vanuatu, ♀, ANIC. 7. *Paraduba owgarra* BETHUNE-BAKER, New Guinea, ♀, ANIC. 8. *Sahulana scintillata* (LUCAS) comb. nov., Australia, ♀, ANIC. 9. *Caleta caleta* (HEWITSON), N. Sulawesi, ♂. 10: *Caleta argola* (HEWITSON), Mindanao, ♂. 11. *Jamides celebica* (ELIOT), Sulawesi, ♂, SIBATANI Collection. 12. *Castalius fasciatus* (RÖBER), N. Sulawesi, a -b: ♂, c: ♀, CASSIDY Collection.


1a
1b
1c
2
3a
3b
3c
3d
4a
4b
4c
5
6
7a
7b
8a
8b
9
10
11a
11b
12a
12b
12c

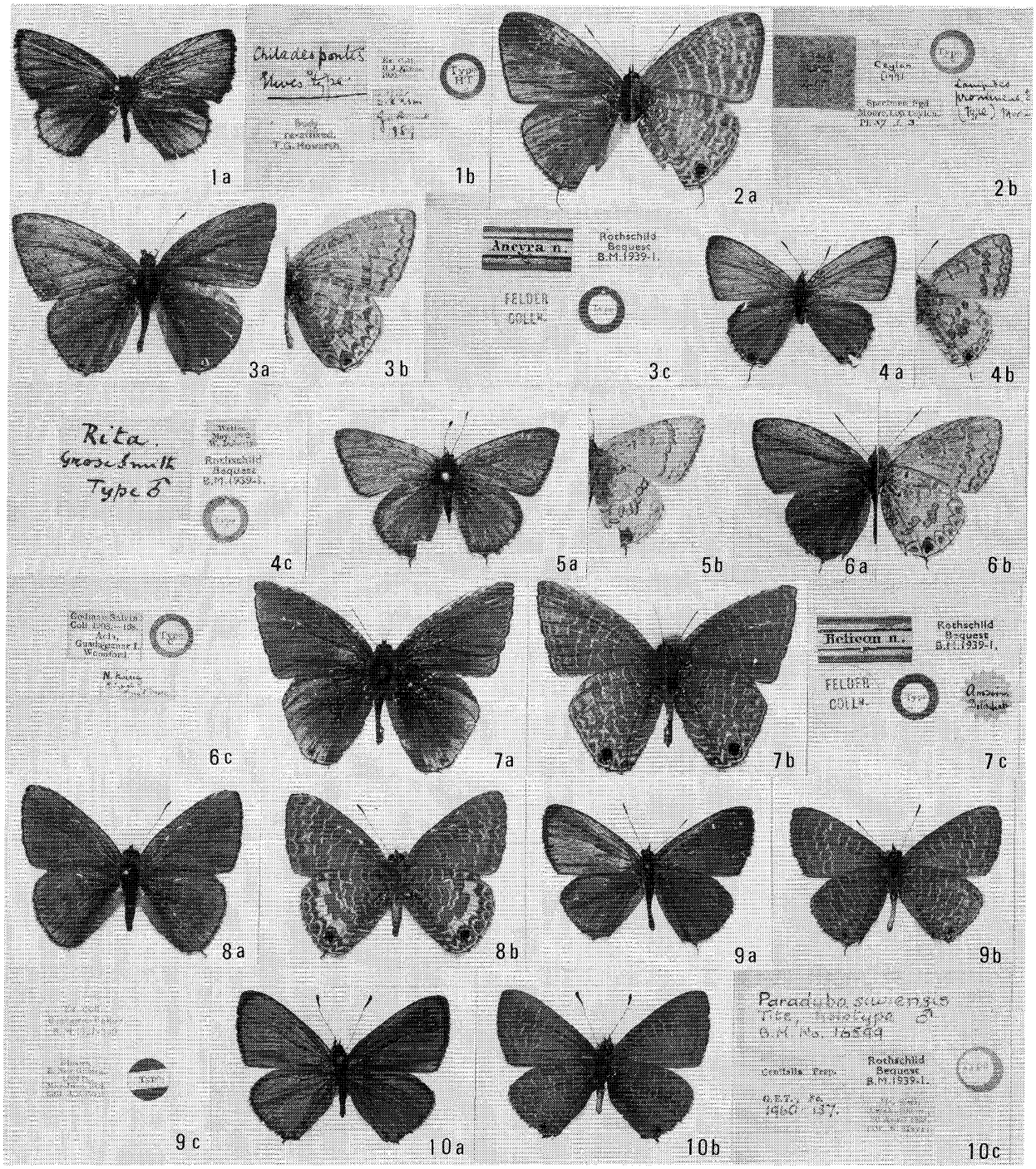


Plate II. Type specimens deposited in the BMNH collection.
1. "*Chilades pontis* ELWES" syntype ♂, Sikkim. 2. "*Lampides prominens* MOORE" syntype ♂, Ceylon. 3. "*Lycaena ancyra* C. FELDER" syntype ♂, Ambon. 4. "*Nacaduba rita* GROSE-SMITH" syntype ♂, Wetter. 5. "*Lampides florinda* BUTLER" syntype ♂, Lifu. 6. "*Nacaduba keiria* H. H. DRUCE" syntype ♂, Solomons. 7. "*Lycaena helicon* C. FELDER" syntype ♂, Ambon. 8. *Ionolyce burnnescens* TITE holotype ♂, Solomons. 9. "*Nacaduba metriodes* BETHUNE-BAKER" syntype ♂, New Guinea. 10. *Paraduba siwiensis* TITE, holotype ♂, West Irian.
1b, 2b, 3c, 4c, 6c, 7c, 9c, 10c: attached labels.

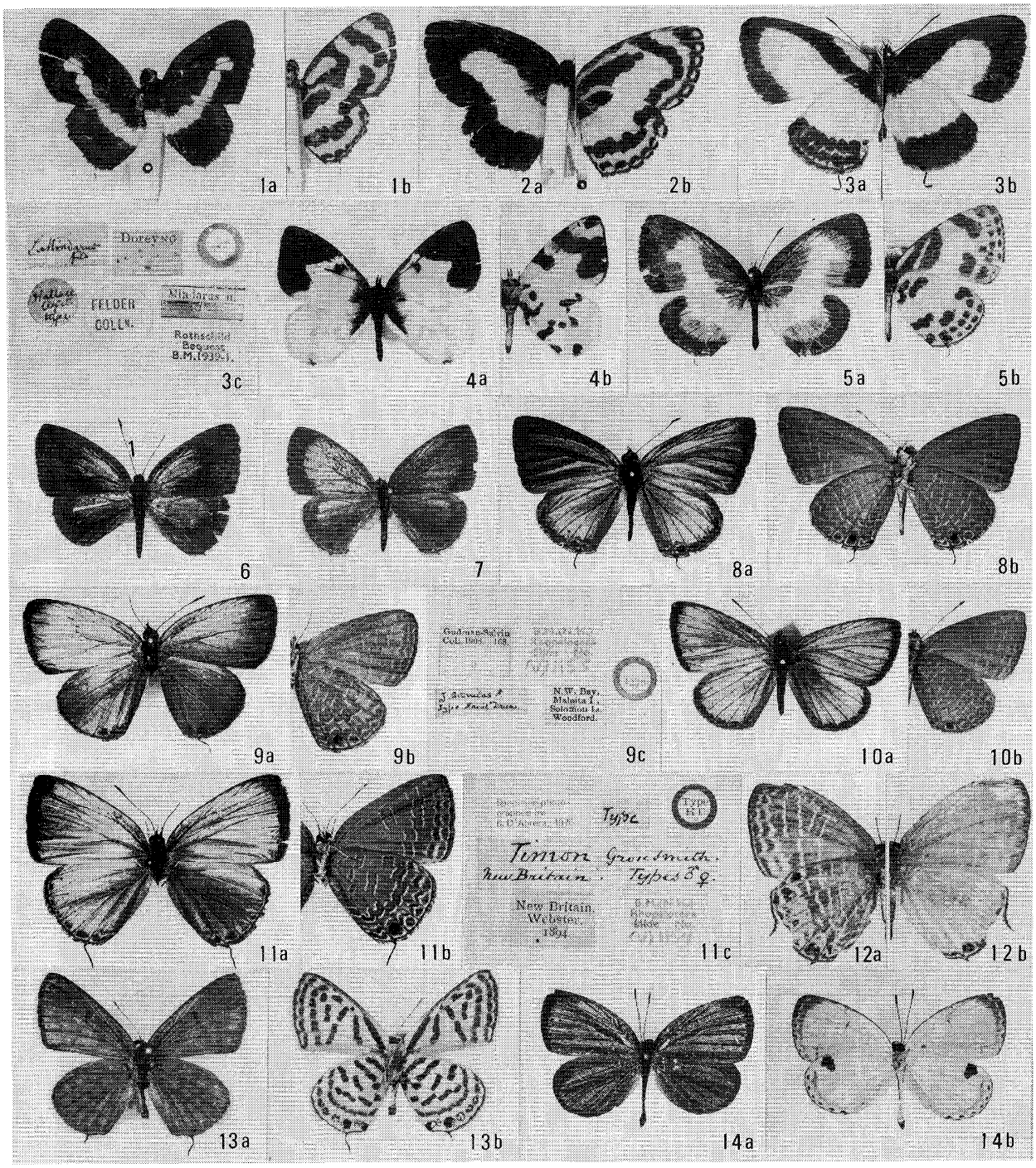


Plate III. Type specimens deposited in the BMNH collection.
1. "*Lycaena caleta* HEWITSON" syntype ♂, Sulawesi. 2. "*Lycaena argola* HWEWITSON" syntype ♂, Mindanao. 3. "*Lycaena mindarus* C. & R. FELDER" syntype ♂, New Guinea. 4. "*Mambara nigropunctata* BETHUNE-BAKER" syntype ♂, New Guinea. 5. "*Lycaena ethion* WESTWOOD" syntype ♂, India. 6. *Jamides seminiger* GROSE-SMITH syntype ♂, Bachan. 7. "*Lampides tiglath* FRUHSTORFER" syntype ♂ from Sula-Mangoli. 8. "*lampides phaseli* MATHEW" syntype ♂, N. Australia. 9. *Jamides soemias* H. H. DRUCE syntype ♂, Solomons. 10. *Jamides walkeri* H. H. DRUCE syntype ♂, Cook Is. 11. *Jamides timon* GROSE-SMITH syntype ♂, New Britain. 12. "*Lampides aetherialis* BUTLER" syntype ♂, Kai. 13. "*Tarucus theophrastus indica* EVANS" holotype ♂, India. 14. *Pithecops mariae* de NICÉVILLE syntype ♂, Sumatra.
3c, 9c, 11c: attached labels.

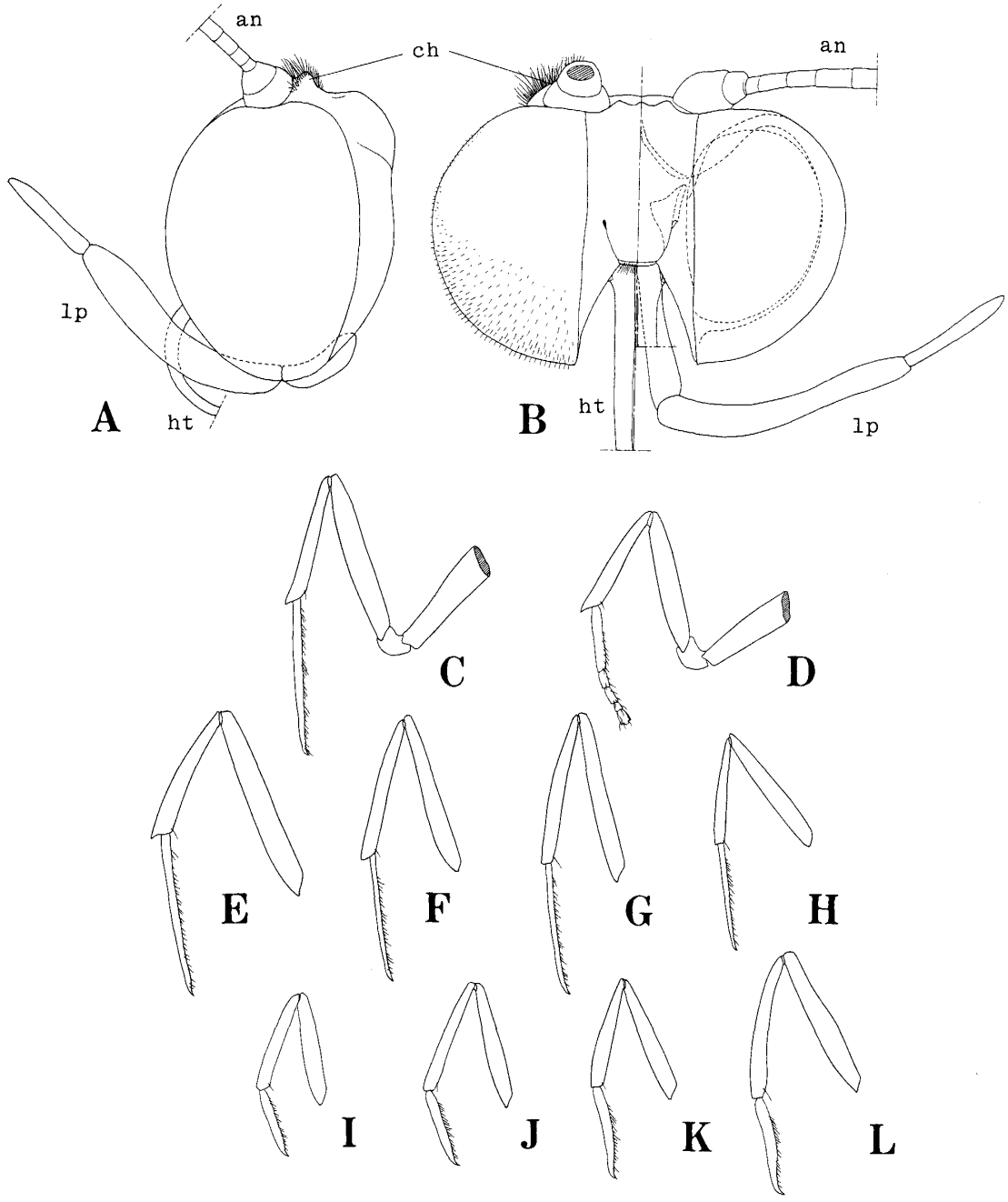


Fig. 1. Heads and legs of the Oriental and Australian Polyommatini.
A-B. Heads of *Jamides bochus* (STOLL), A: lateral view, B: frontal view, C-D. Fore legs, C: *Jamides bochus* (STOLL) ♂, D: *Ditto,* ♀ E-L. Male fore legs, E: *Jamides elpis* (GODART), F: *Pistoria nigropunctata* (BETHUNE-BAKER), G: *Caleta roxus* (GODART), H: *Discolampa ethion* (WESTWOOD), I: *Pithecops corvus* FRUHSTORFER, J: *P. fulgens* DOHERTY, K: *P. phoenix* RÖBER, L: *P. dionisius* (BOISDUVAL).
an: antenna, ch: chaetosema, lp: labial palp, ht: haustellum.

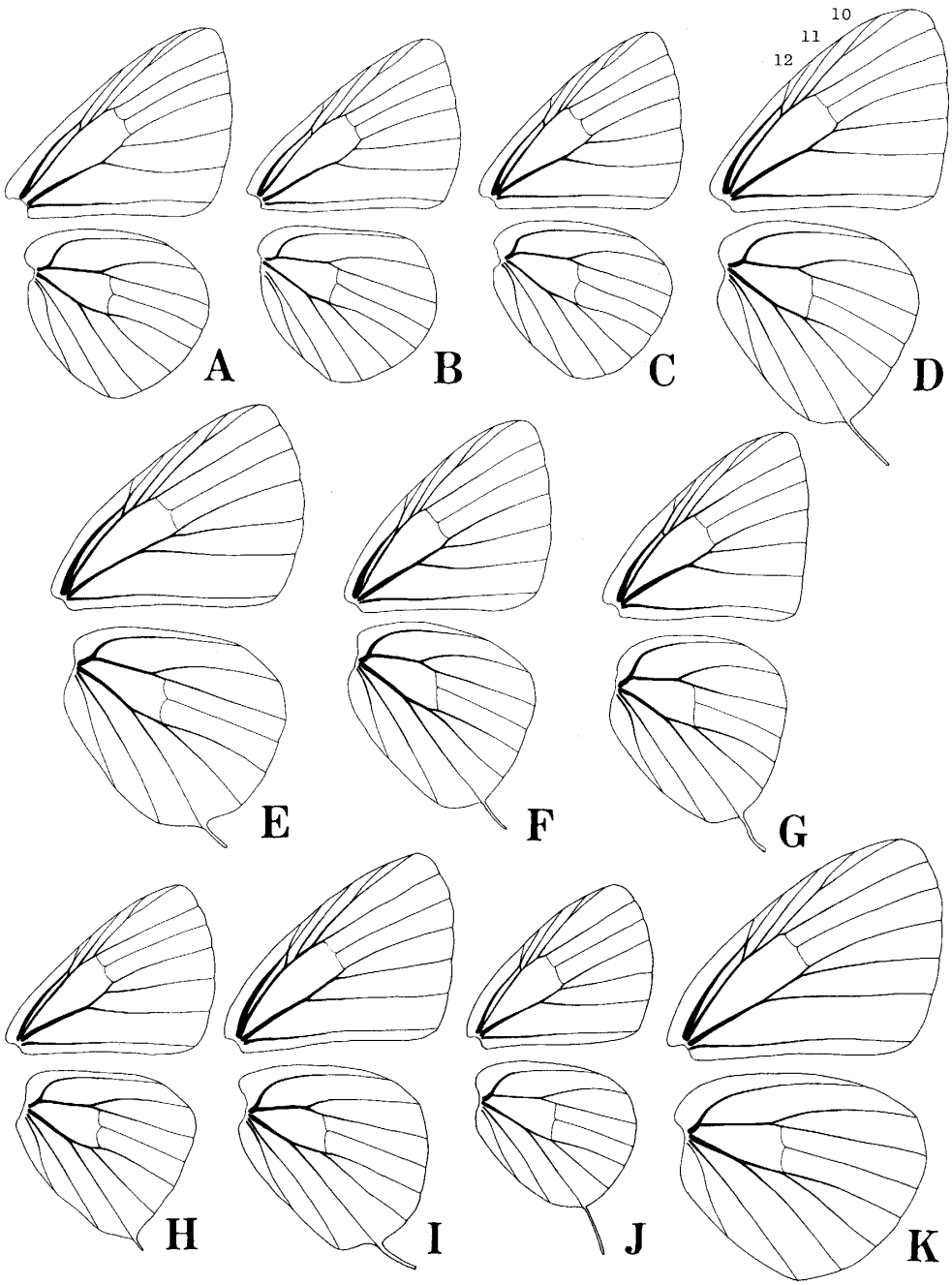


Fig. 2. Wing venations of the Oriental and Australian Polyommatini.
A. *Una usta* (DISTANT) ♂, W. Malaysia. B. *Orthomiella rantaizana* WILEMAN ♂, Taiwan. C. *Petrelaea tombugensis* (RÖBER) ♂, Marianas. D. *Nacaduba kurava* (MOORE) ♂, N. Borneo. E. *Tartesa astarte* (BUTLER) ♂, Solomons. F. *Erysichton lineata* (MURRAY) ♂, Papua New Guinea. G. *Ionolyce helicon* (C. FELDER) ♂, W. Malaysia. H. *Paraduba owgarra* BETHUNE-BAKER ♂, Papua New Guinea. I. *Catopyrops ancyra* (C. FELDER) ♂, Mindanao. J. *Prosotas nora* (C. FELDER) ♂, W. Malaysia. K. *Nothodanis shaeffera* (ESCHSCHOLTS) ♂, Palawan.

