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# **Records of the Zoological Survey of India**

**Butterflies of the families Acraeidae, Styridae,  
Nymphalidae, Riodinidae and Lycaenidae  
(Lepidoptera) from Arunachal Pradesh  
and adjoining areas, India.**

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**Zoological Survey of India**



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## INTRODUCTION

North-eastern hill areas of India are well known for harbouring rich insect fauna particularly the butterflies. Accordingly, the present studies on butterflies are based upon the material collected during 1961-1974 from Arunachal Pradesh and adjoining areas by several survey parties from the Zoological Survey of India.

The Union Territory of Arunachal Pradesh\* lies between 27°.0-29°.30' latitudes north and 91°.30'-97°.30' longitudes east, with its capital Itanagar. It has an area of 83,578 Km sq and altitudinal range from 2000-5000m. It is bounded by Bhutan to the west, Tibet and China to the north and east, Assam to the south, and Nagaland and Burma to the south-east. It has five Districts, viz., Kameng, Subansiri, Siang, Lohit and Tirap with their head-quarters at Bomdila, Ziro, Along, Tezu and Khonsa, respectively.

Arunachal Pradesh is a wild and mountainous tract divided by several streams and rivers. The regular monsoon starts in April and continues heavily until October, and the rainfall amounts to about five metres per year.

Earlier reports of butterflies from Arunachal Pradesh and adjoining areas are mainly by Evans (1912), Betts (1950) and Bhattacharya (1985) from Namdhapa, a wildlife sanctuary in Tirap.

Presently, 129 species and subspecies in 67 genera distributed over five families, viz. Acraeidae, Satyridae, Nymphalidae, Riodinidae and Lycaenidae have been studied from the above mentioned area. The remarks on each species and subspecies include common name, variations in the size and shape of colour markings, fore wing length, geographical distribution and information on the food plants.

Keys to genera and species of various families reported from the area under study have been provided after the works of Evans (1932), Corbet and Pendlebury (1956) for Nymphalidae and Riodinidae ; Talbot (1947) for Satyridae and Cantlie (1962) for Lycaenidae.

Amongst a total of 129 species and subspecies dealt with, 114 constitute new locality records for the Districts of Kameng, Subansiri, Siang, Lohit and Tirap ; and of these, 37 are new records for the entire Arunachal Pradesh. Besides, 17 species and subspecies are rare and one i.e. *Euthalia telchinia* (Ménétriès) is very rare in status. Further, the list of species and subspecies of the aforesaid families so far known from Arunachal Pradesh has also been provided.

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\* Since declared as a State in 1987 and has II districts,

## SYSTEMATIC ACCOUNT

## Family ACRAEIDAE

Wings thinly scaled and spotted; cell closed in fore wing and hind wing. Fore wing without any vein inflated at base and vein 1A+2A free. Fore legs imperfect in both sexes.

This family is represented in India by a single genus *Acraea* Fabricius.

I Genus *Acraea* Fabricius

1807. *Acraea* Fabricius, *Mag. f. Insektenk.* (Illiger), 6 : 284.

*Type species* : *Papilio horta* Linnaeus, 1764.

*Distribution* : Ethiopian and Indo-Australian Regions.

*Diagnostic characters* : Wings elongate, more or less diaphanous. In fore wing vein  $R_1$  arising before the end of cell,  $R_2$  to  $R_5$  stalked,  $M_1$  from upper angle of cell or near it and widely separate from  $M_2$ . In male, claws of mid-and hind legs unequal.

*Remarks* : The butterflies of this genus are popularly known as 'The Costers'. Two species viz., *A. violae* (Fabricius) and *A. issoria* Huebner of this genus occur in India, of which the former is dealt with here.

1. *Acraea violae* (Fabricius)

(The Tawny Coster)

(Plate I, nos. 1-2)

1775. *Papilio violae* Fabricius, *Syst. ent.*, : 460.