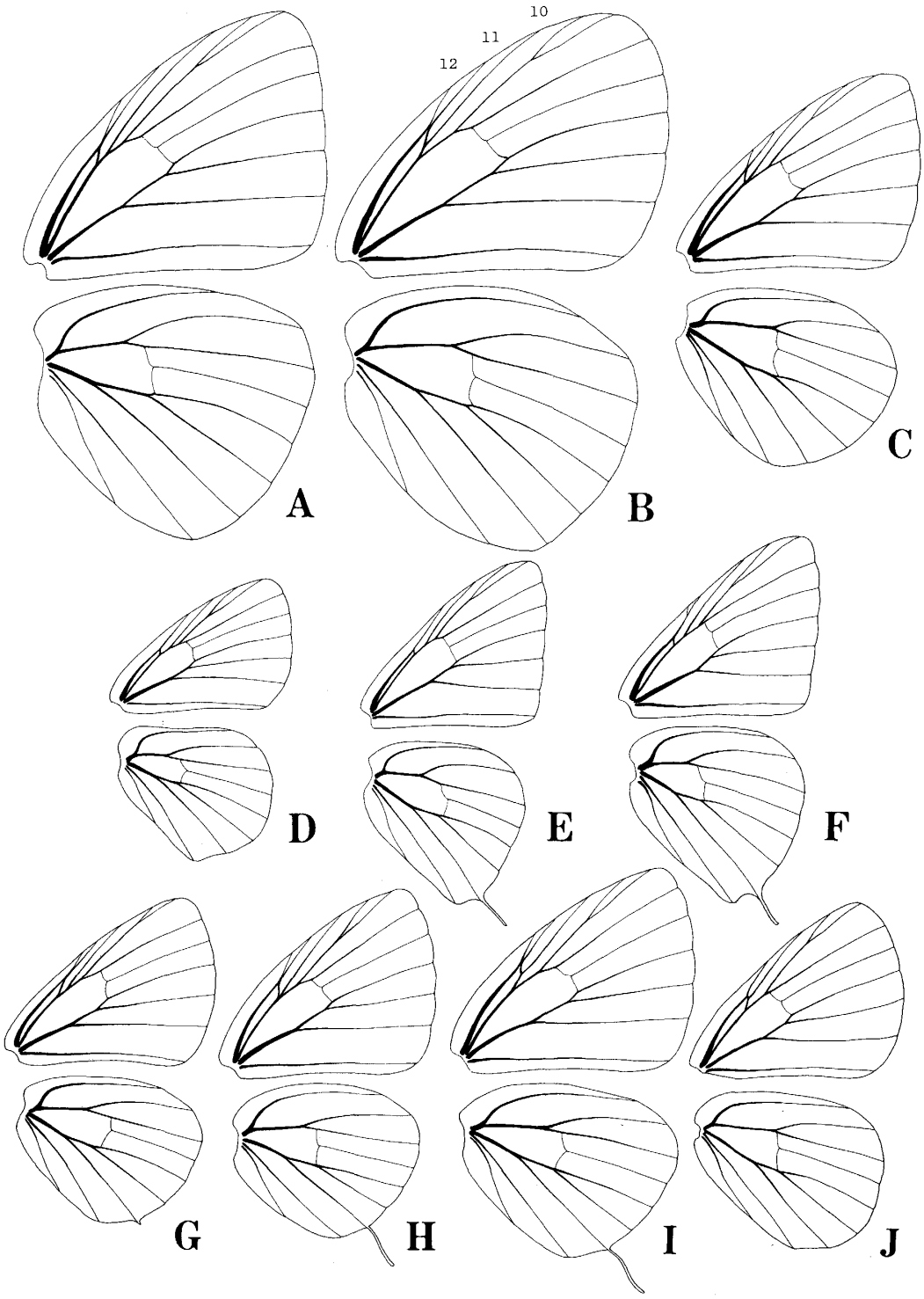


Fig. 3. Wing venations of the Oriental and Australian Polyommatini.
A. *Danis danis* (CRAMER) ♂, Irian Jaya. B. *Perpheres perpheres* (H. H. DRUCE & BETHUNE-BAKER) ♂, Irian Jaya C. *Psychonotis caelius* (C. & R. FELDER) ♂, Australia. D. *Neolucia agricola* (WESTWOOD) ♂, Australia. E. *Sahulana scintillata* (LUCAS) ♂, Australia. F. *Theclinesthes miskini* (LUCAS) ♂, Australia. G. *Upolampes evena* (HEWITSON) ♂, Papua New Guinea. H. *Caleta elna* (HEWITSON) ♂, N. Borneo. I. *Caleta caleta* (HEWITSON) ♂, Sulawesi. J. *Pistoria nigropunctata* (BETHUNE-BAKER) ♂, Papua New Guinea.

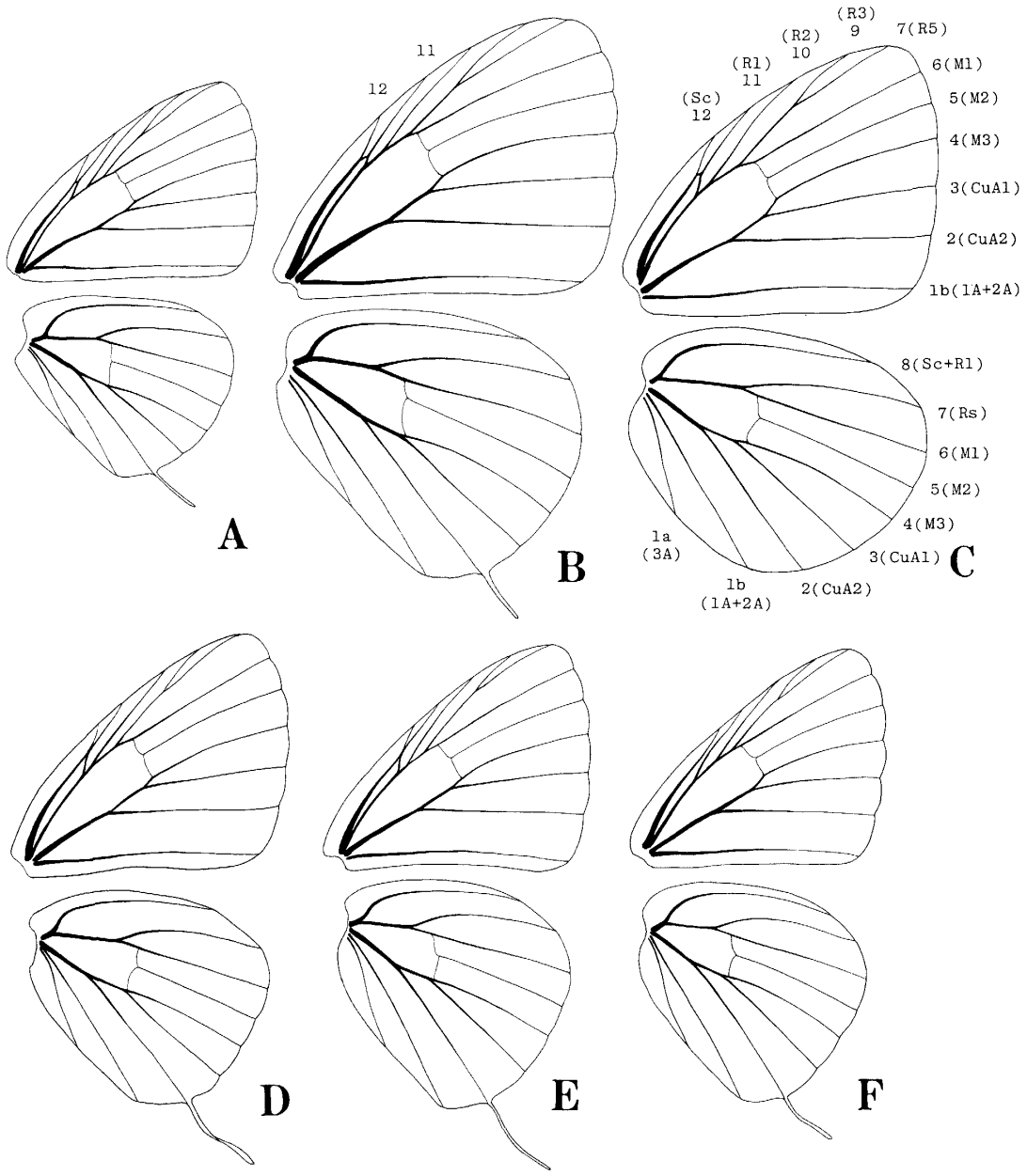


Fig. 4. Wing venations of the Oriental and Australian Popuommatini.
A. *Jamides bochus* (STOLL) ♂, Mindanao. B. *Jamides celebica* (ELIOT) ♂, Sulawesi. C. *Epimastidia inops* (C. & R. FELDER) ♂, Papua New Guinea. D. *Castalius fasciatus* (RÖBER) ♂, Sulawesi. E. *Catochrysops panormus* (C. FELDER) ♂, Malaysia. F. *Lampides boeticus* (LINNAEUS) ♂, Ishigaki Is., Japan.

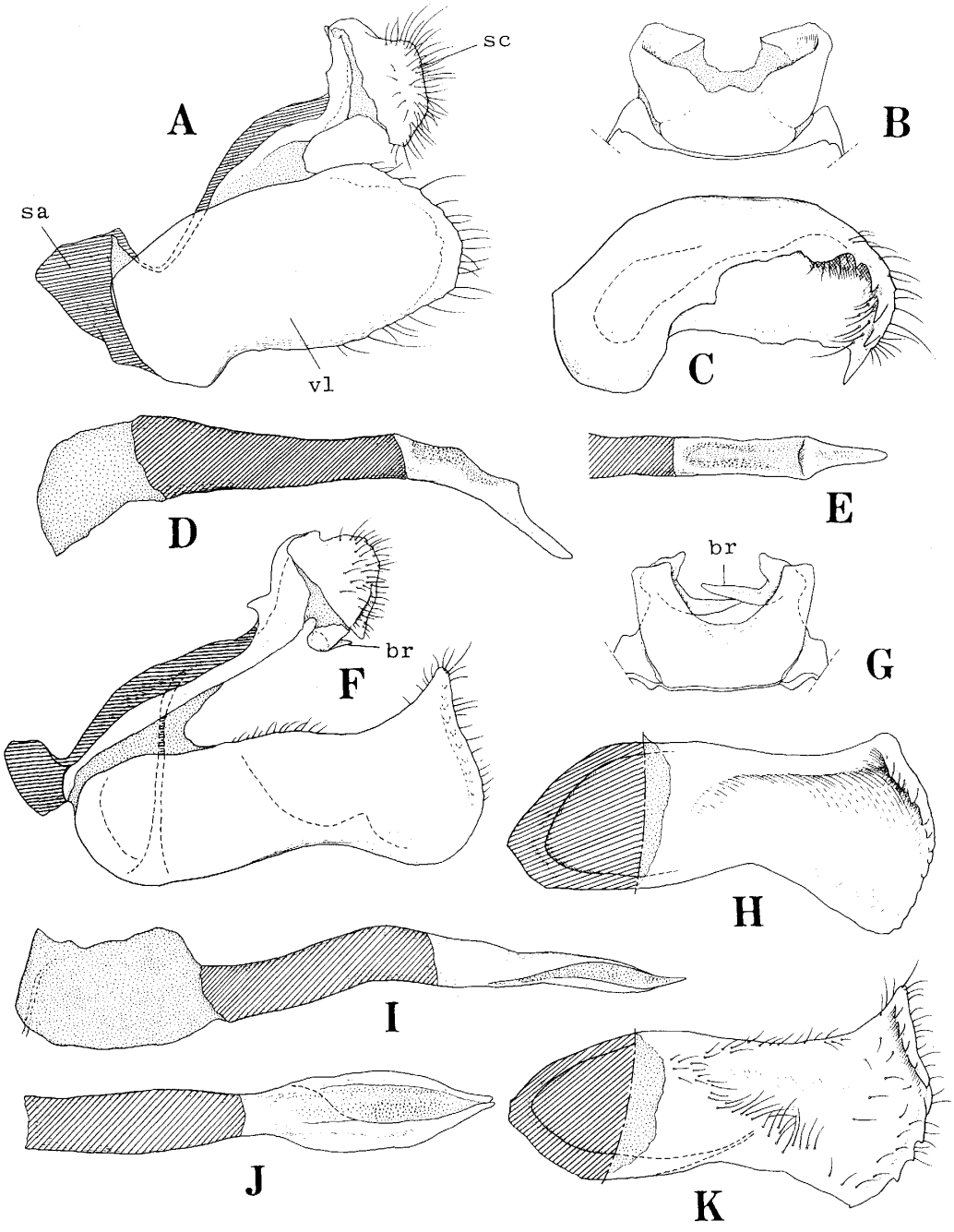


Fig. 5. Male genitalia of *Una usta* (DISTANT), W. Malaysia (A-E), *Orthomiella pontis* (ELWES), Sikkim, BM.v.1824, (F-J) and *O. pontis fukienensis* FORSTER, Fukien, China, BM.v.1826 (K).
A, F: Whole genitalia except phallus in lateral view, B, G: Dorsa in dorsal view, C, H, K: Right valvae in internal view, D, I: Phalli in lateral view, E, J: *Ditto* in dorsal view.
sc: socius, sa: saccus, br: brachium.

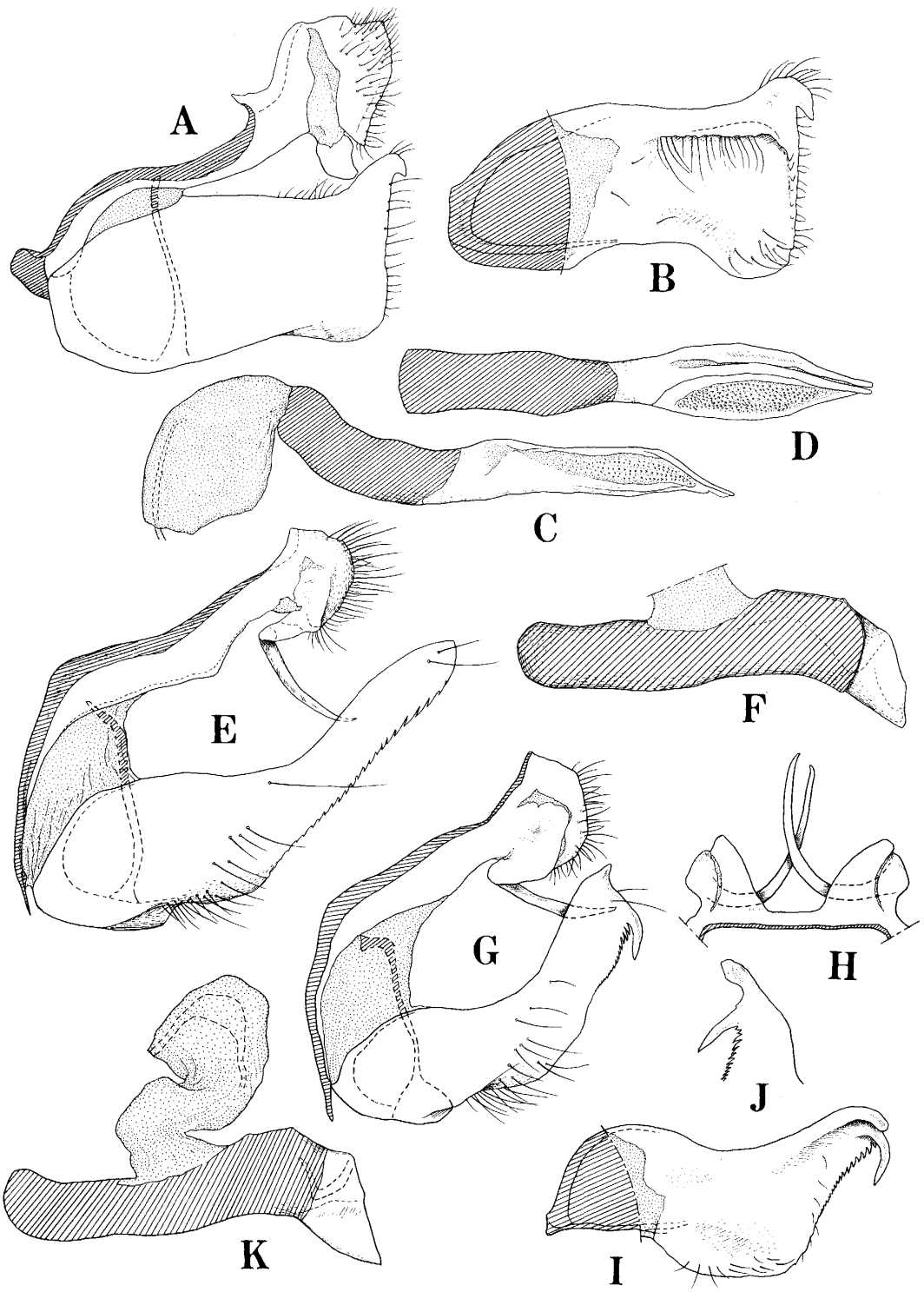


Fig. 6. Male genitalia of *Orthomiella sinensia* (ELWES), S. China, BM.v.1827, (A-D), *Nacaduba hermus* (C. FELDER), W. Malaysia (E-F) and *Nacaduba nerine* (GROSE-SMITH & KIRBY), New Guinea, BM.v.1768, (G-K).
A, E, G: Whole genitalia except phallus in lateral view, B, I: Right valvae in internal view, C, F, K: Phalli in lateral view, D: Phallus in dorsal view, H: Dorsum in dorsal view, J: Apical portion of right valva in posterior view.

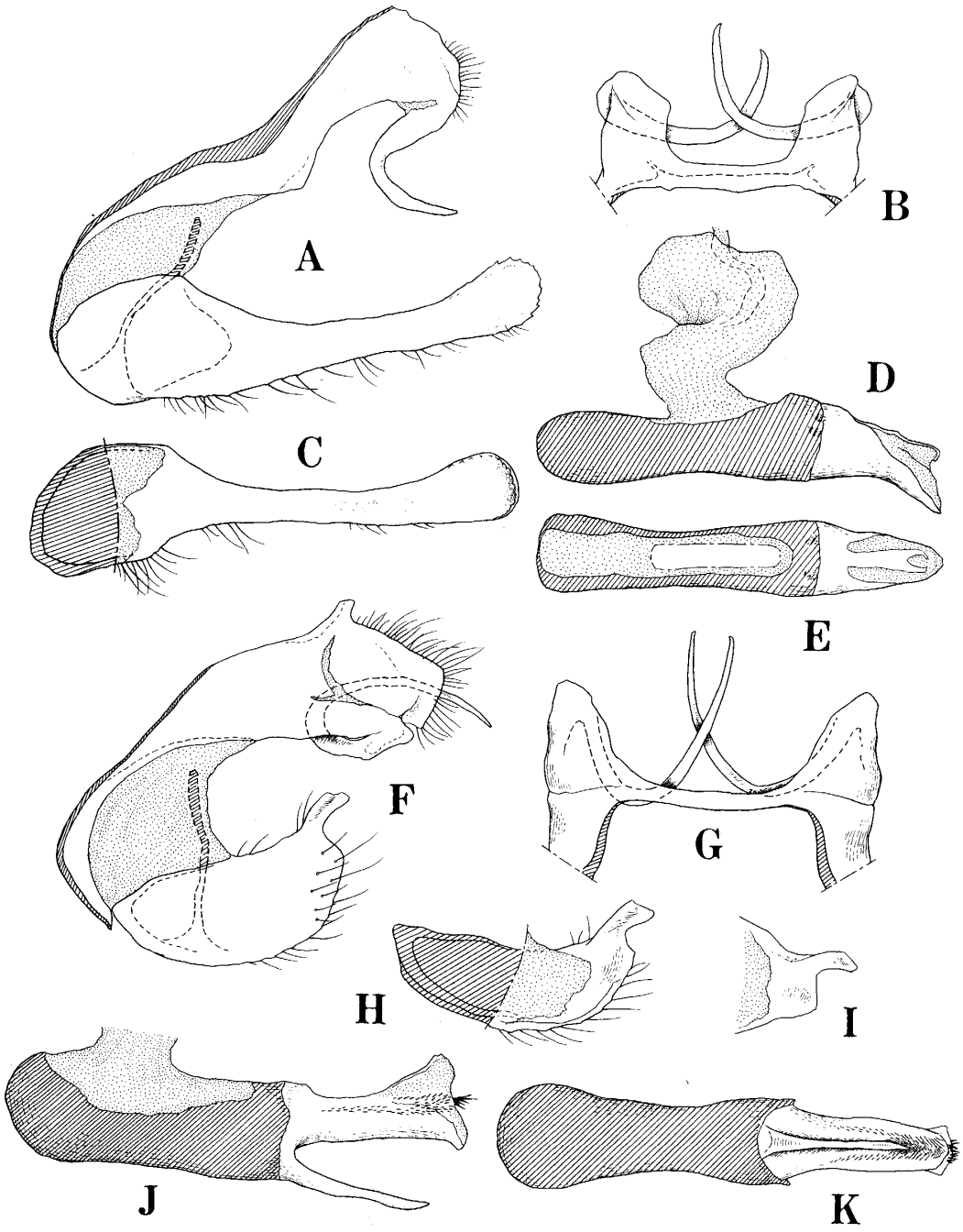


Fig. 7. Male genitalia of *Nacaduba schneideri* (RIBBE), New Ireland, BM.v.1822, (A-E) and *N. biocellata* (C. & R. FELDER), Queensland, SIBATANI Collection, (F-K).
A, F: Whole genitalia except phallus in lateral view, B, G: Dorsa in dorsal view, C, H: Right valvae in internal view, D, J: Phalli in lateral view, E: Phallus in dorsal view, K: Phallus in ventral view. I: Apical portion of valva in dorso-internal view.