1905. *Telchinia violae*, Bingham, *The Fauna of British India (Butterflies)*, 1 : 471-472.

1947. *Acraea violae*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 466-469.

*Material examined* : Siang District, Old Jining, 500 m., 1 ex., 20.x. 1966 (Coll. S. K. Tandon and G. S. Arora). *Fore Wing length* : 28 mm.

*Distribution* : India and Sri Lanka.

*Remarks* : The upperside of fore wing has a black pear shaped spot in right wing but it is transverse in left fore wing. The underside of hind wings has whitish spots on the black marginal area but the spots are larger on upperside. This species is a new record for Siang District.

*Food plants* : *Adenia palmata* Engl. (the wild passion flower), *Aporosa lindleyana* Baill., *Hibiscus cannabinus* Linnaeus, *Passiflora edulis* Sims., *P. foetida* Linnaeus and *Tectona grandis* Linnaeus.

## Family SATYRIDAE

Labial palpi compressed. Upperside and underside of wings usually marked with ocelli and sometimes with white or tawny bands. Fore wing usually with one or more veins swollen at base. Cell in fore—and hind wing closed. Fore legs in both the sexes imperfect ; fore tarsus single jointed in male and five jointed in female.

*Key to genera*

- |   |     |                             |
|---|-----|-----------------------------|
| 1. Eyes hairy   | ... | 2                           |
| Eyes glabrous   | ... | 3                           |
| 2. Fore wing with veins 1A+2A and median vein swollen   | ... | <i>Mycalesis</i> Huebner    |
| Fore wing with veins 1A+2A not swollen, median vein more or less swollen  | ... | <i>Lethe</i> Huebner        |
| 3. Hind wing with a precostal cell  | ... | <i>Elymnias</i> Huebner     |
| Hind wing without a precostal cell  | ... | 4                           |
| 4. Fore wing without swollen veins  | ... | <i>Melanitis</i> Fabricius  |
| Fore wing with median vein swollen  | ... | 5                           |
| 5. Fore wing with upper angle of cell strongly acute, upper margin of cell markedly longer than the lower margin          | ... | <i>Orsotriaena</i> Willgren |
| Fore wing with the upper angle of cell not acute, upper margin of cell not longer than the lower margin                   | ... | 6                           |
| 6. Hind wing with vein Sc nearly straight at its origin   | ... | <i>Zipaetis</i> Hewitson    |
| Hind wing with vein Sc strongly angled at its origin  | ... | 7                           |
| 7. Hind wing with the outer margin more or less crenulate. Cilia prominently chequered, at least on fore wing             | ... | <i>Aulocera</i> Butler      |
| Hind wing with the outer margin not crenulate. Cilia slightly chequered or not so in fore and hind wing                   | ... | 8                           |
| 8. Fore wing with lower discocellular vein excurved, vein R <sub>2</sub> arising from cell                                | ... | <i>Erebia</i> Dalman        |
| Fore wing with lower discocellular vein straight or incurved, vein R <sub>2</sub> arising always from vein R <sub>5</sub> | ... | <i>Ypthima</i> Huebner      |

II Genus *Mycalesis* Huebner

1818. *Mycalesis* Huebner, *Zutr. z. Samml. exot. Schmett.*, 1 : 17.

*Type species* : *Papilio francisca* Stoll, 1780.

*Diagnostic characters* : Fore wing with lower discocellular vein between veins  $M_2$  and  $M_3$  strongly curved towards base of the wing. In hind wing vein  $Cu_{1a}$  variable, arising a little before or from the lower angle of cell, sometimes stalked with  $M_3$ .

*Distribution* : China, Japan, Ethiopian and Indo-Australian Regions.

*Remarks* : The butterflies of this genus are commonly called 'The Bushbrowns'. Of the 27 species of *Mycalesis* occurring in India, four are dealt with here.