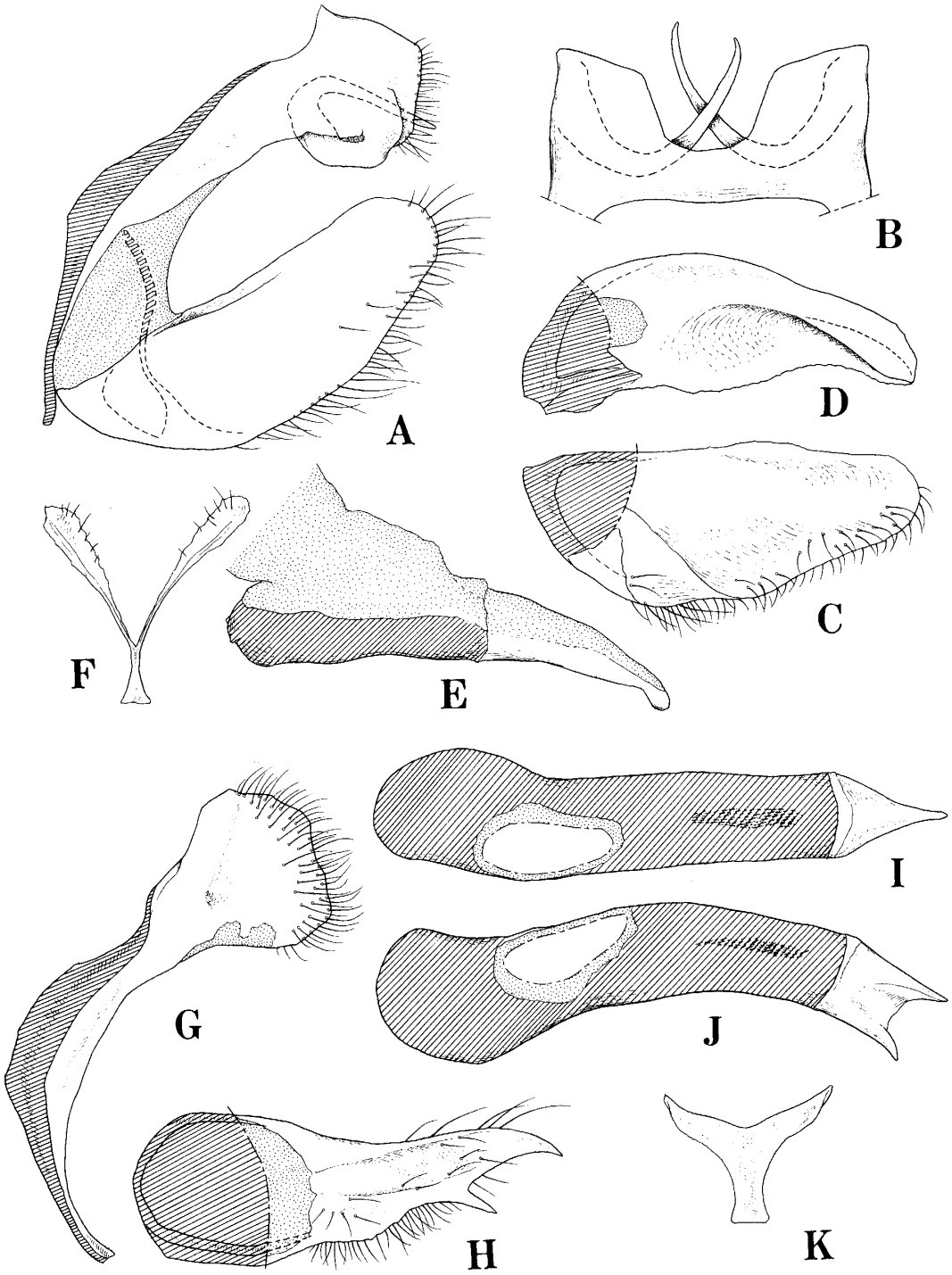


Fig. 8. Male genitalia of *Tartesa astarte* (BUTLER), Solomons, BM.v.1780, (A-F) and *Erysichton lineata* (MURRAY), Papua New Guinea (G-K).
A, G: Whole genitalia except phallus in lateral view, B: Dorsum in dorsal view, C, H: Right valvae in internal view, D: Right valva in dorso-internal view, E, J: Phalli in lateral view, I: Phallus in dorsal view, F, K: Juxta in posterior view.

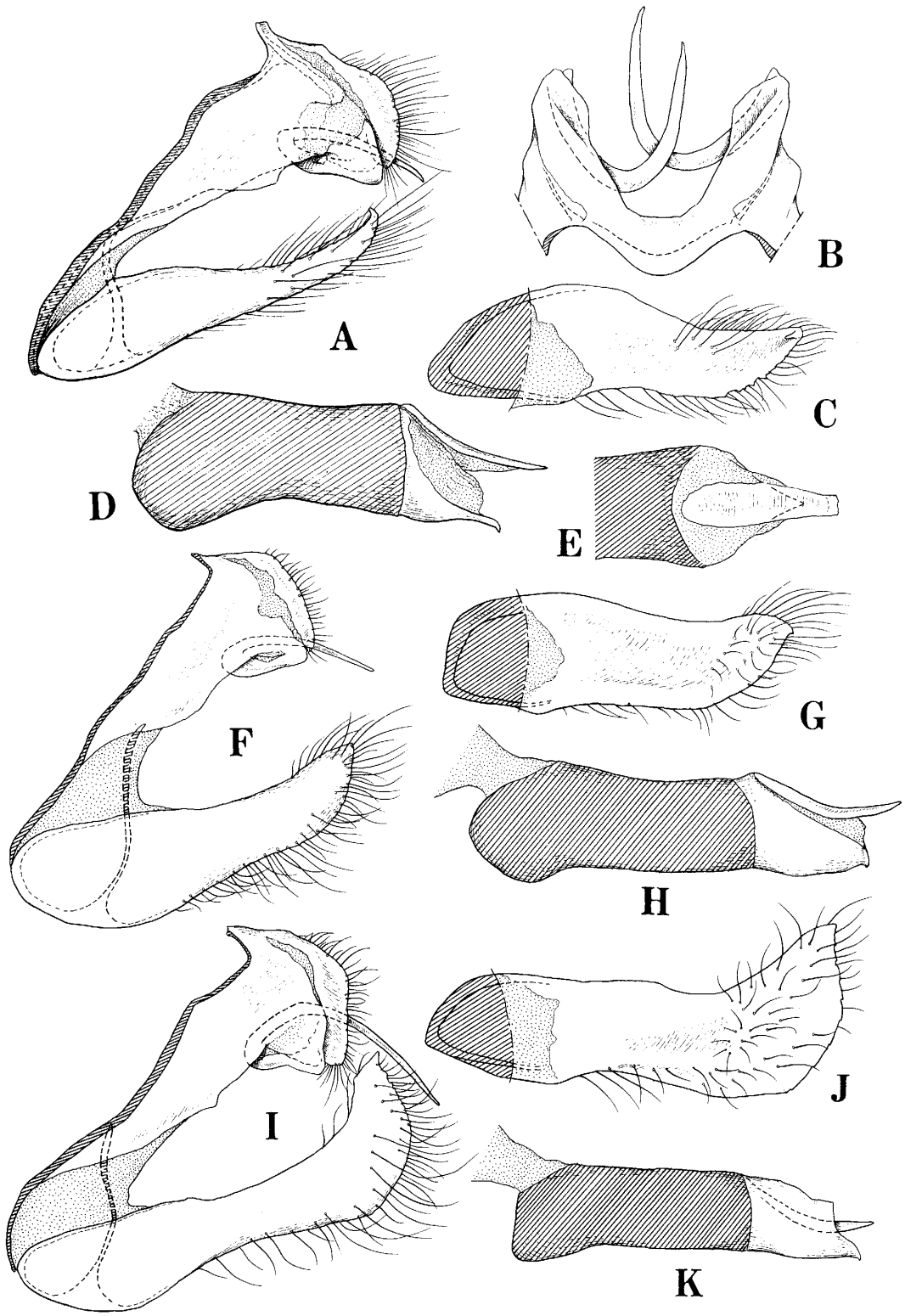


Fig. 9. Male genitalia of *Danis danis* (CRAMER), Papua New Guinea (A-E), *D. regalis* (GROSE-SMITH & KIRBY), Papua New Guinea, BM.v.1665, (F-H) and *D. drucei* (GROSE-SMITH & KIRBY), Irian Jaya, BM.v.1661, (I-K).
A, F, I: Whole genitalia except phallus in lateral view, B: Dorsum in dorsal view, C, G, J: Right valvae in internal view, D, H, K: Phalli in lateral view, E: Phallus (posterior half) in dorsal view.

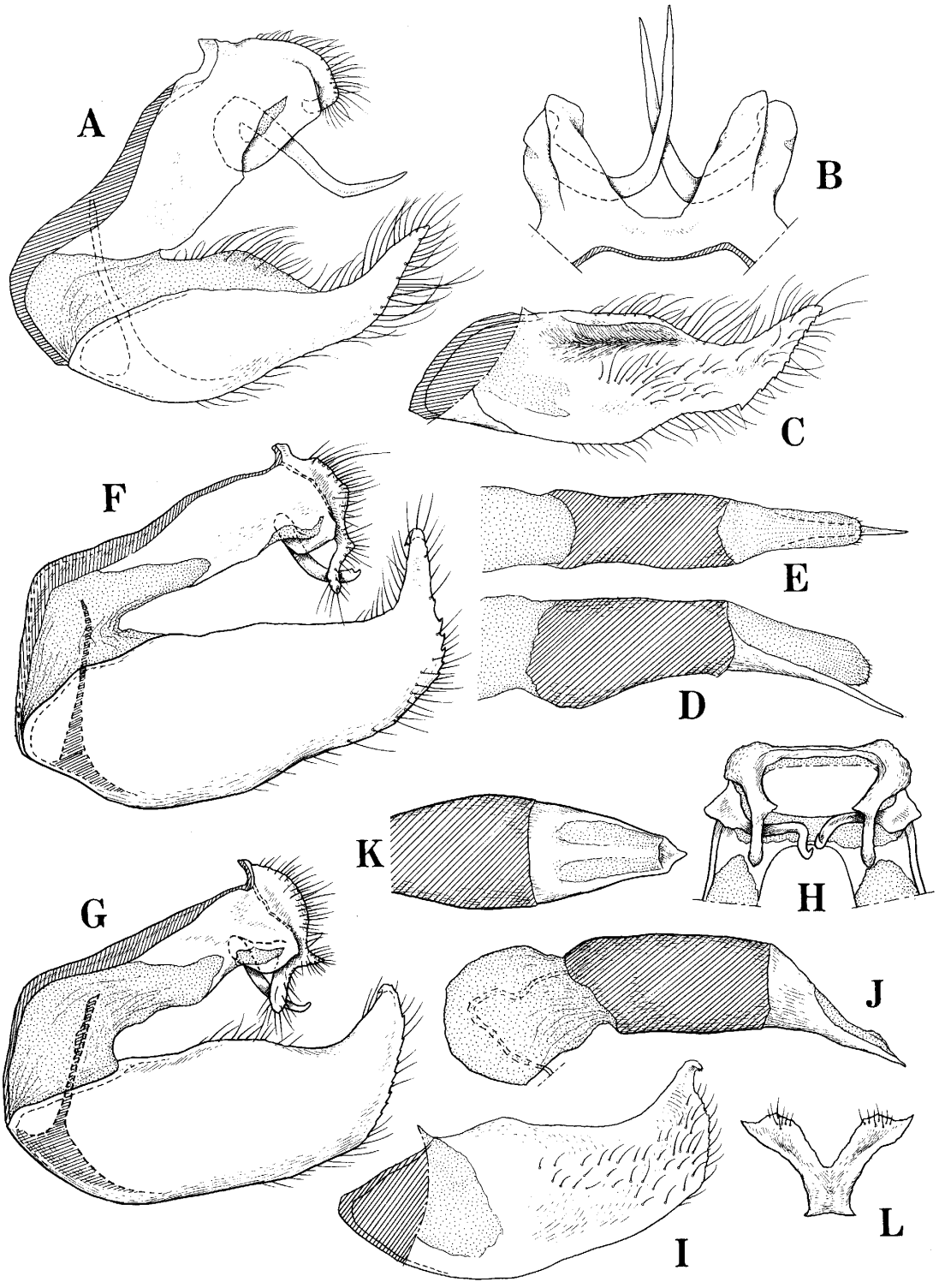


Fig. 10. Male genitalia of *Perpheres perpheres* (H. H. DRUCE & BETHUNE-BAKER), Irian Jaya (A-E), *Psychonotis caelius* (C. & R. FELDER), Queensland (F) and *P. hebes* (H. H. DRUCE), Papua New Guinea (G-L).
A, F, G: Whole genitalia except phallus in lateral view, B: Dorsum in dorsal view, C, I: Right valvae in internal view, D, J: Phalli in lateral view, E, K: *Ditto* in dorsal view, H: Dorsum in posterior view, L: Juxta in posterior view.

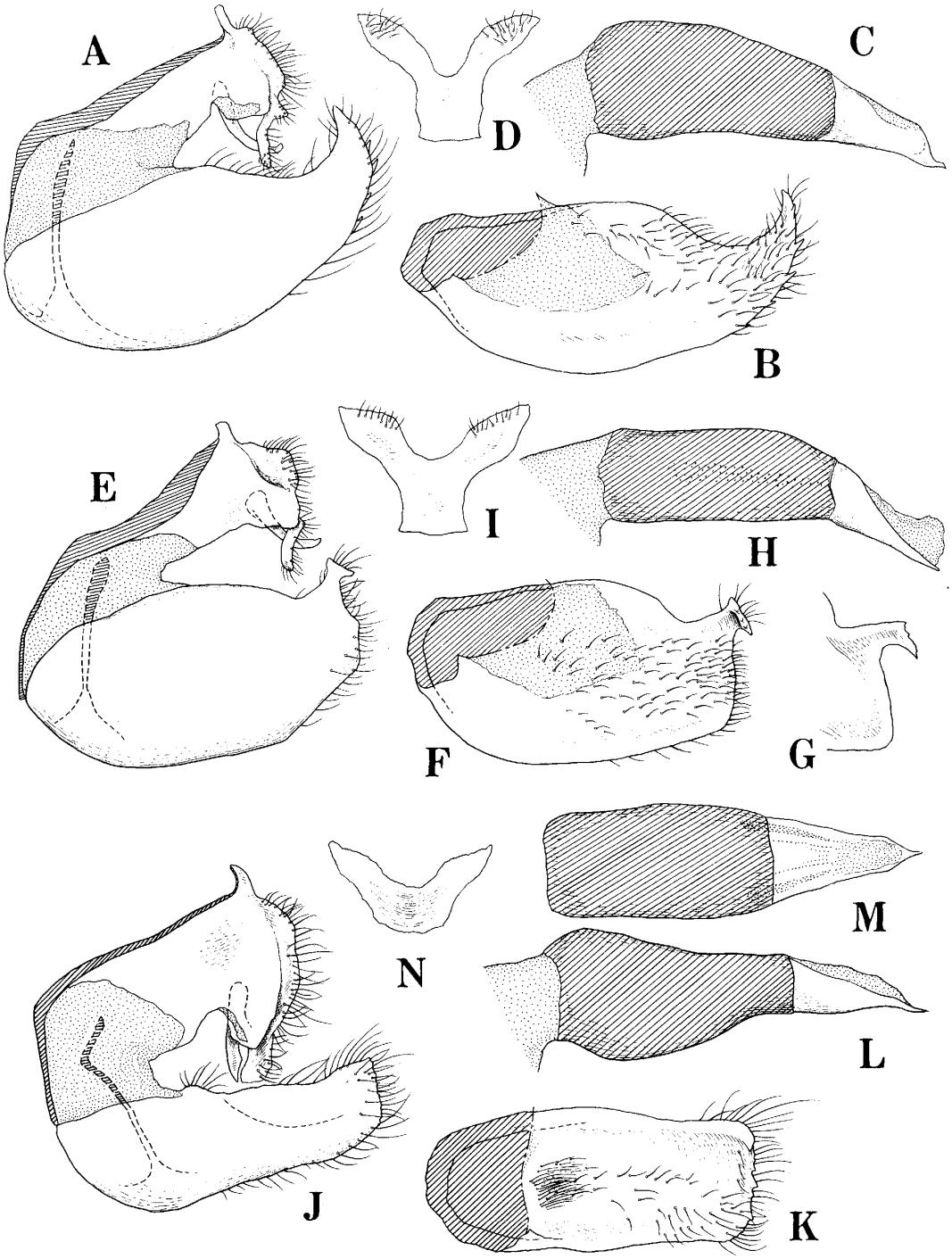


Fig. 11. Male genitalia of and *Psychonotis eudocia* (H. H. DRUCE & BETHUNE-BAKER), Bachan, BM.v. 1751, (A-D), *P. hymetus* (C. FELDER), Ambon, BM.v.1754, (E-I) and *P. browni* (H. H. DRUCE & BETHUNE-BAKER), New Ireland, BM.v.1765, (J-N).
A, E, J: Whole genitalia except phallus in lateral view, B, F, K: Right valvae in internal view, C, H, L: Phalli in lateral view, D, I, N: Juxta in posterior view, G: Apical portion of valva in internal view.

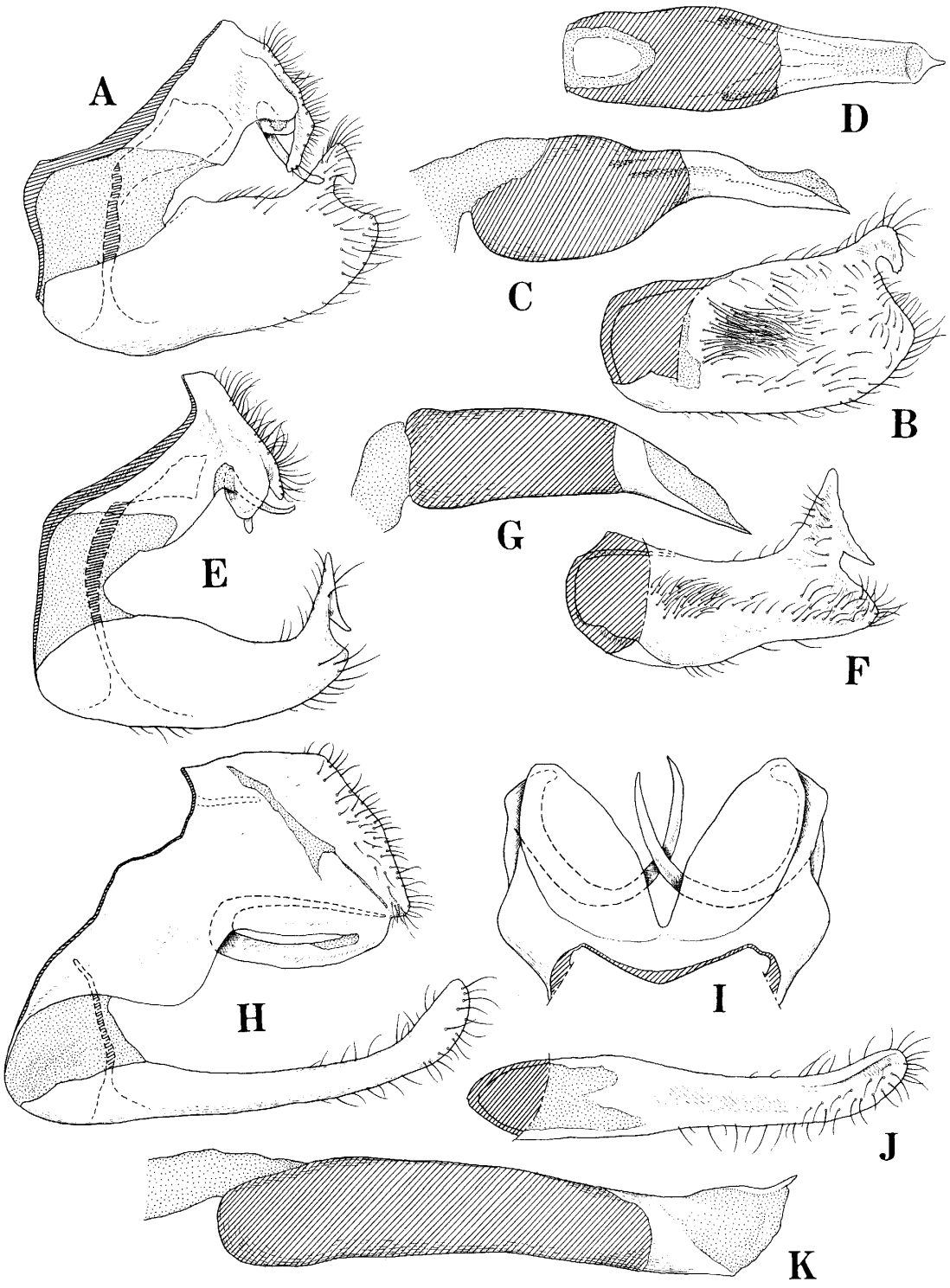


Fig. 12. Male genitalia of, *Psychonotis kruera* (H. H. DRUCE), Solomons, BM.v.1763, (A-D), *P. purpurea* (H. H. DRUCE), Lifu Is., BM.v.1829, (E-G) and *Nothodanis schaeffera* (ESCHSCHOLTZ), Luzon, BM.v.1671, (H-K).
A, E, H: Whole genitalia except phallus in lateral view, B, F, J: Right valvae in internal view, C, G, K: Phalli in lateral view, D: Phallus in dorsal view, I: Dorsum in dorsal view.

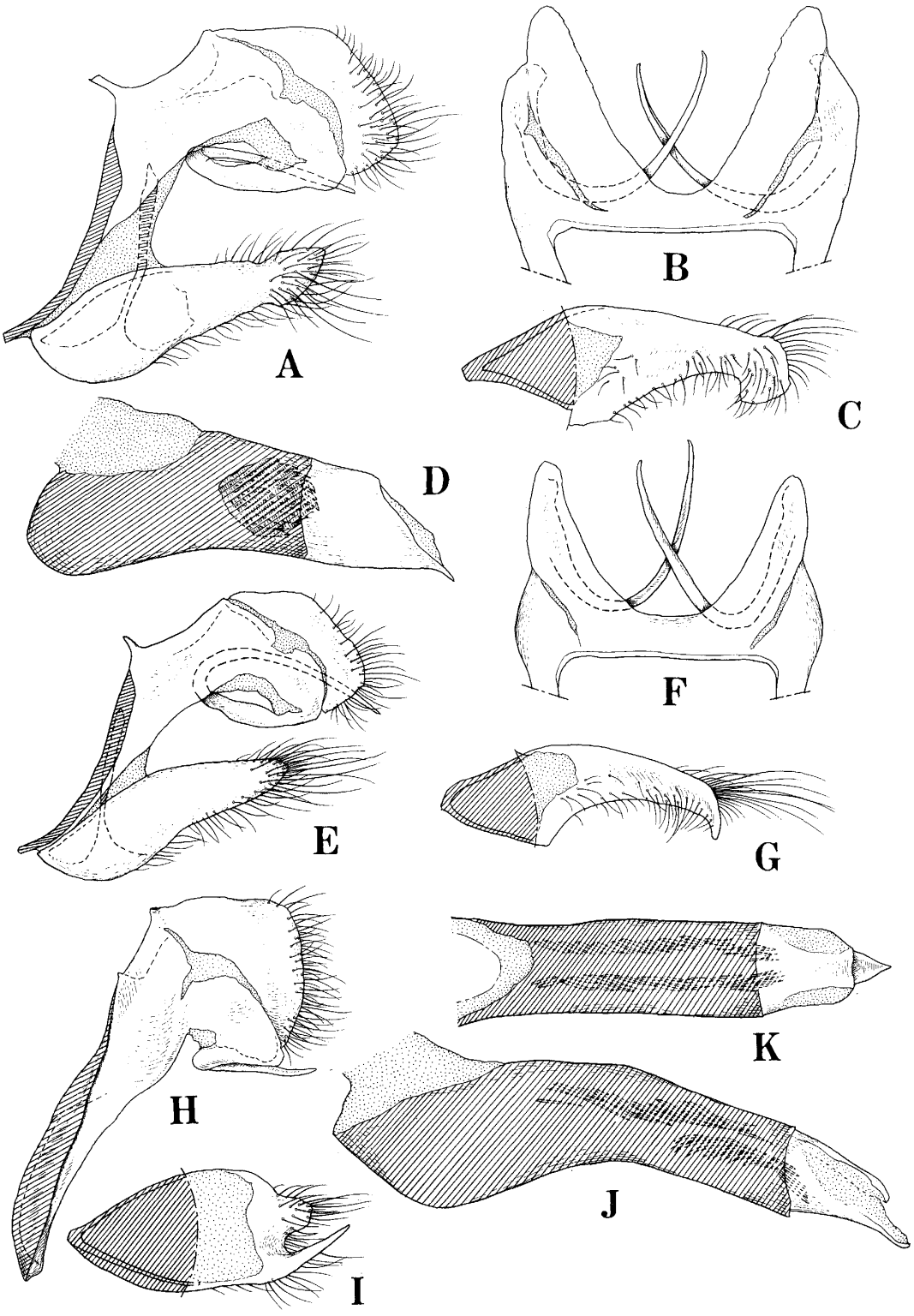


Fig. 13. Male genitalia of *Paraduba owgarra* BETHUNE-BAKER, Papua New Guinea (A-D), *P. metriodes* (BETHUNE-BAKER), Irian Jaya (E-G) and *Ionolyce helicon* (C. FELDER), W. Malaysia, (H-K). A, E: Whole genitalia except phallus in lateral view, H: Ring in lateral view, B, F: Dorsa in dorsal view, C, G, I: Right valvae in internal view, D, J: Phalli in lateral view, K: Phallus in dorsal view.

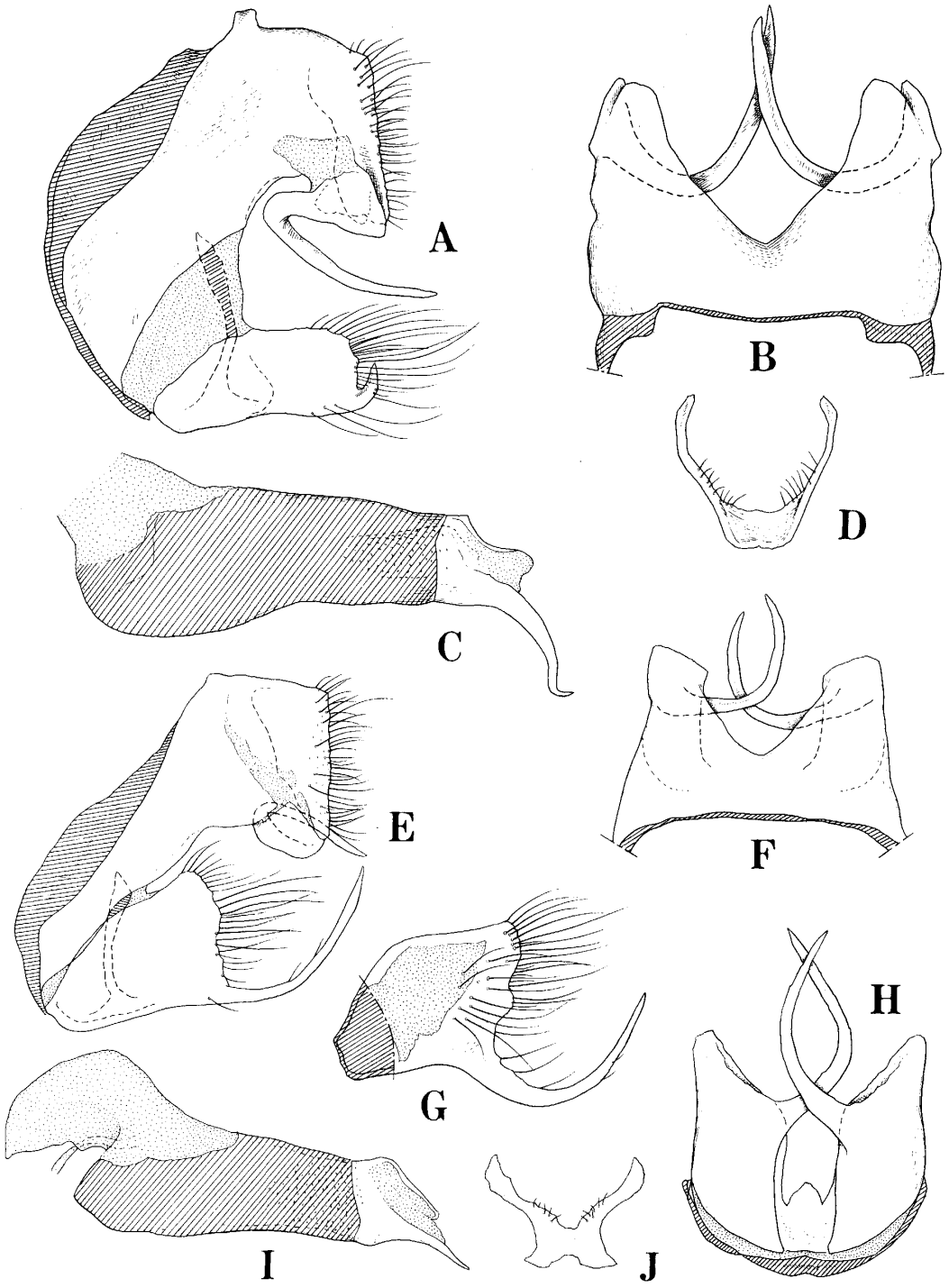


Fig. 14. Male genitalia of *Catopyrops rita* (GROSE-SMITH), S. Sulawesi (A-D) and *C. florinda* (BUTLER), Queensland, BM.v.1728, (E-I).
A, E: Whole genitalia except phallus in lateral view, B, F: Dorsa in dorsal view, C, I: Phalli in lateral view, D, J: Juxta in posterior view, G: Right valva in internal view, H: Valvae in ventral view.

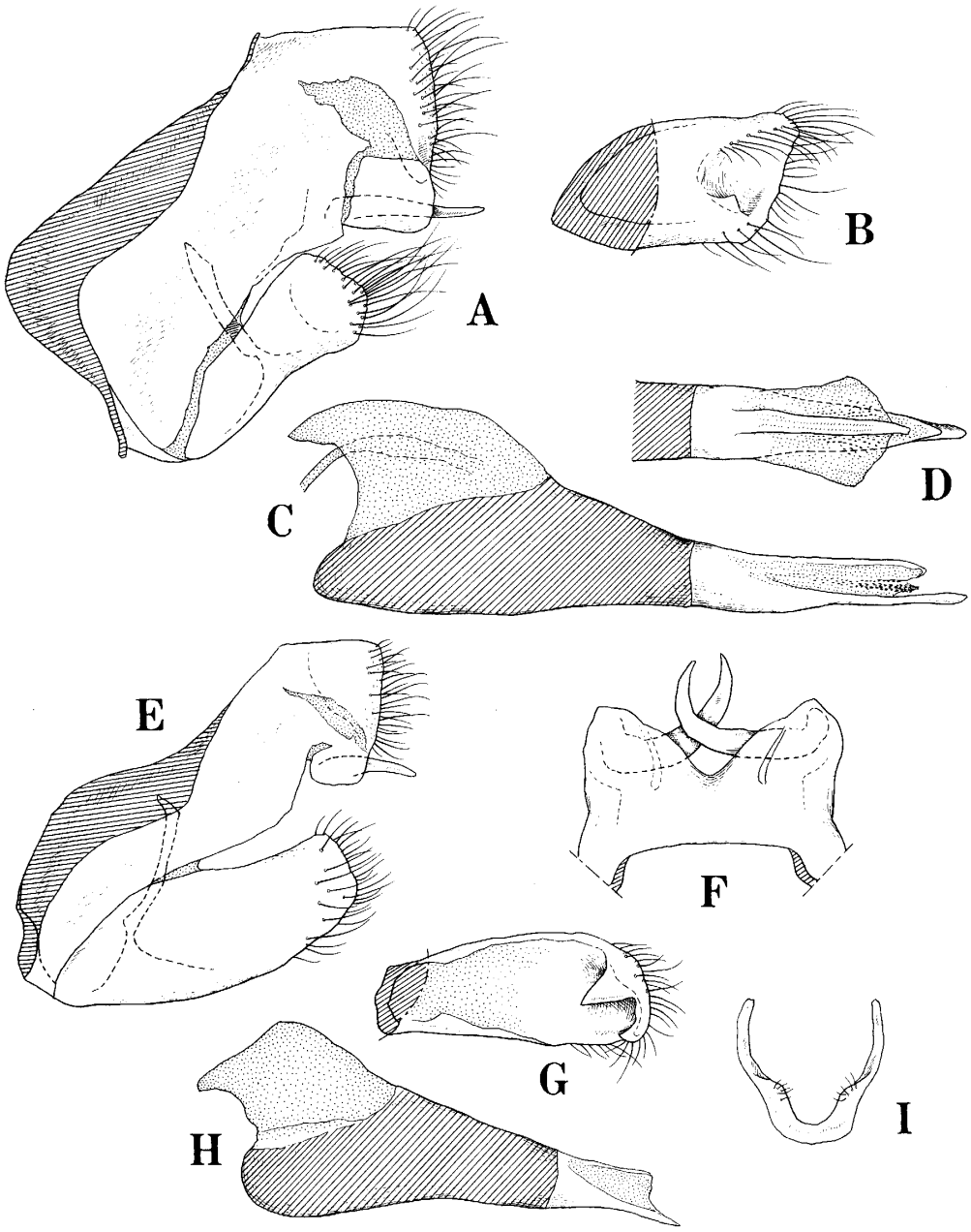


Fig. 15. Male genitalia of *Catopyrops keiria* (H. H. DRUCE), Solomons, BM.v.1730, (A-D) and *C. kokopona* (RIBBE) from New Britain, BM.v.1732, (E-H).
A, E: Whole genitalia except phallus in lateral view, B, G: Right valvae in internal view, C, H: Phalli in lateral view, D: Phallus (posterior half) in dorsal view, F: Dorsum in dorsal view, I: Juxta in posterior view.

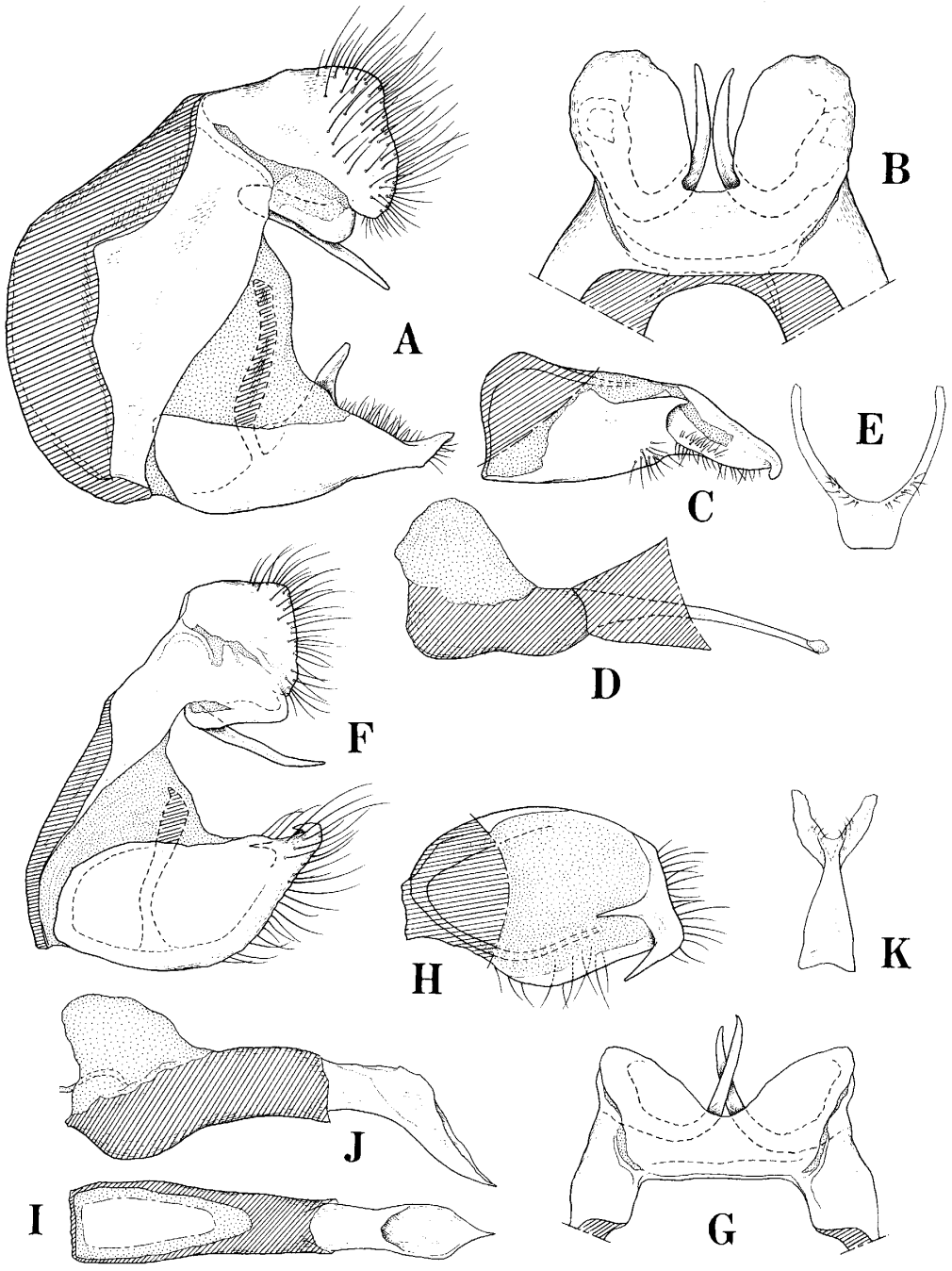


Fig. 16. Male genitalia of *Theclinesthes miskini* (LUCAS), Queensland, SIBATANI Collection, (A-E) and *Sahulana scintillata* (LUCAS), Queensland, SIBATANI Collection, (F-K).
A, F: Whole genitalia except phallus in lateral view, B, G: Dorsum in dorsal view, C, H: Right valvae in internal view, D, J: Phalli in lateral view, I: Phallus in dorsal view, E, K: Juxta in posterior view.

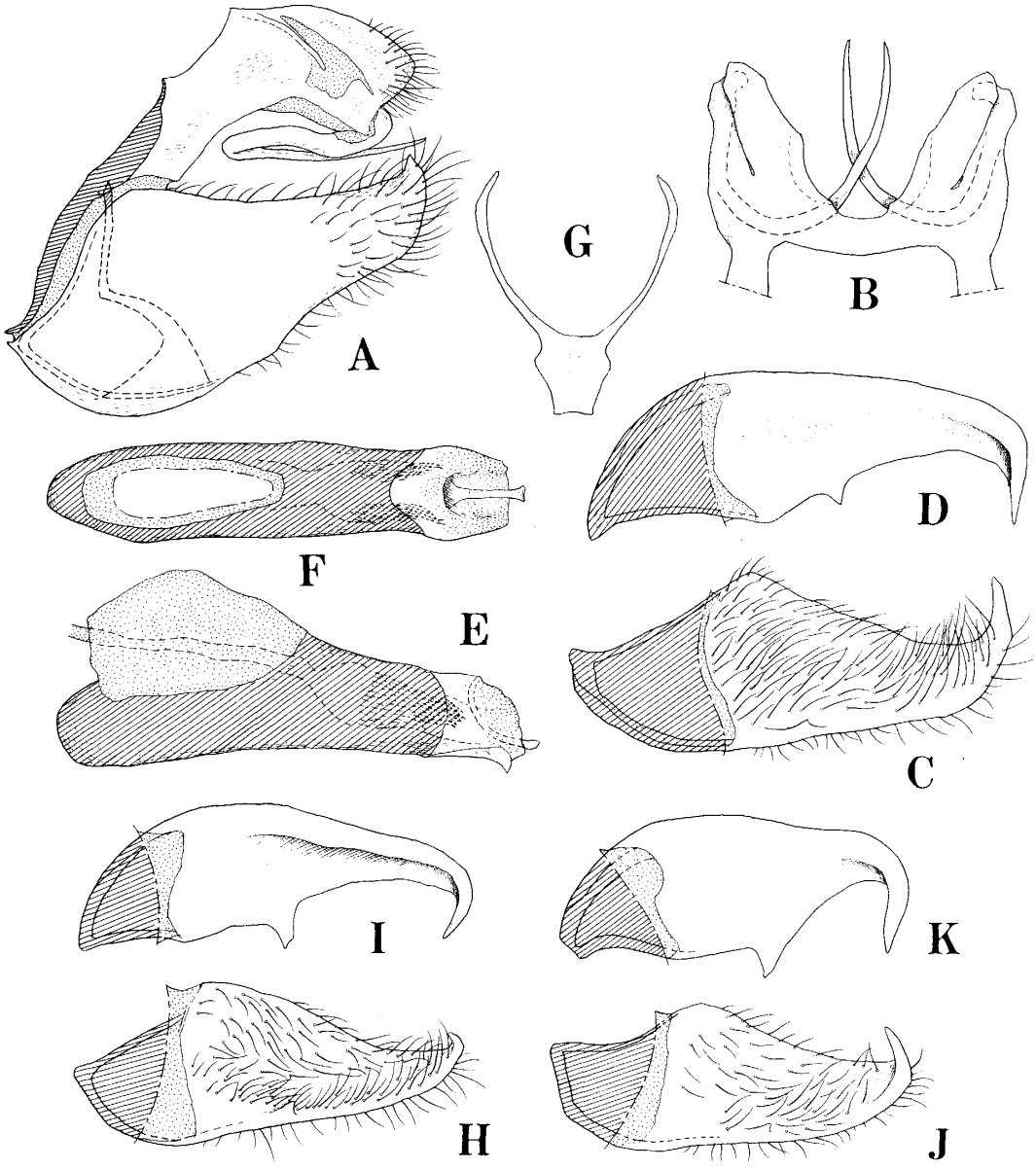


Fig. 17. Male genitalia of *Neolucia agricola* (WESTWIID), Sydney, BM.v.1734, (A-G), *N. mathewi* (MISKIN), S. W. Australia, BM.v.1735, (H-I) and *N. hobartensis* (MISKIN), Tasmania, BM.v.1737, (J-K).
A: Whole genitalia except phallus in lateral view, D: Dorsum in dorsal view. C, H, J: Right valvae in internal view, D, I, K: *Ditto* in dorso-internal view, E: Phallus in lateral view, F: *Ditto* in dorsal view.