#### *Key to species*

- |   |     |                             |
|---|-----|-----------------------------|
| 1. Hindwing with vein $Cu_{1a}$ arising before end of cell  | ... | 3                           |
| Hind wing with vein $Cu_{1a}$ arising at or just beyond end of cell   | ... | 2                           |
| 2. Fore wing with brand elongate  | ... | <i>visala</i> Moore         |
| Fore wing with brand short  | ... | <i>mineus</i> (Linnaeus)    |
| 3. Fore wing with pupilled ocelli in interspaces 2 and 5 (the latter rarely absent) on upper-side. Hind wing with a pupilled ocellus in interspace 2 on upperside | ... | <i>misenus</i> de Nicéville |
| Fore wing without ocelli on upperside. Hind wing with ocelli in interspaces 2 and 5 on upperside  | ... | <i>malsarida</i> Butler     |

### 2. *Mycalesis mineus mineus* (Linnaeus)

(The Dark Brand Bushbrown)

(Plate I, nos. 3-4)

1767. *Papilio mineus* Linnaeus, *Syst. Nat.*, 1 : 768.

1947. *Mycalesis mineus mineus*, Talbot, *The Fauna of British India (Butterflies)* 2 : 134-136.

*Material examined* : Lohit District, Meghabasti, 1 ex., 8.x.1966 (Coll. S. K. Tandon and G. S. Arora) ; Santipur, 100 m., 1 ex., 2.iii.1969, Bolung, 200 m., 1 ex., 4.iii.1969 ; Dambuk, 1 ex., 5.iii.1969 (Coll. S. K. Tandon). Assam, Sadiya Road, 300 m., 3 exs., 8.iii.1969, Kaziranga, 100 m., 1 ex., 24.iii.1969, (Coll. S. K. Tandon). Lakhimpur, Rangajan, 1 ex., 4.x.1966. (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 23-27 mm.

*Distribution* : China ; India (Kulu to Assam, Andaman Islands) to Burma.

*Remarks* : The specimens exhibit variation in size and number of

ocelli on the upperside as well as underside of wings. This nominate subspecies is a new record for Lohit District.

*Food plants* : Grasses.

### 3. *Mycalesis visala visala* Moore

(The Long-Brand Bushbrown)

(Plate I, nos. 5-6)

1857. *Mycalesis visala visala* Moore, *Cat. Lep. Ins. Mus. East India Coy.*, 1 : 230.

*Material examined* : Kameng District, Tipi, 213 m., 1 ex., 3.v.1966, Pinjuli, 244 m., 2 exs. 4.v.1966 (*Coll. A. N. T. Joseph*). Sonai Rupai Forest, 343 m., 1 ex.,—1966 (*Coll. S. K. Bhattacharya and A. N. T. Joseph*). Siang District, Lekhabali river, 1 ex., 7.x.1966 ; Kambeng, 200 m., 1 ex., 16.x.1966 ; New Jining, 200 m., 2 exs., 18.x.1966, Old Jining, 500 m., 1 ex., 20.x.1966, Basar, 550 m., 1 ex., 31.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Assam Foot Hills, 1 ex., 1.iii.1973 (*Coll. S. K. Tandon & party*). *Fore wing length* : 24-29 mm.

*Distribution* : India (Uttar Pradesh-Kumaon to Assam, Madhya Pradesh and South India) and Burma.

*Remarks* : The upperside of fore wing has ocelli of variable size in interspaces 2 and 5 and sometimes these ocelli are absent. This nominate subspecies earlier reported from Siang District (Abor and Rahung) is a new record for Kameng District.

*Food plants* : Grasses.

### 4. *Mycalesis misenus* de Nicéville

(The Salman-Branded Bushbrown)

1889. *Mycalesis misenus* de Nicéville, *J. Bombay nat. Hist. Soc.*, 4 : 164, pl. A, fig. 8.

*Material examined* : Assam, North Lakhimpur, Baliwari, 1 ex., 2.x.1966, Gilagudi, 2 exs., 4.x.1966 ; Rangajan, 1 ex., 4.x.1966 (*Coll. S. K. Tandon and G. S. Aroaa*). Kaziranga, 100 m., 24.iii.1969 (*Coll. S. K. Tandon*). *Fore wing length* : 22-26 mm.