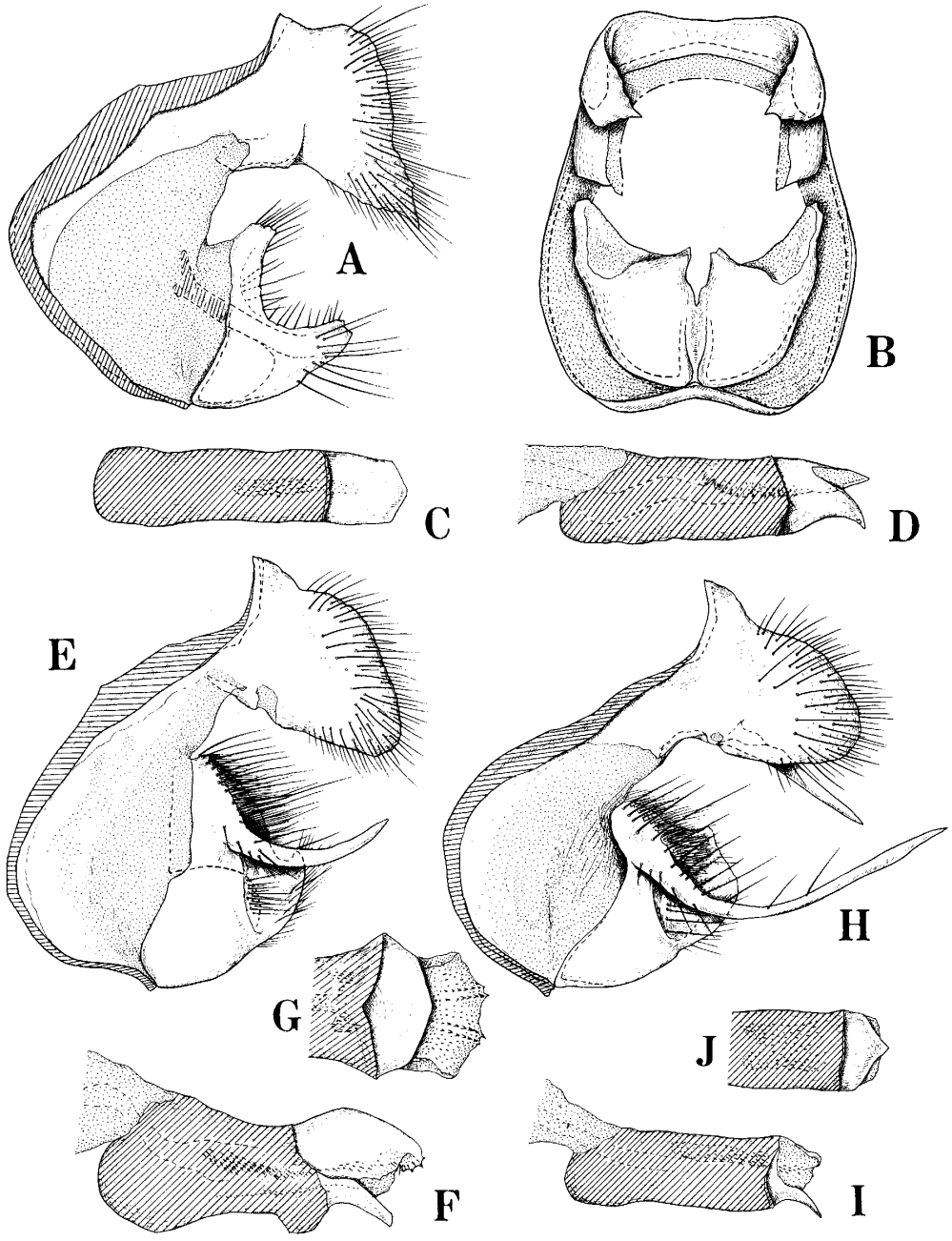


Fig. 18. Male genitalia of *Caleta caleta* (HEWITSON), N. Sulawesi (A–D) and *C. roxus* (GODART), W. Malaysia (E–G) and *C. manovus* (FRUHSTORFER), N. Borneo (H–J).
A, E, H: Whole genitaia except phallus in lateral view, B: *Ditto* in posterior view, D, F, I: Phalli in lateral view, C, G, J: *Ditto* in ventral view.

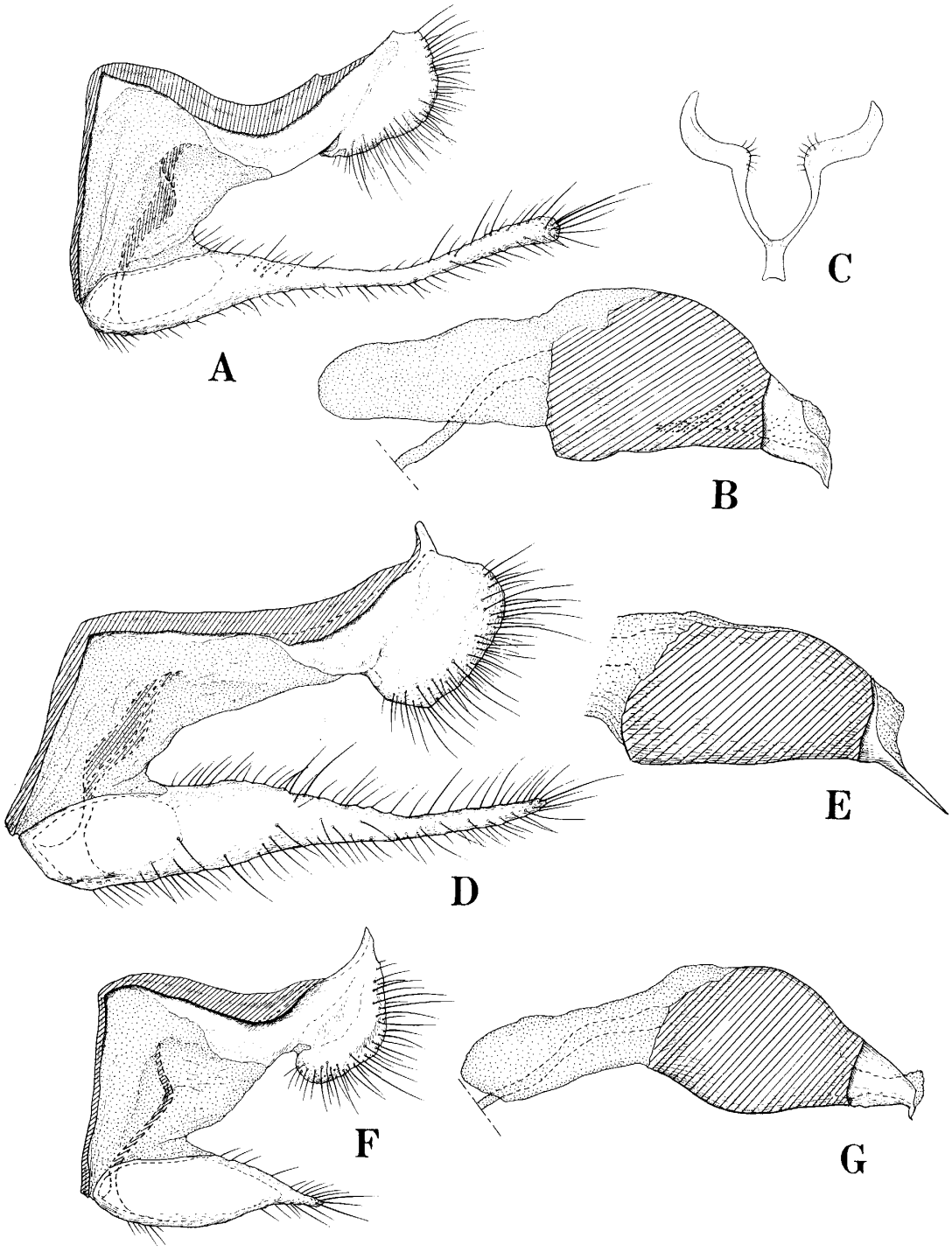


Fig. 19. Male genitalia of *Discolampa ethion* (WESTWOOD), W. Malaysia (A-C), *D. ilissus* (C. & R. FELDER), S. Sulawesi (D-E) and *D. albula* (GROSE-SMITH), Papua New Guinea (F-G).
A, D, F: Whole genitalia except phallus in lateral view, B, E, G: Phalli in lateral view, C: Juxta in posterior view.

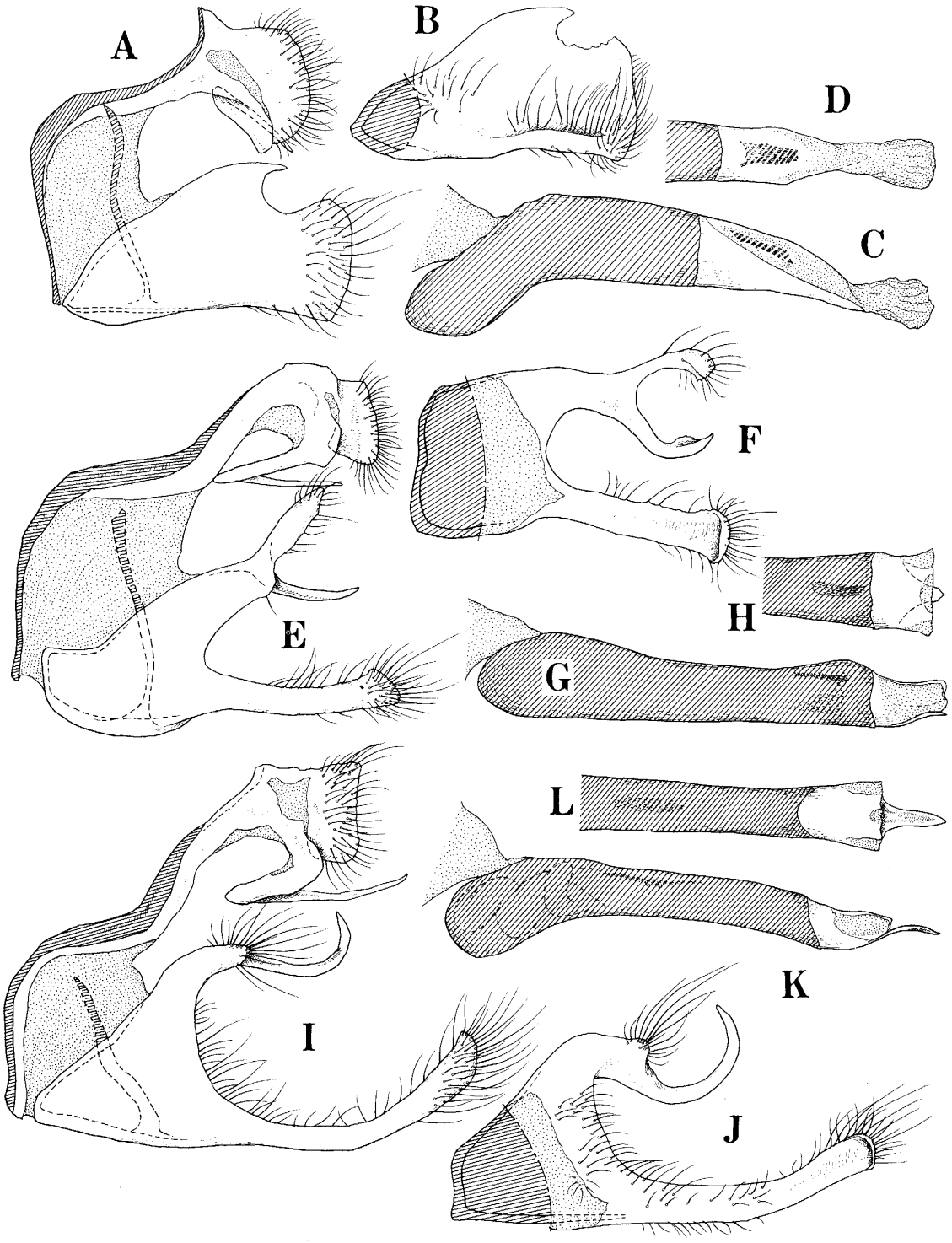


Fig. 20. Male genitalia of *Jamides seminiger* GROSE-SMITH, Bachan, BM.v.1678, (A-D), *J. areas* (H. H. DRUCE), Solomons, BM.v.1713, (E-H) and *J. nitens* (JOICEY & TALBOT), Papua New Guinea, BM.v.1711, (I-L).
A, E, I: Whole genitalia except phallus in lateral view, B, F, J: Right valvae in internal view, C, G, K: Phalli in lateral view, D, H, L: *Ditto* (posterior portion) in dorsal view.

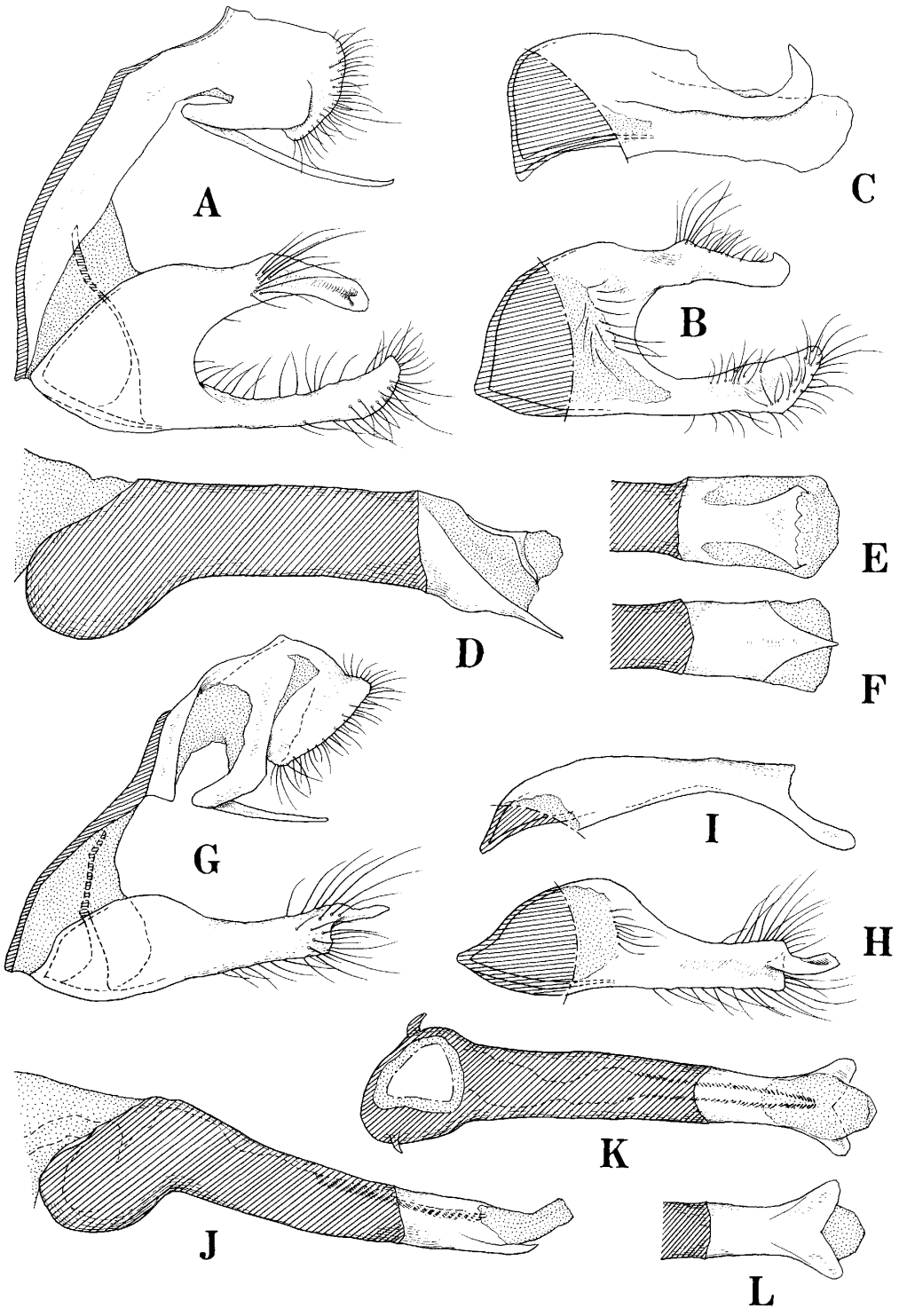


Fig. 21. Male genitalia of *Jamides lugine* (H. H. DRUCE), Borneo, BM.v.1704, (A-f) and *J. aetherialis* (BUTLER), Kai, BM.v.1706, (G-L).
A, G: Whole genitalia except phallus in lateral view, B, H: Right valvae in internal view, C, I: *Ditto* in dorsal view, D, J: Phalli in lateral view, E, K: *Ditto* in dorsal view, F, L: *Ditto* (postrior half) in ventral view.

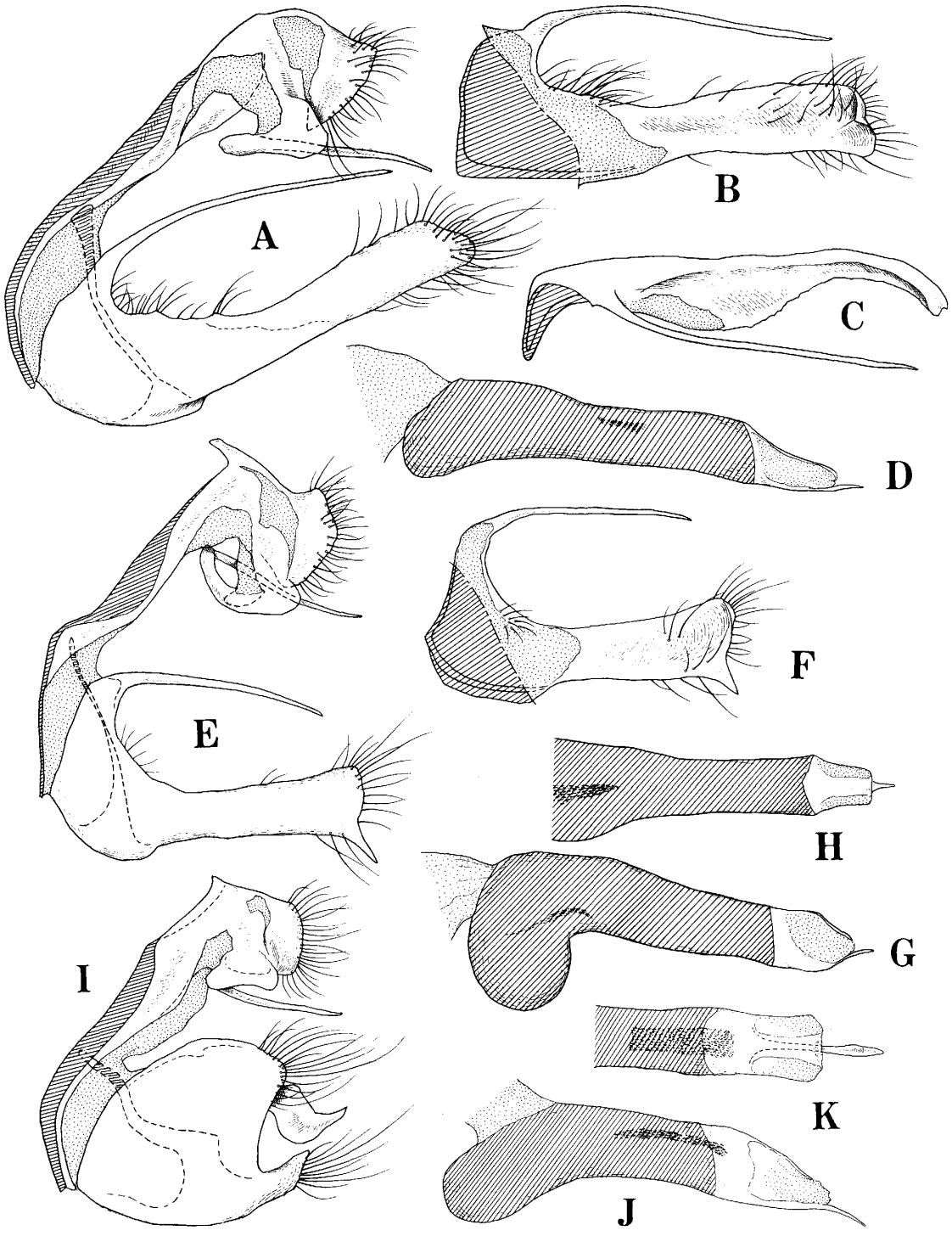


Fig. 22. Male genitalia of *Jamides anops* (DOHERTY), Sumba, BM.v.1708, (A-D), *J. aleuas* (C. & R. FELDER), New Guinea, BM.v.1722, (E-H) and *J. celebica* (ELIOT), Sulawesi (I-K).
A, E, I: Whole genitalia except phallus in lateral view, B, F: Right valvae in internal view, C: Right valva in dorsal view, D, G, J: Phalli in lateral view, H, K: *Ditto* (posterior half) in dorsal view.

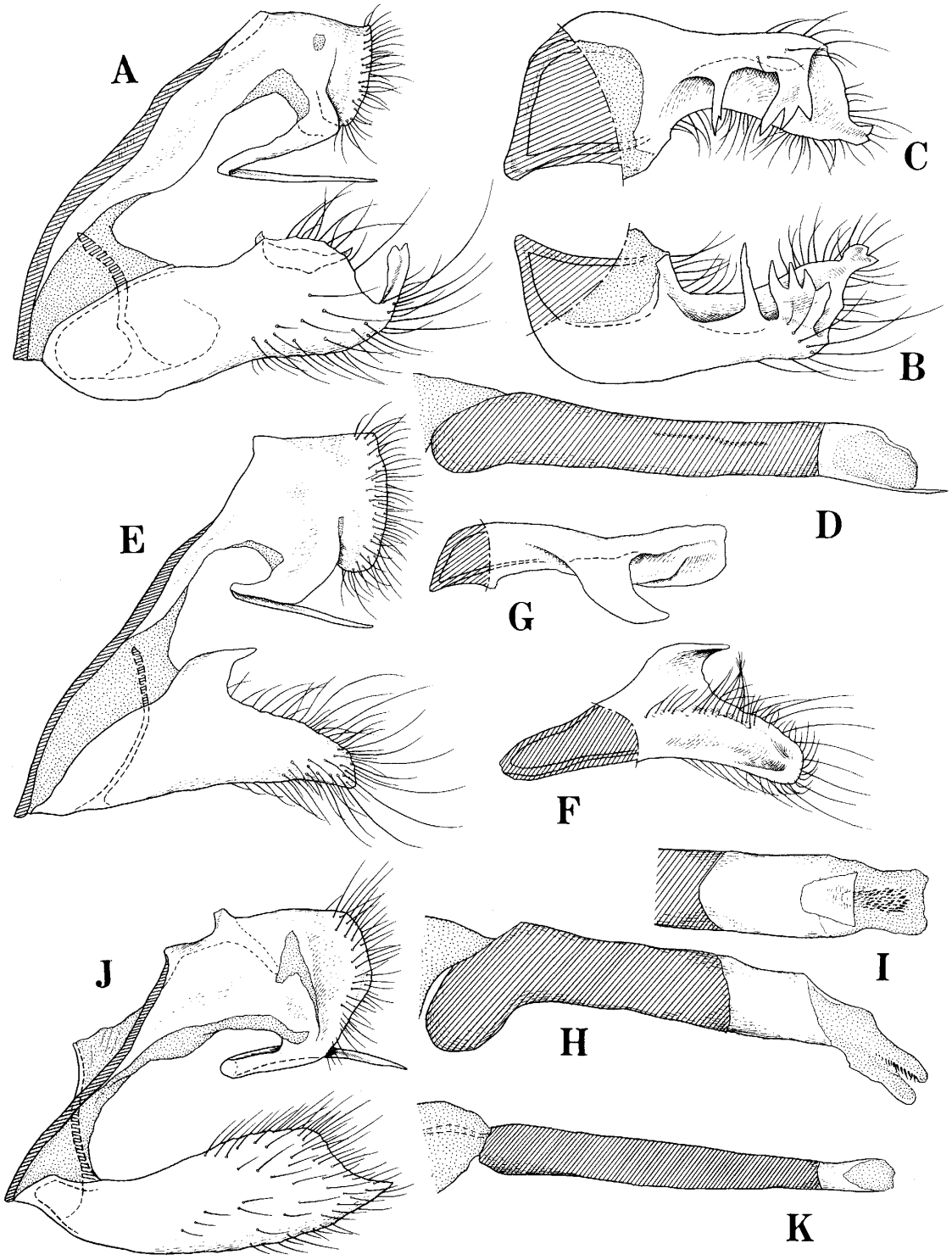


Fig. 23. Male genitalia of *Jamide festivus* (RÖBER), Sulawesi, BM.v.1716, (A-D), *J. lucide* (de NICÉVILLE), Sumatra, BM.v.1705, (E-I) and *Epimastidia inops* (C. & R. FELDER), New Guinea (J-K).
A, E, J: Whole genitalia except phallus in lateral view, B: Left valva in dorsal view, C, G: Right valvae in dorsal view, F: Right valva in internal view, D, H, K: Phalli in lateral view, I: Phallus (posterior half) in dorsal view.

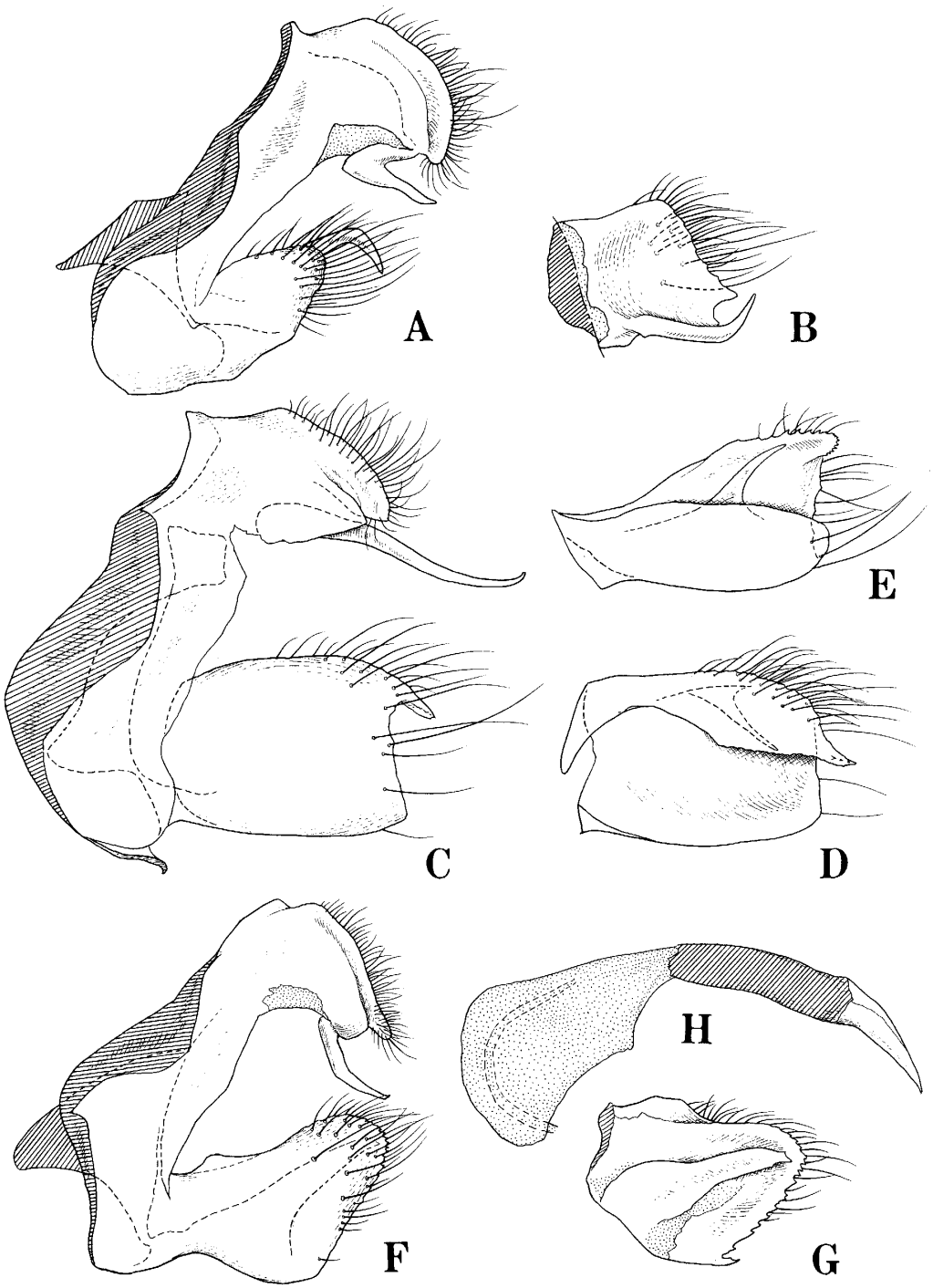


Fig. 24. Male genitalia of *Tarucus callinara* BUTLER, Burma, BM.v.1809, (A, B), *T. hazara* EVANS, India, BM.v.1811, (C-E) and *T. indica* EVANS, S. India, BM.v.1810, (F-H).
A, C, F: Whole genitalia except phallus in lateral view, B, E, G: Right valvae in internal view, D: Right valva in dorsal view, H: Phallus in lateral view.

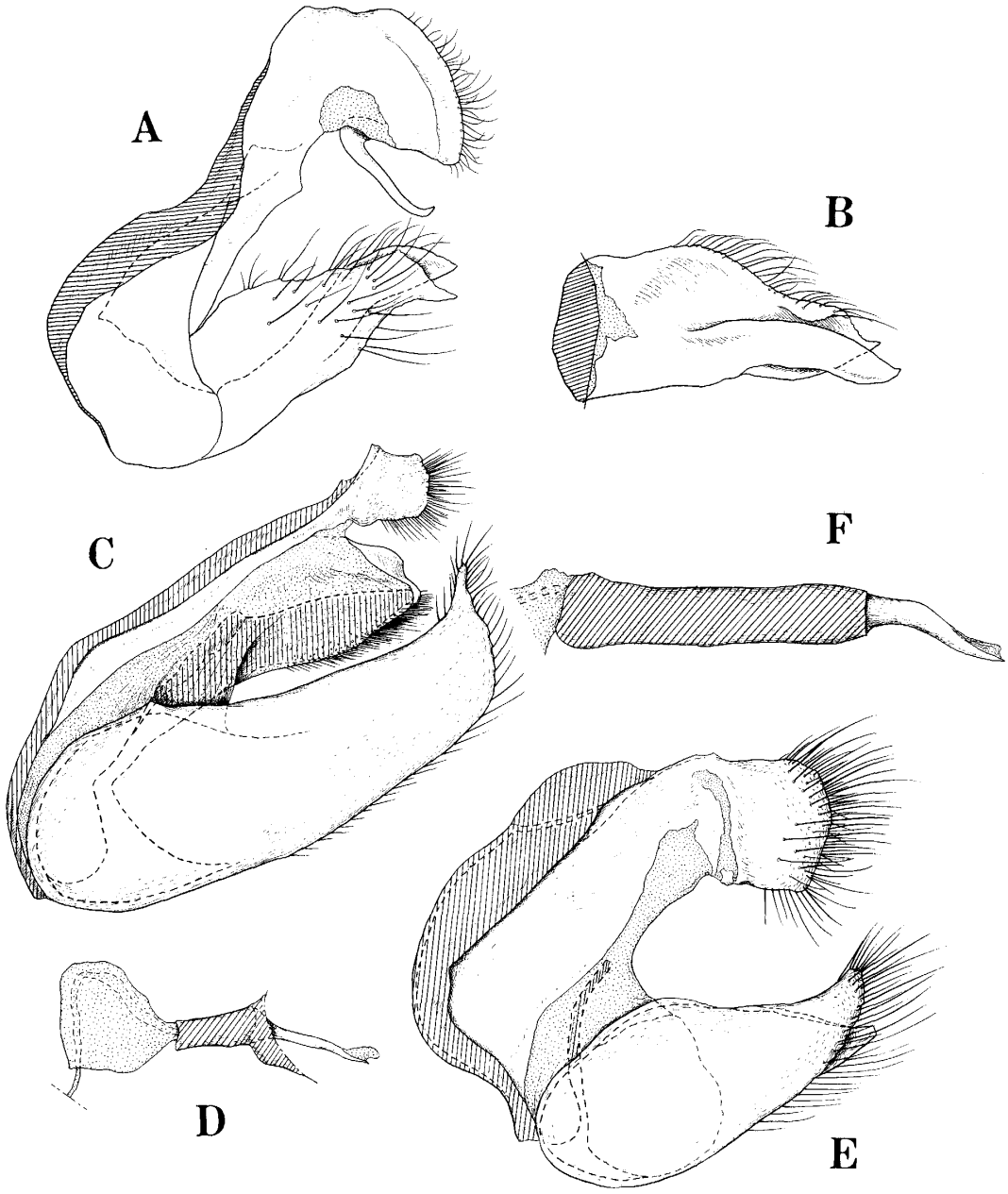


Fig. 25. Male genitalia of and *Tarucus venosus* MOORE, N. India, BM.v.1812, (A-B), *Pithecops phoenix* RÖBER, S. Sulawesi (C-D) and *P. dionisius* (BOISDUVAL), Papua New Guinea (E-F).
A, C, E: Whole genitalia except phallus in lateral view, B: Right valva in internal view, D, F: Phalli in lateral view.

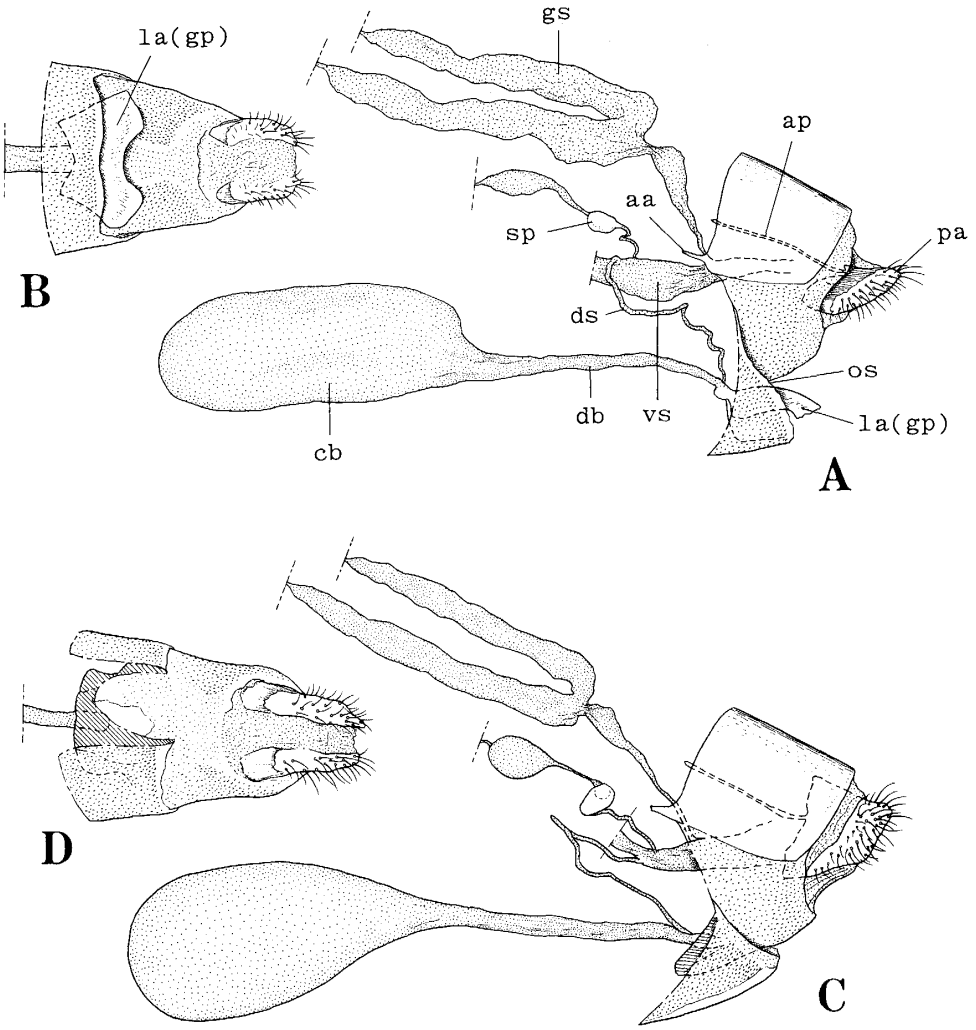


Fig. 26. Female genitalia of *Una usta* (DISTANT), N.E. Sumatra, BM.v.1828, (A-B), *Orthomiella pontis* (ELWES), India, BM.v.1825, (C-D).
A, C: Internal reproductive organs in lateral view, B, D: Terminalia in ventral view.
aa: apophysis anterioris, ap: apophysis posterioris, cb: corpus bursae, db: ductus bursae, ds: ductus seminalis, gs: glandula sebacea, la (gp): lamella antevaginalis (genital plate), os: ostium, pa: papilla analis, sp: spermatheca, vs: vestibulum.

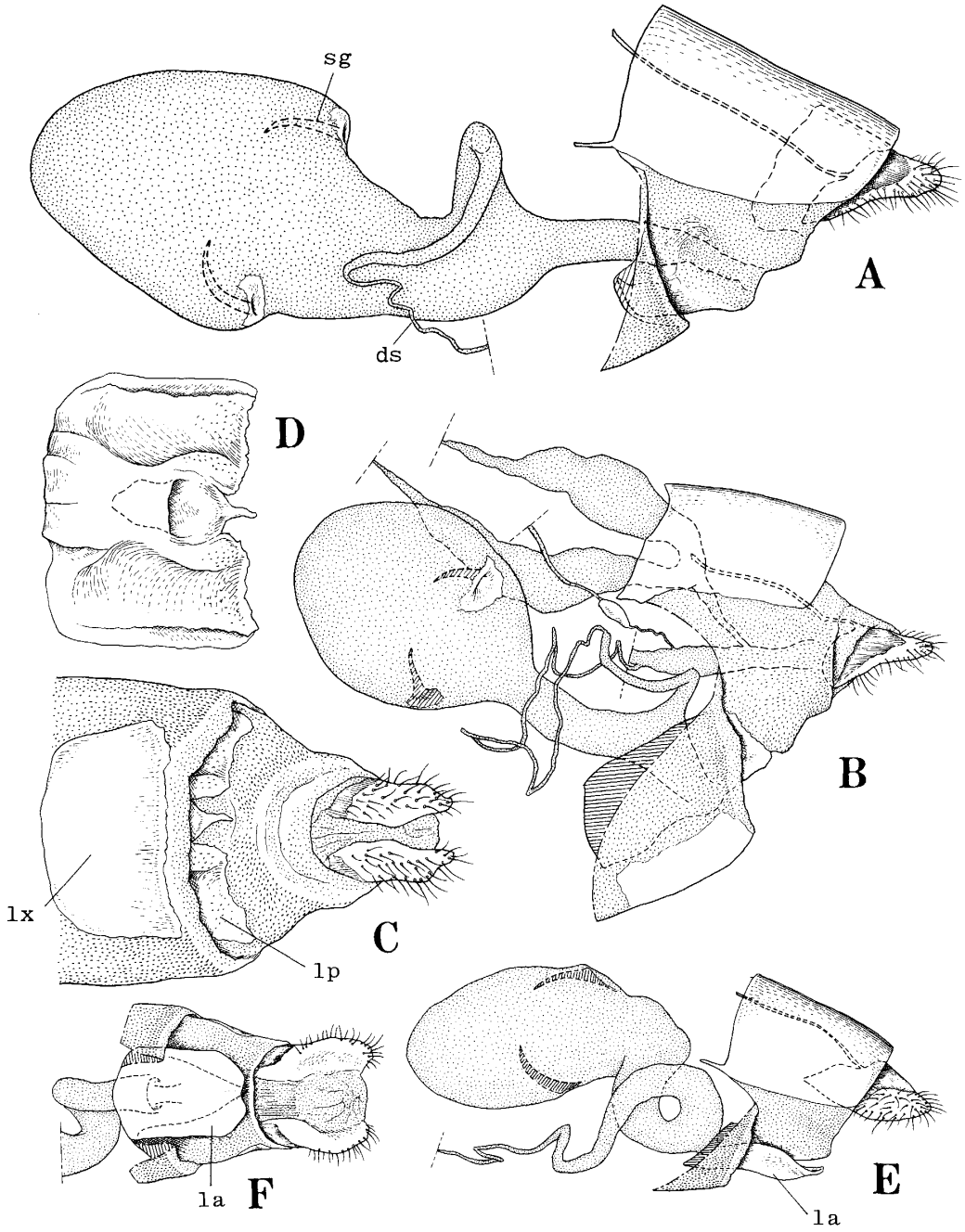


Fig. 27. Female genitalia of *Nacaduba subperusia* (SNELLEN), W. Malaysia, (A), *N. schneideri* (RIBBE), New Britain, BM.v.1823, (B-D) and *Nacaduba biocellata* (C. & R. FELDER), N. Australia (E-F). A, B, E: Internal reproductive organs in lateral view, C, F: Terminalia in ventral view, D: Genital plate.
sg: signa, ds: ductus seminalis, la: lamella antevaginalis, lp: lamella postvaginalis, lx: lodix.

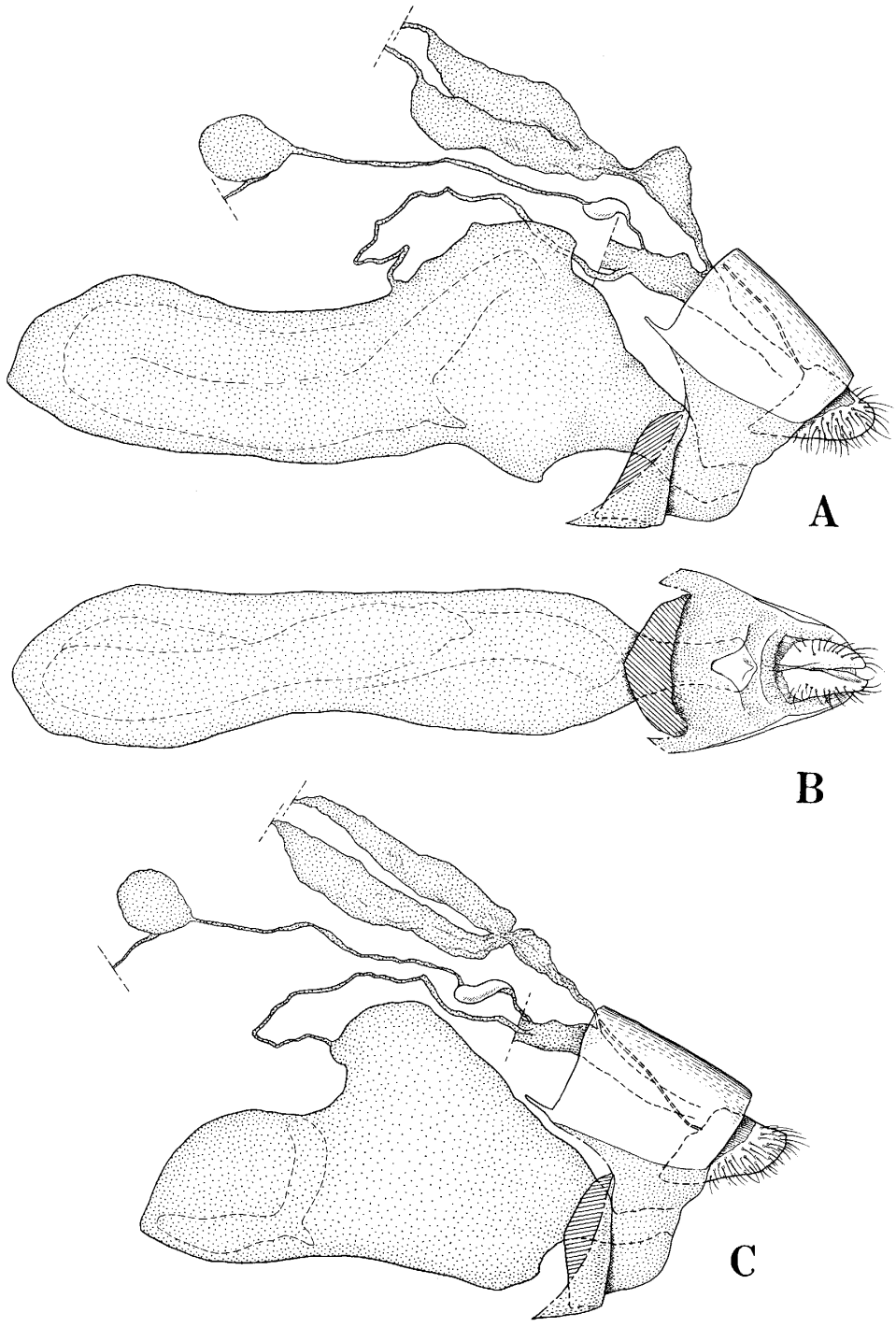


Fig. 28. Female genitalia of *Tartesa astarte* (UTLER), Solomons, BM.v.1781, (A, B) and *T. ugiensis* (H. H. DRUCE), S. Christoval, BM.v.1783, (C).
A, C: Internal reproductive organs in lateral view, B: *Ditto* in ventral view.