*Distribution* : India (Sikkim-Assam).

*Remarks* : The ocellus in interspace 5 on the upperside of fore wing is sometimes, very much reduced. This species is rare in status.

*Food plants* : Grasses.

5. *Mycalesis malsarida* Butler  
(The Plain Bushbrown)

1868. *Mycalesis malsarida* Butler, *Cat. Satyr. Brit. Mus.* : 134, pl. 3, fig. 14.

*Material examined* : Assam, Sadiya Road, 300 m., 4 exs., 8.iii.1969  
(Coll. S. K. Tandon). *Fore wing length* : 22-23 mm.

*Distribution* : India (Assam, Khasi Hills and Naga Hills).

*Remarks* : This species was previously recorded from Dejoo, Lichi and Duta. It is rare in status.

*Food plants* : Grasses.

III Genus *Lethe* Huebner

1819. *Lethe* Huebner, *Verz. bekannt. Schmett.*, (4) : 56.

*Type species* : *Papilio europa* Fabricius, 1775.

*Diagnostic characters* : Fore wing usually short and outer margin never excurved. Hind wing oval, never symmetrical about a central axis from base to middle of outer margin, the latter strongly arched, scalloped, often caudate or dentate at vein  $M_3$ . Female often with a white band on the fore wing.

*Distribution* : India (Himalayas) to Japan and Siberia, south and east Kalimantan (Borneo), Java, Moluccas and Sulawesi (Celebes).

*Remarks* : The butterflies of this genus are commonly known as 'The Treebrowns'. Of the 37 species occurring in India, six are represented in the present collection.

*Key to species*

- |   |     |                              |
|---|-----|------------------------------|
| 1. In hind wing vein Sc nearly as long as vein Rs. Underside of hind wing with an ocellus in interspace 7     | ... | <i>pulaha</i> (Moore)        |
| In hind wing vein Sc about half as long as vein Rs. Underside of hind wing without an ocellus in interspace 7 | ... | 2                            |
| 2. Cilia of fore wing chequered. Wings without any secondary sex mark   | ... | 3                            |
| Cilia of fore wing not chequered. Wings with secondary sex marks  | ... | 4                            |
| 3. Sexes similar. Upperside of fore wing in male and female with a very broad oblique white discal band       | ... | <i>confusa</i> (Aurivillius) |
| Sexes dissimilar. Upperside of fore wing in female with and male without an oblique white discal band         | ... | <i>rohria</i> (Fabricius)    |

4. Upperside of hind wing without ochraceous red colouration ... *vindhya* (Felder)  
 Underside of hind wing in male outwardly, in female entirely with ochraceous red colouration ... 5
5. Upperside of hind wing with a discal line or band broadly deflected outwards, scarcely angulate between veins  $Cu_{1a}$  and  $M_1$  ... *mekara* (Moore)  
 Underside of hind wing with a discal line or band acutely angulate and produced along and above vein  $M_1$  ... *chandica* (Moore)

6. ***Lethe rohria rohria*** (Fabricius)  
 (The Common Treebrown)

1787. *Papilio rohria* Fabricius, *Mantissa Ins.*, 2 : 45.

1947. *Lethe rohria rohria*, Talbot ; *The Fauna of British India (Butterflies)*, 2 : 200-201.

*Material examined* : Siang District, New Jining, 200 m., 1 ex., 19.x.1966 ; Old Jining, 500 m., 1 ex., 22.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 29—31 mm.

*Distribution* : India (Kashmir to Sikkim), Burma and extending to Yunan, Thailand, Malaya and Java.

*Remarks* : The upperside of both wings is without a distal whitish spot in interspace 2. This nominate subspecies earlier known from Subansiri District (Yatchuli, 3000 feet) is a new record for Siang District.