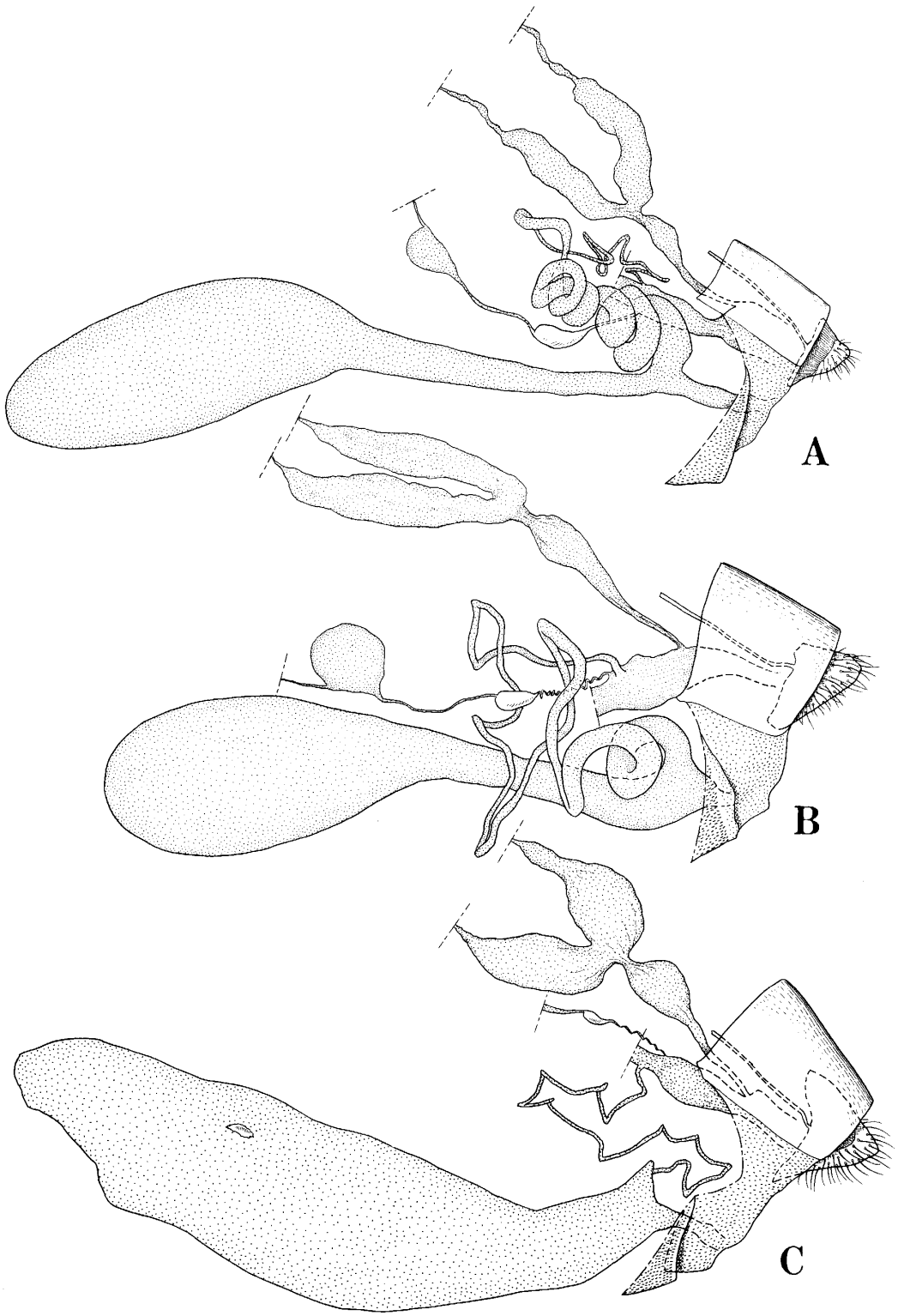


Fig. 29. Female internal reproductive organs of *Erysichton lineata* (MURRAY), Australia (A), *E. palmyra* (C. FELDER), Ceram, BM.v.1651, (B) and *Danis hengis* (GROSE-SMITH), New Guinea, BM.v.1670, (C).

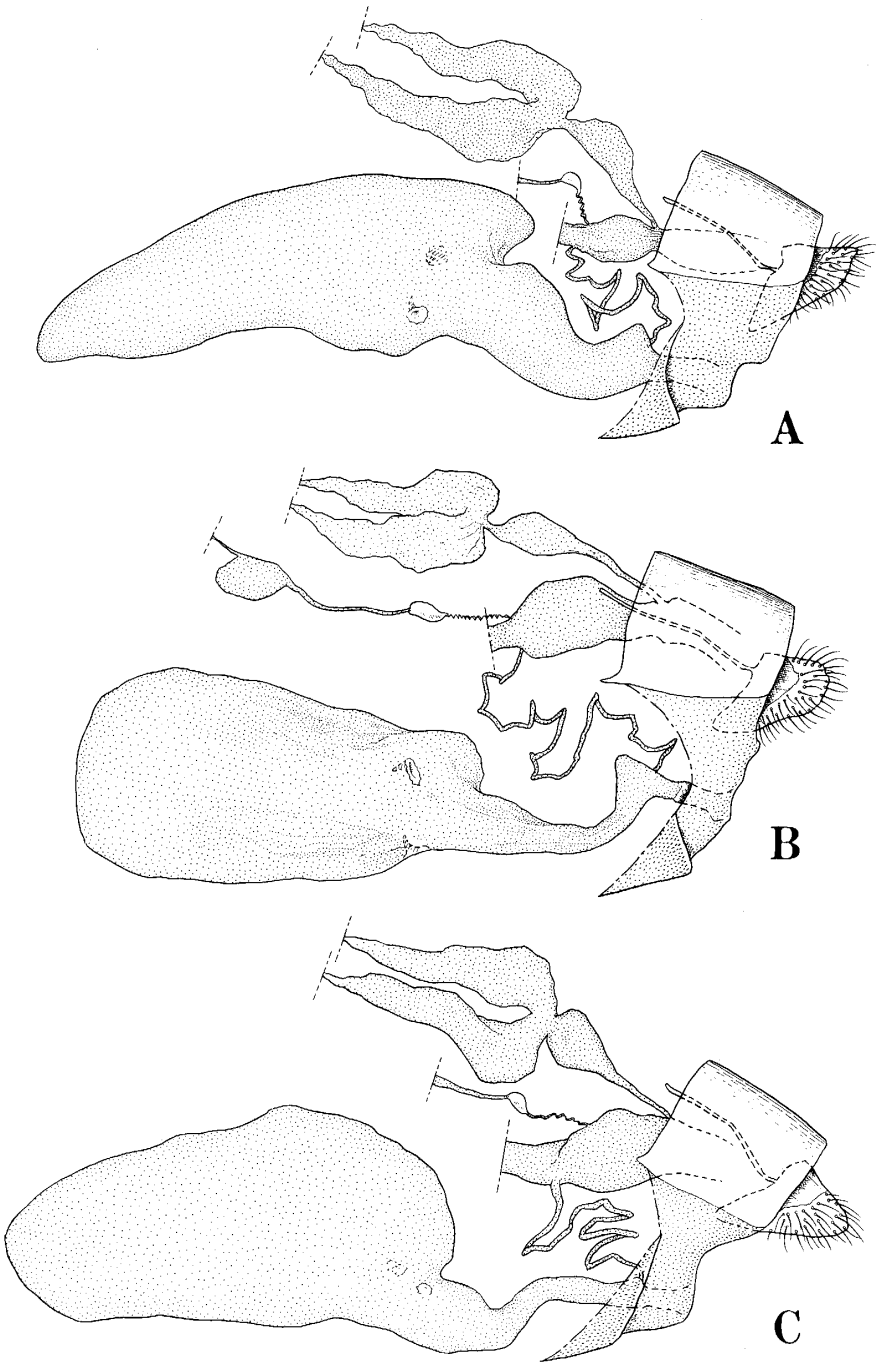


Fig. 30. Female internal reproductive organs of *Danis* spp.
A: *Danis phroso* (GROSE-SMITH), Irian Jaya, BM.v.1658, B: *D. regalis* (GROSE-SMITH & KIRBY), Papua New Guinea, BM.v.1666, C: *Danis drucei* (GROSE-SMITH & KIRBY), Irian Jaya, BM.v. 1662.

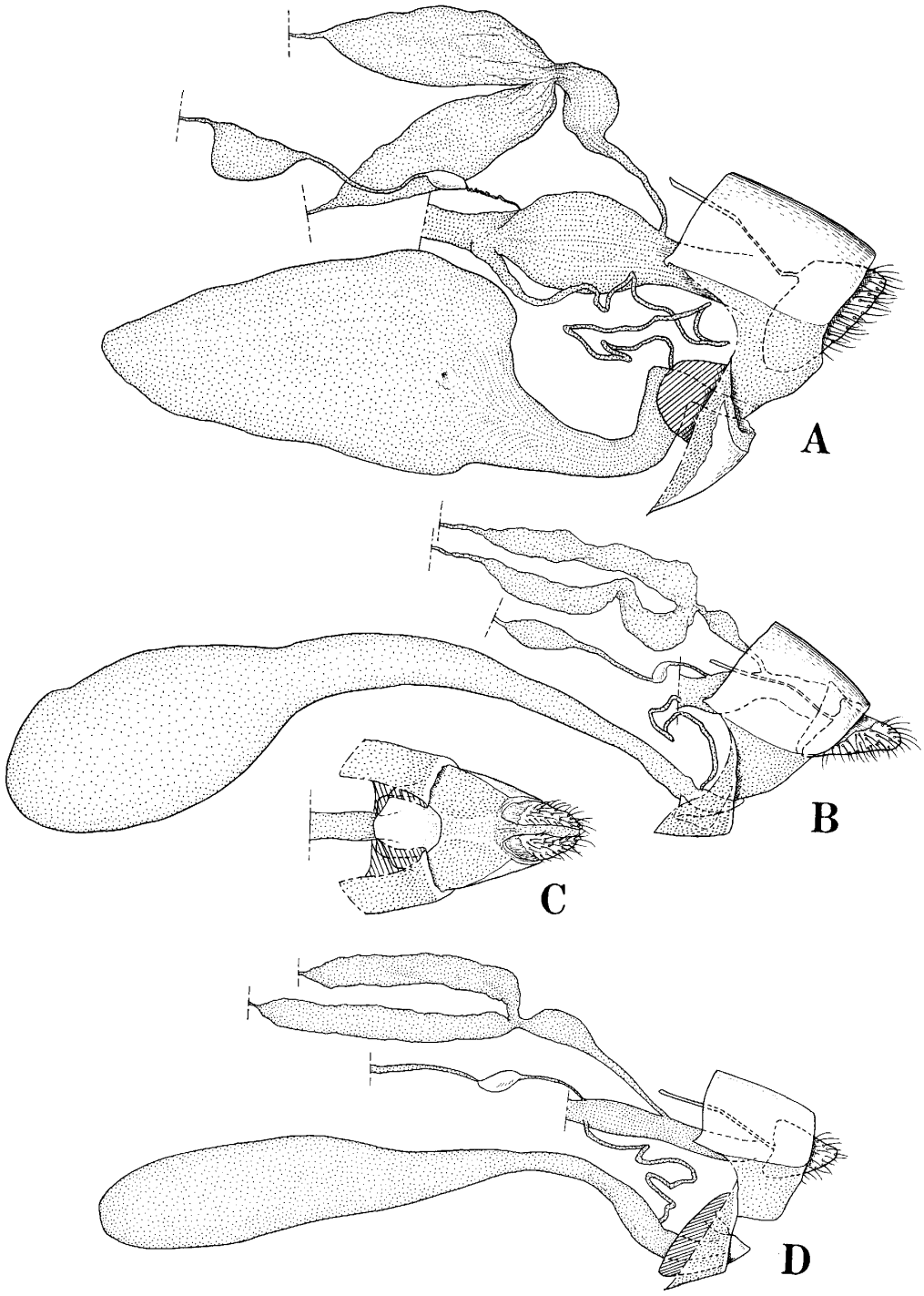


Fig. 31. Female genitalia of *Danis concolor* (ROTHSCHILD), Irian Jaya, BM.v.1656, (A), *Perpheres perpheres* (H. H. DRUCE & BETHUNE-BAKER), Papua New Guinea, BM.v.1653, (B, C) and *Psychonotis caelius* (C. & R. FELDER), Queensland, ELKU, (D).
A, B, D: Internal reproductive organs in lateral view, C: Terminalia in ventral view.

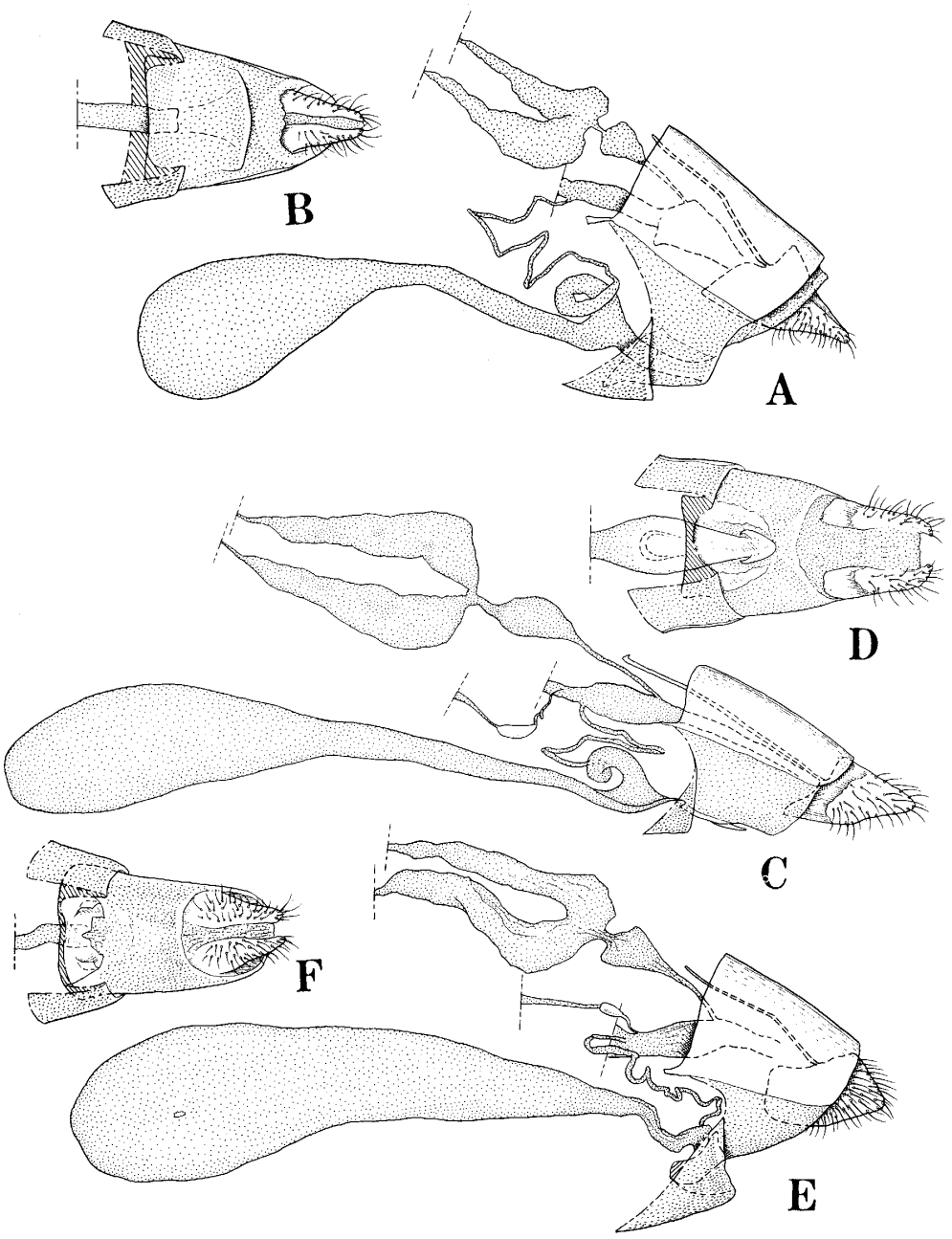


Fig. 32. Female genitalia of *Nothodanis schaeffera* (ESCHSCHOLTZ), Palawan, BM.v.1672, (A, B), *Prosotas nelides* (de NICÉVILLE), Malaysia, ELIOT Collection, (C-D) and *Catopyrops rita* (GROSE-SMITH), Flores, BM.v.1727, (E-F).
A, C, E: Internal reproductive organs in lateral view, B, D, F: Terminalia in ventral view.

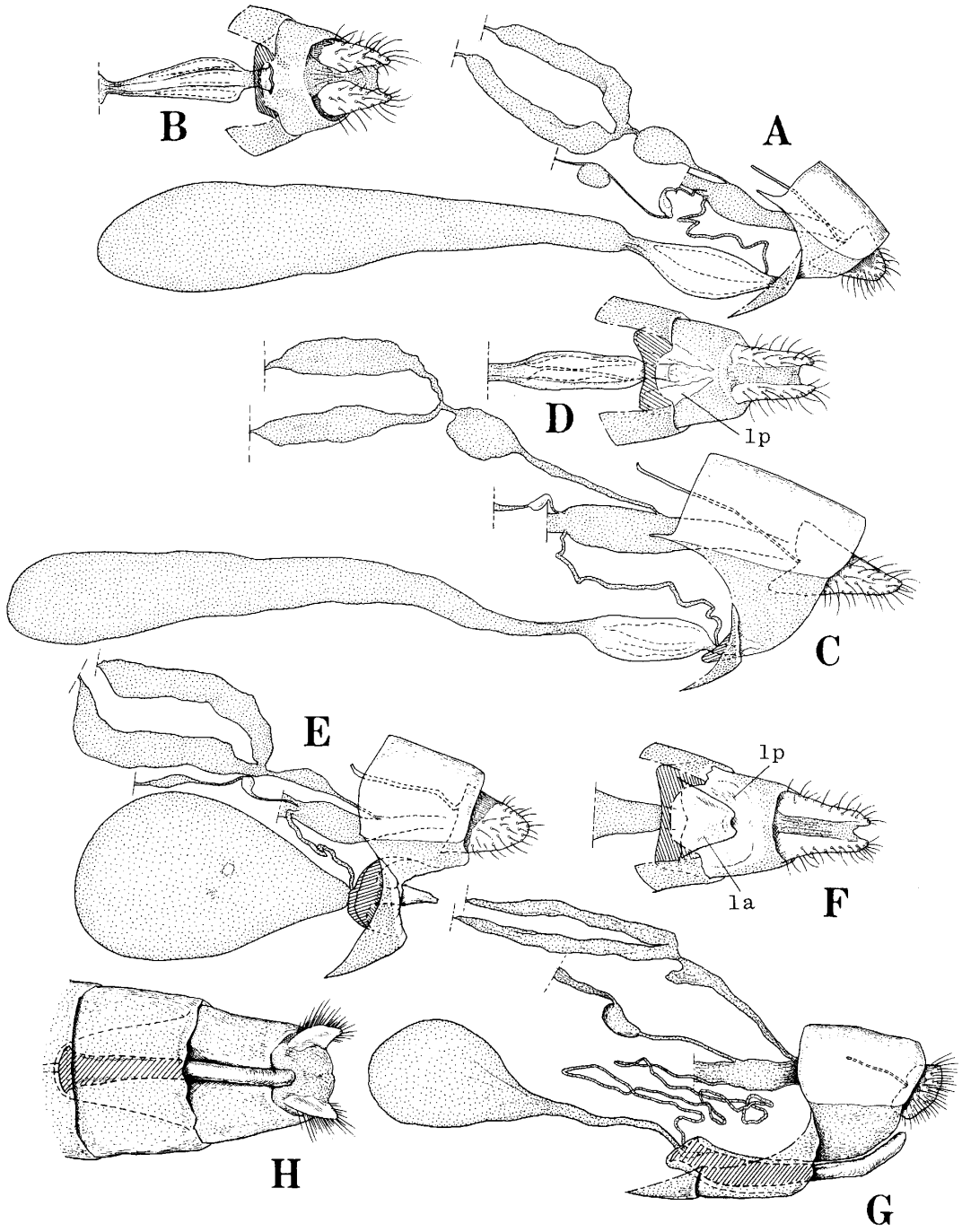


Fig. 33. Female genitaia of *Paraduba owgarra* BETHUNE-BAKER, New Guinea, ANIC, (A-B), *Ionolyce brunnescens* TITE, Solomons, ANIC, (C-D), *Thaumaina uranothauma* BETHUNE-BAKER, New Guinea, ANIC, (E-F) and *Pithecops phoenix* RÖBER, S. Sulawesi, (H-G).
A, C, E, G: Internal reproductive organs in lateral view, B, D, F, H: Terminalia in ventral view.
la: lamella antevaginalis, lp: lamella postvaginalis.