*Food plants* : Grasses.

7. ***Lethe confusa confusa*** Aurivillius  
 (The Banded Treebrown)  
 (Plate I, nos. 7-8)

1897. *Lethe confusa* Aurivillius, *Ent. Tidskr.*, ; 142.

1947. *Lethe confusa confusa*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 205-207.

*Material examined* : Tirap District, Changlong, 500 m., 1 ex., 31.x.1971 (*Coll. G. S. Arora*). *Fore wing length* : 27 mm.

*Distribution* : India (Kashmir-Sikkim), Burma and extending to Yunan, Malaya and Java.

*Remarks* : The underside of fore wing has a short and white oblique bar from a subapical lilacine patch bearing three ocelli in vertical order, not reaching costa (vs. reaching costa *vide* Bingham,

1905 ; Talbot, 1947). The underside of hind wing bears a double tornal ocellus, the lower one being smaller. This nominate subspecies previously known from Kameng District (Bomdila, 8000 feet), Subansiri District (Pite, 2000 feet ; Yatchuli, 3000 feet ; Nyukmadong, 9000 feet) is a new record for Tirap District.

*Food plants* : Palms.

8. **Lethe mekara zuchra** Fruhstorfer  
(The Common Red Forester)

1911. *Lethe mekara zuchra* Fruhstorfer, In Seitz, *The Macrolepidoptera of the World (Fauna Indo-Austral)*. 9 : 319, ♂ ♀ (Assam).

*Material examined* : Lohit District, Sitapani, 100 m., 1 ex., 16.iii.1969 (Coll. S. K. Tandon). *Fore wing length* : 30 mm.

*Distribution* : India (Assam) to Burma.

*Remarks* : The upperside of wings is marked with reddish tinge. This subspecies is a new record for Lohit District.

*Food plant* : Bamboo.

9. **Lethe chandica chandica** (Moore)  
(The Angled Red Foster)  
(Plate II, nos. 9-10)

1857. *Debis chandica* Moore, *Cat. Lep. Ins. Mus. East India Coy.* 1 : 219.

1947. *Lethe chandica chandica*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 211-213.

1950. *Lethe chandica flonona*, Betts, *J. Bombay Nat. Hist. Soc.* 49 : 494.

*Material examined* : Siang District, Tappi Dulla, 500 m., 1 ex., 22.v.1966 (Coll. S. K. Tandon and G.S. Arora). *Fore wing length* : 31 mm.

*Distribution* : India (Sikkim to Assam) to Burma and Thailand.

*Remarks* : The ocellus in interspace 1 on the underside of fore wing is double and enveloped in a common ring. The nominate subspecies earlier known from Subansiri District (Tasser Puttu, 4500 feet and Yazali, 3000 feet) is a new record for Siang District.

*Food plant* : Bamboo.

10. **Lethe vindhya** (Felder)  
(The Black Forester)  
(Plate II, nos. 11-12)

1859. *Debis vindhya* Felder, *Wien. ent. Monats*, 3 : 402, ♂.

1947. *Lethe vindhya*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 222.

**Material examined :** Siang District, Tappi Dulla, 500 m., 1 ex., 22.x.1966 (Coll. S. K. Tandon and G. S. Arora). Assam, Elephant Flat, 400 m., 1 ex., 25.iii.1973 (Coll. S. K. Tandon and party). *Fore wing length* : 31-33 mm.

**Distribution :** India (Sikkim) to Burma, Malaya and Tongking.

**Remarks :** There are seven ocelli on the underside of hind wing (six ocelli *vide* Marshall and de Niceville, 1882 and Talbot, 1947). Of these, two ocelli are separately placed in interspace 1, the remaining ocelli in interspaces 2 and 6 are prominent. This species previously known from District of Subansiri (Selsemchi, 15000 feet) and Tirap (Namdhapa) is a new record for Siang District.