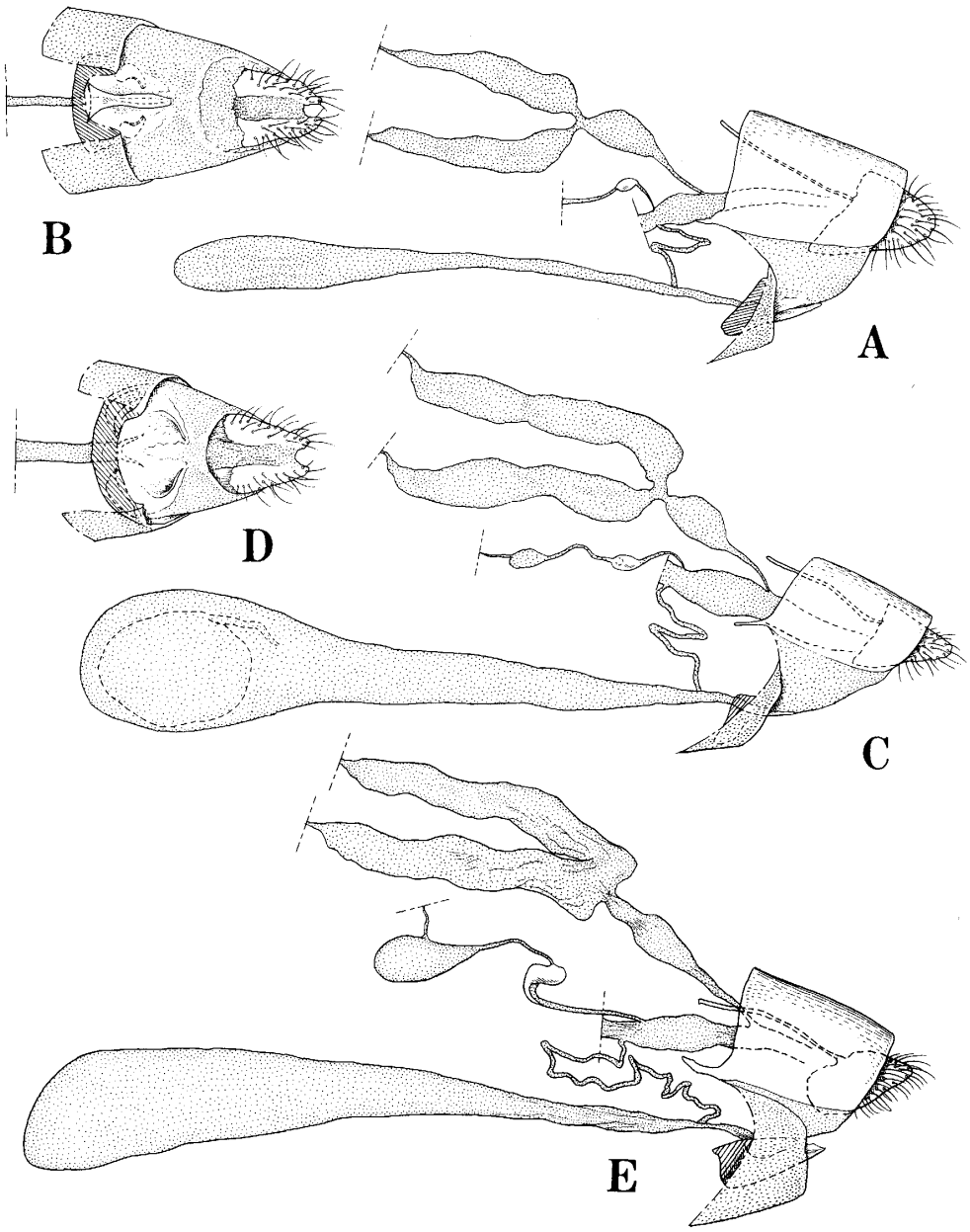


Fig. 34. Female genitalis of *Theclinesthes miskini* (LUCAS), Australia, SIBATANI Collection, (A-B), *Sahulana scintillata* (LUCAS), Australia, ANIC, (C-D) and *Neolucia argicola* (WESTWOOD), Queensland, OMNH, (E).
A, C, E: Internal reproductive organs in lateral view, B, D: Terminalia in venteral view.

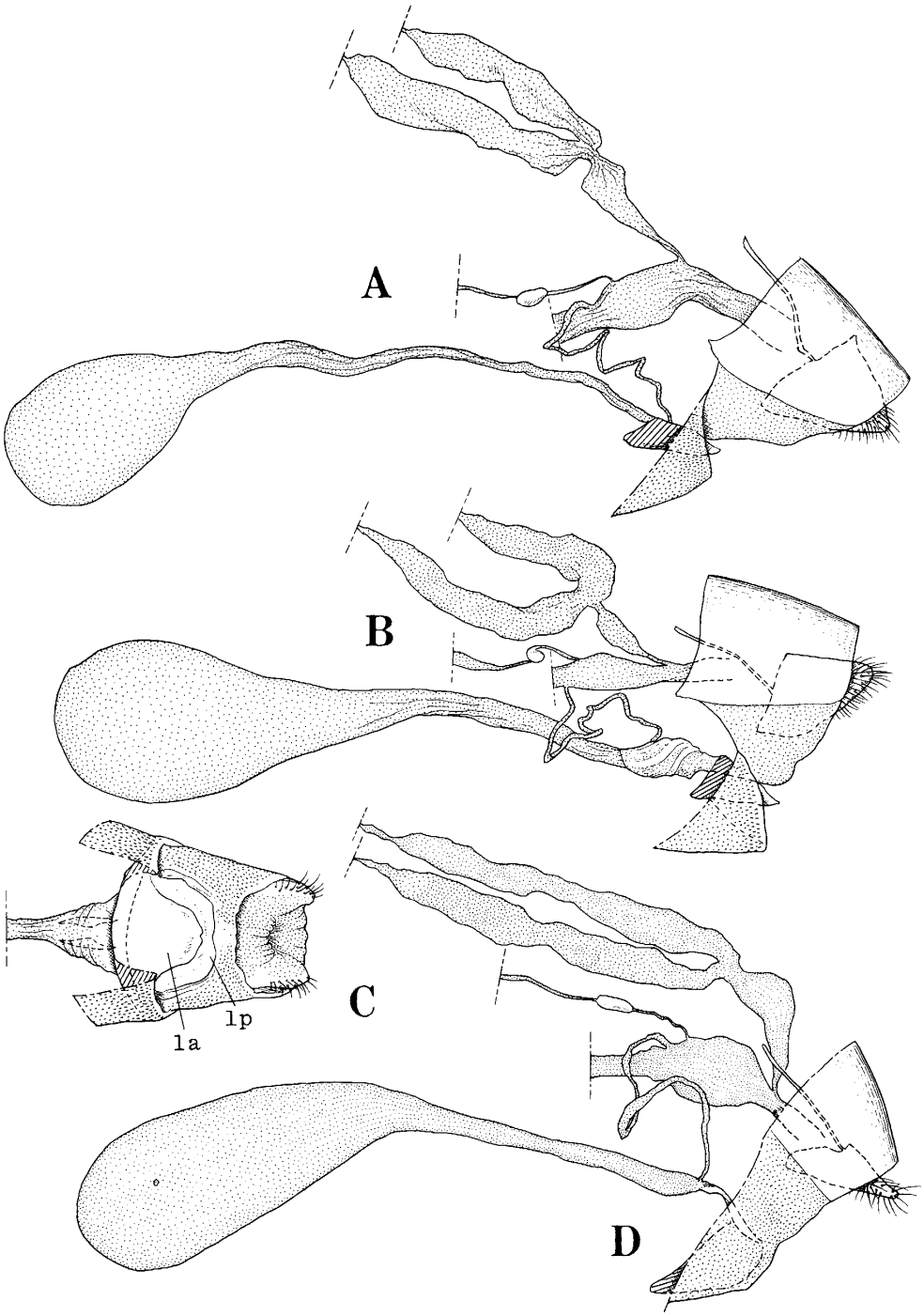


Fig. 35. Female genitalia of *Discolampa ethion* (WESTWOOD), India, BM.v.1793, (A), *Caleta roxus* (GODART), Jawa, BM.v.1800, (B, C) and *Epimastidia arienis* H. H. DRUCE, Solomons, BM.v.1647, (D).
A, B, D: Internal reproductive organs in lateral view, C: Terminalia in ventral view.
la: lamella antevaginalis, lp: lamella postvaginalis.

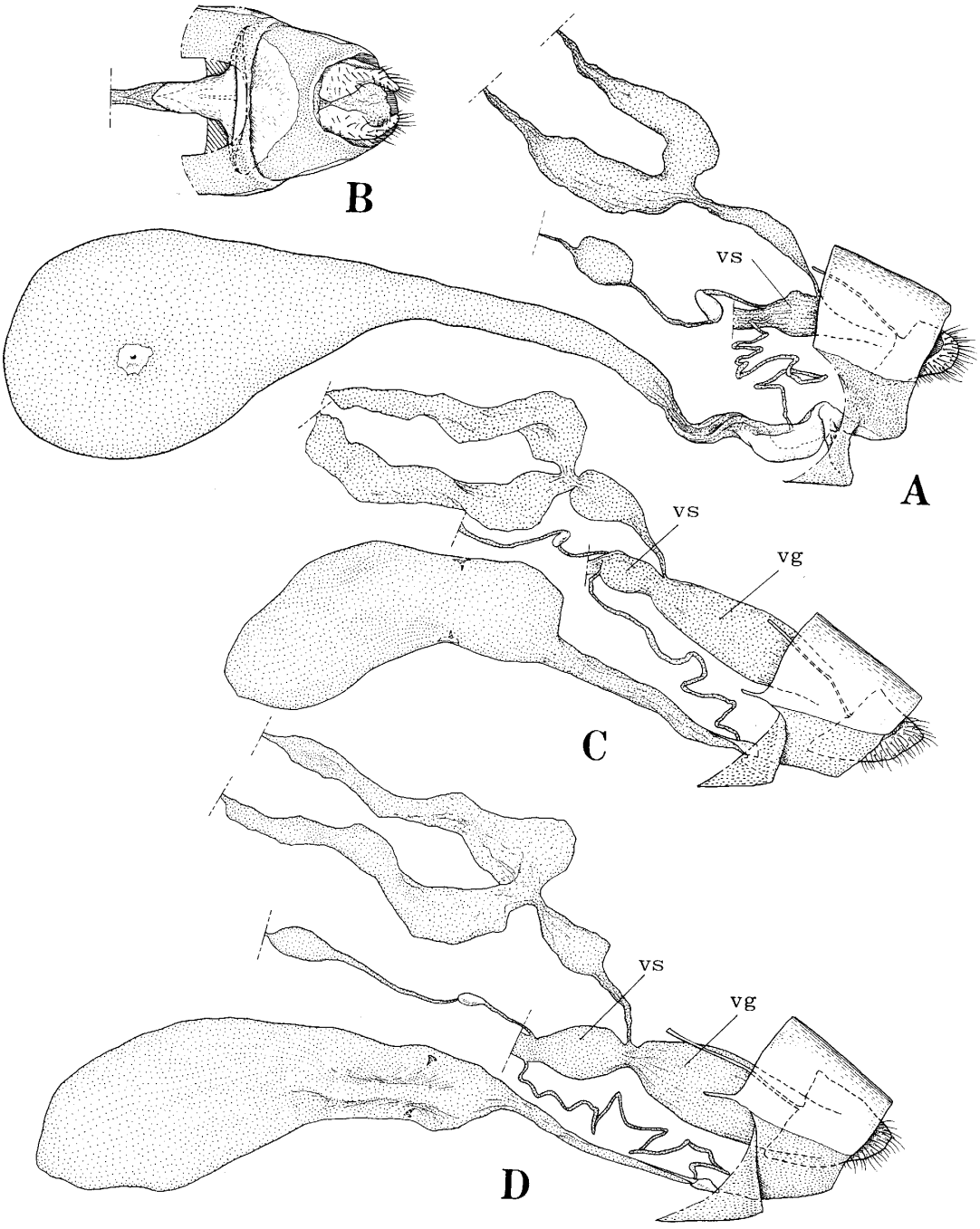


Fig. 36. Female genitalia of *Jamides celebica* (ELIOT), N. Sulawesi, CASSIDY Collection (A, B), *J. amarauge* H. H. DRUCE, Papua New Guinea, BM.v.1677, (C) and *J. soemias* H. H. DRUCE, Solomons, BM.v.1683, (D).
A, C, D: Internal reproductive organs in lateral view, B: Terminalia in ventral view.
vg: vagina, vs: vestibulum.

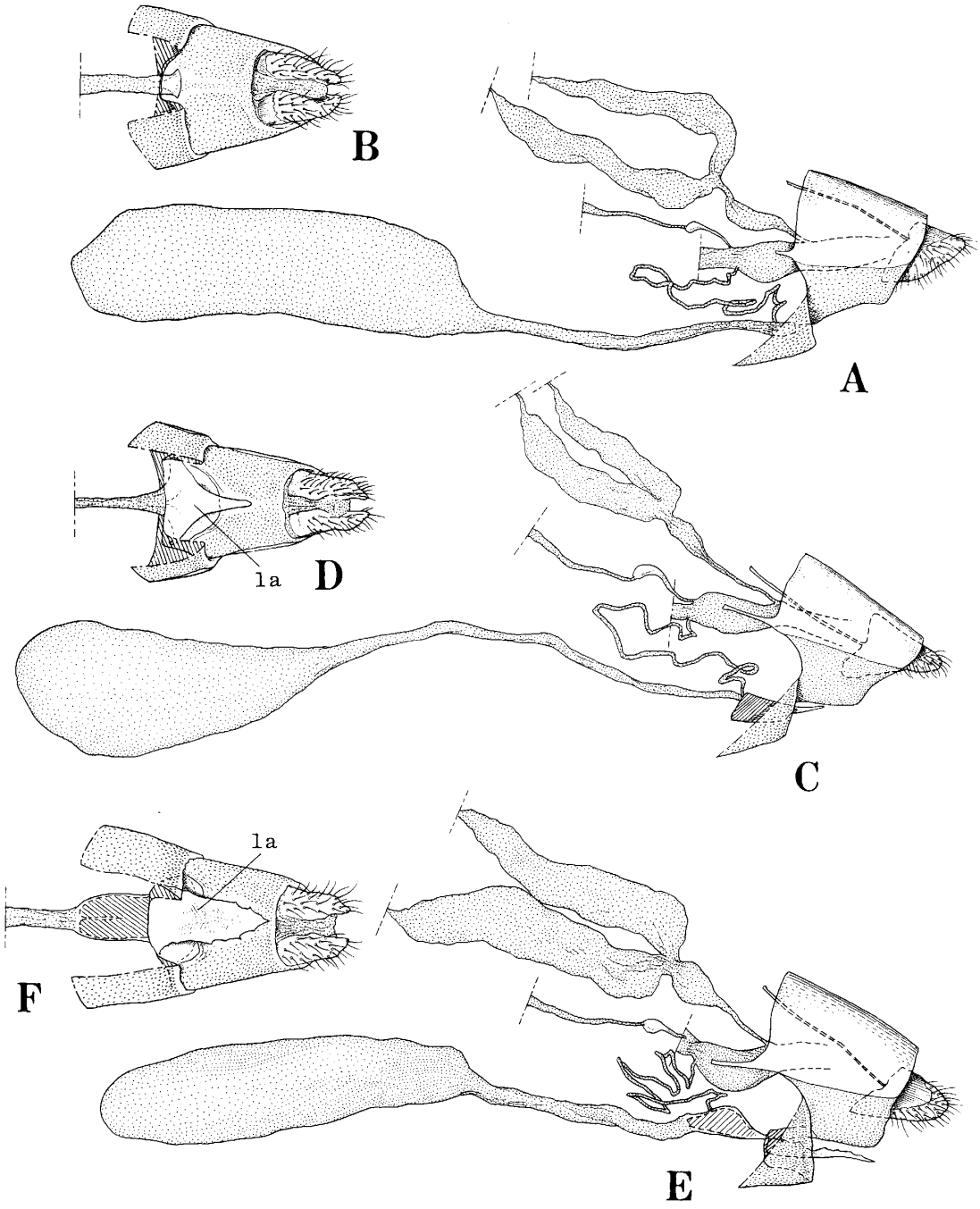


Fig. 37. Female genitalia of *Jamides limes* (H. H. DRUCE), N. Borneo, BM.v.1701, (A-B), *J. pseudosias* ROTHSCHILD, Ceram, BM.v.1703, (C-D) and *rothschildi* H. HAYASHI, Ceram, BM.v.1700, (E-F). A, C, E: Internal reproductive organs in lateral view, B, D, F: Terminalia in ventral view. la: lamella antevaginalis.

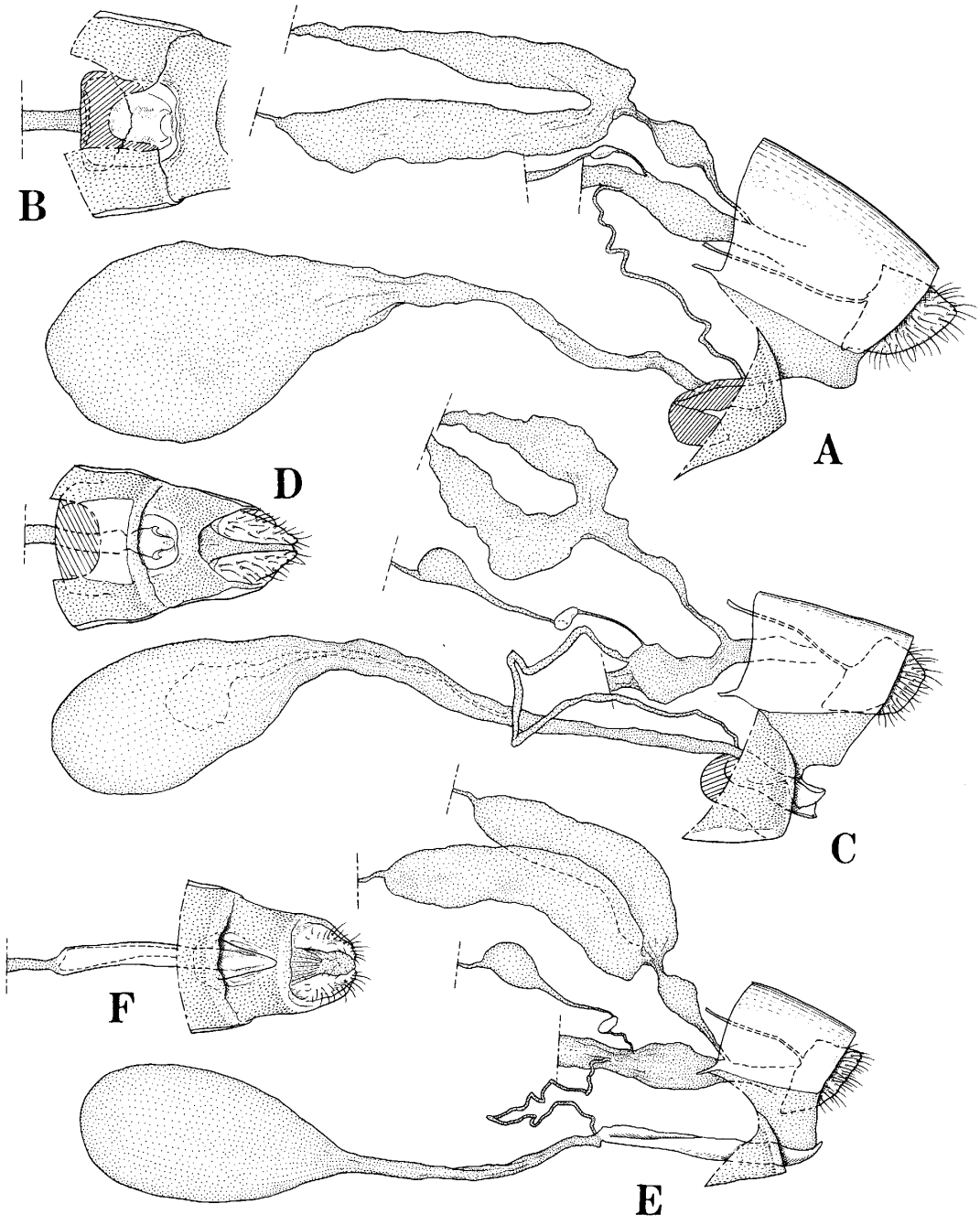


Fig. 38. Female genitalia of *Tarcus anada* de NICÉVILLE, India (A, B), *Castalius rosimon* (FABRICIUS), India, BM.v.1792, (C, D) and *C. fasciatus* (RÖBER), N. Sulawesi, CASSIDY Collection, (E, F). A, C, E: Internal reproductive organs in lateral view, B, D, F: Terminalia in ventral view.