**Food plant :** Bamboo.

11. ***Lethe pulaha pulahoides* (Moore)**  
(The Veined Labyrinth)  
(Plate 11, 13-14)

1892a. *Blanilda pulahoides* Moore, *Lep. ind.*, 1 : 304, pl. 94, fig. 2♂.

1947. *Lethe pulaha pulahoides*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 233-234.

**Material examined :** Lohit District, Divang, 500 m., 1 ex., 2.iii.1973 (Coll. S.K. Tandon). *Fore wing length* : 28 mm.

**Distribution :** India (Assam) to Burma (Karen Hills).

**Remarks :** The pale spots on the upperside fore and hind wing are not large. The pale bar running across the cell on the upperside of fore wing, is not of uniform width. This subspecies is a new record for Lohit District. It is rare in status.

**Food plant :** Bamboo.

IV Genus *Aulocera* Butler

1867. *Aulocera* Butler, *Ent. mon. Mag.*, 4 : 121.

**Type species :** *Satyrus brahminus* Blanchard, 1844.

**Diagnostic characters :** Upperside of wings crossed by a discal white or pale yellow band. Hind wing with the vein Sc strongly angled at its origin, meeting vein Rs more or less at right angles, outer margin more or less crenulate. Cilia prominently chequered at least on fore wing.

**Distribution :** India (The Himalayas), Nepal, Tibet and Western China.

*Remarks* : The butterflies of this genus are commonly called 'The Satyrs'. Of the four species occurring in India only *Aulocera saraswati* (Kollar) is dealt with here.

12. ***Aulocera saraswati*** (Kollar)  
(The Striated Satyr)  
(Plate II, nos. 15-16)

1844. *Satyrus saraswati* Kollar, In Huegel's Kaschmir, 4(2) : 445, pl. 14, figs. 3 and 4, ♀.  
1947. *Aulocera saraswati*; Talbot, *The Fauna of British India (Butterflies)*, 2 : 295-296.

*Material examined* : Kameng District, Siggaram, 2135 m., 2 exs., 29.viii.1961 ; Kalaktang, 2135 m., 3 exs., 29.viii.1961, 2288 m., 1 ex., 5.ix.1961 (*Coll. S. Biswas*). *Fore wing length* : 31-36 mm.

*Distribution* : Pakistan (Chitral) to India (Punjab, Himachal Pradesh, Uttar Pradesh and Sikkim) and Nepal.

*Remarks* : The underside of hind wing bears a postmedial black spot in interspace 5 with the white pupil. The black spot varies in size. It is a new record for Kameng District.

V Genus ***Erebia*** Dalman

1816. *Erebia* Dalman, *K. svenska vetensk. Akad. Handl., Stockh.* (No. 1) : 58.

*Type species* : *Papilio ligea* Linnaeus, 1758.

*Diagnostic characters* : Fore wing with the lower discocellular excurved, vein  $R_2$  arising from the cell.

*Distribution* : Alpine regions of Europe to Turkestan, Central China, Tibet and the Himalayas (India).

*Remarks* : The butterflies of this genus are commonly called 'The Arguses'. Of the nine species occurring in India only *Erebia annada orixa* (Moore) is dealt with here.

13. ***Erebia annada orixa*** (Moore)  
(The Ringed Argus)  
(Plate III, nos. 17-18)

1872. *Callerebia orixa* Moore, *Proc. zool. Lond.* : 555, ♂.  
1947. *Erebia annada orixa*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 311.

*Material examined* : Kameng District, Kalikat 200 m., 1 ex., 27.viii.1961 (*Coll. S. Biswas*), Dunn Bridge, 1524 m., 1 ex., 21.iv.1966, 2 exs., 1.v.1966 (*Coll. A. N. T. Joseph*). *Fore wing length* : 29-30 mm.

*Distribution* : India (Assam) to Northern Burma.

*Remarks* : The upperside of fore wing has a narrow submarginal dark brown band running from vein  $Cu_{1a}$  to costa. The underside of hind wing bears a postmedial and submarginal diffused band, the former not reaching the inner margin. Bands in the costal area are broad and joining each other. The lower ocelli are unpupilled. This subspecies was also recorded earlier from Rupa (5000 feet) and Momba in the Kameng District.

## VI Genus *Ypthima* Huebner

1818. *Ypthima* Huebner, *Zutr. z. Samml. exot. Schmett.*, 1 : 17.

*Type species* : *Ypthima huebneri* Kirby, 1871.

*Diagnostic characters* : Outer margin of fore and hind wing evenly rounded. Underside of fore and hind wings striated, bearing a submarginal series of yellow-ringed black ocelli. Hind wing with veins  $M_1$  and  $Cu_{1a}$  separated at their origin.

*Distribution* : Africa and throughout the Indo-Australian Region.

*Remarks* : The butterflies of this genus are commonly called 'The Rings'. Of the 20 species occurring in India four are dealt with here.

### *Key to species*

- |  |     |                           |
|--|-----|---------------------------|
| 1. Underside of hind wing with a single apical ocellus in interspace 6   | ... | <i>nareda</i> (Kollar)    |
| Underside of hind wing with more than one apical ocellus, one in interspace 5 always prominent   | ... | 2                         |
| 2. Underside of hind wing with two apical ocelli much larger than others   | ... | <i>sakra</i> Moore        |
| Underside of hind wing with two apical ocelli not much larger than others  | ... | 3                         |
| 3. Fore wing expanse more than 45 mm.  | ... | <i>methora</i> Hewitson   |
| Fore wing expanse less than 45 mm.   | ... | 4                         |
| 4. Upperside of hind wing with discal line more or less well marked. Underside of wings with coarse striation ; sub-basal band prominent on both wings | ... | <i>baldus</i> (Fabricius) |
| Upperside of hind wing with discal band not distinct. Underside of wings with fine striation ; sub-basal band obsolete on both wings                   | ... | <i>indecora</i> Moore     |

14. **Ypthima nareda newara** Moore  
(The Large Three ring)  
(Plate III, nos. 19-20)

1874. *Ypthima newara* Moore, *Proc. zool. Soc. Lond.* : 567.

1947. *Ypthima nareda newara*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 322-323.

*Material examined* : Kameng District, Pinjuli, 241 m., 1 ex., 4.v. 1966 (Coll. A. N. T. Joseph). Tirap District, Jairampur, 225 m., 2 exs., 25.x.1971 ; Changlang Agricultural Training Camp, 500 m., 1 ex., 1.xi.1971 (Coll. G. S. Arora). Assam, Foot Hills, 1 ex., 1.iii.1973 (Coll. S. K. Tandon). *Fore wing length* : 20-21 mm.

*Distribution* : India (Sikkim to Mishmi Hills in Lohit District, Manipur, Naga Hills), Nepal and Burma (Chin Hills).

*Remarks* : In one specimen, the underside of fore wing has the submarginal fascia broader at tornus and the underside of hind wing bears subapical ocellus which is not much longer. This subspecies was previously reported from Balipara Tract (Lih, 7000 feet ; Momba). It is for the first time recorded from Tirap District.

*Food plants* : Grasses.

15. **Ypthima indecora** Moore  
(The Western Five Ring)  
(Plate III, nos. 21-22)

1882b. *Ypthima indecora* Moore, *Proc. zool. Soc. Lond.*, 234-63, pls. 11, 12.

*Material examined* : Kameng District, Rupa, 2 exs., 15.iii.1973 (Coll. S. K. Tandon and party). *Fore wing length* : 18-20 mm.

*Distribution* : India (Kashmir to Kumaon).

*Remarks* : Evans (1932) considered it as subspecies namely *Y. philomela indecora* but later on Talbot (1947) revived its specific status. This species is a new record for Kameng District and for entire Arunachal Pradesh.

*Food plants* : Grasses.

16. **Ypthima baldus baldus** (Fabricius)  
(The Common Five Ring)

1775. *Papilio baldus* Fabricius, *Syst. Ent.* (3) 1 : 829.

1947. *Ypthima baldus baldus*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 337-338.

*Material examined* : Kameng District, Ankaling, 2800 feet, 1 ex., 10.iii.1961 (Coll. K. C. Jairam), Shaitan Bridge, 1524 m., 1 ex., 23.iv.1966 (Coll. A. N. T. Joseph). Subansiri District, Tezu, 1 ex., 20.i.1970, Alubari, 800 m., 1 ex., 23.i.1970 (Coll. J. M. Julka and party). Siang District, Pading village, 300 m., 1 ex., 11.x.1966, Kambeng, 200 m. 1 ex., 15.x.1966, 2 exs., 16.x.1966, New Jining, 200 m., 2 exs., 18.x.1966, Old Jining, 500 m., 4 exs., 20.x.1966, Tappi Dulla, 500 m., 1 ex., 22.x.1966 ; Tapi, 600 m., 4 exs., 23.x.1966, Tachidoni, 400 m., 5 exs., 24.x.1966, Daporija, 150 m., 3 exs., 26.x.1966, 2 exs., 28.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Dambuk, 2 exs., 5.iii.1969, Tezu, 150 m., 2 exs., 10.iii.1969, Namsai, 100 m., 1 ex., 15.iii.1969 (Coll. S. K. Tandon). Tirap District, Jairampur, 225 m., 1 ex., 26.x.1971, 1 ex., 27.x.1971, Changlong, Agricultural Training Farm, 500 m., 2 exs. 1.xi.1971 (Coll. G. S. Arora). Assam, Lakhimpur, Rangajan, 1 ex., 2.x.1966, N. Lakhimpur, 1 ex., 3.x.1966 (Coll. S. K. Tandon and G. S. Arora) ; Dibrugarh, 100 m., 2 exs., 27.ii.1969, Sadiya, 100 m., 2 exs., 1.iii.1969 (Coll. S. K. Tandon), Charduar Forest, 120 m., 1 ex., 24.iii.1973 (Coll. S. K. Tandon and party). *Fore wing length* : 16-20 mm.

*Distribution* : India and Burma to Malaya, Java and Moluccas, Sulawesi, the Philippines, Kalimantan, Taiwan, Japan and China.

*Remarks* : The nominate subspecies exhibits considerable variations with regard to wing expanse, ocelli on wings and differences in dry and wet season forms. This nominate subspecies is previously known from Districts of Siang and Tirap (Namdhapa). It is a new record for Kameng, Subansiri, Lohit and Tirap (except Namdhapa).

*Food plants* : Grasses.

### 17. *Ypthima methora methora* Hewitson (The Variegated Five-ring)

1865. *Ypthima methora* Hewitson, *Trans. ent. Soc. Lond.* (3) 2 : 281-93, pls. 17, 18.

1947. *Ypthima methora methora*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 340-341.

*Material examined* : Assam, Elephant flat, 1 ex., 25.iii.1973 (Coll. S. K. Tandon). *Fore wing length* : 24 mm.

*Distribution* : India (Sikkim and Assam).

*Remarks* : The species is rare in status. The bands on underside of fore and hind wings are indistinct. It has been earlier recorded from Tirap District (Namdhapa).

*Food plants* : Grasses.

18. **Ypthima sakra sakra** Moore  
(The Himalayan Five ring)

1857. *Ypthima sakra* Moore, *Cat. lep. Ins. Mus. East India Coy*, 1 : 236.

1947. *Ypthima sakra sakra*, Talbot, *The Fauna of India British India (Butterflies)*, 1 : 343-344.

*Material examined* : Kameng District, Kalactang, 2135 m., 2 exs., 29.viii.1961 (Coll. S. Biswas). Subansiri District, Hapoli, 1585 m., 1 ex., 15.v.1966 (Coll. A. N. T. Joseph). *Fore wing length* : 23 mm.

*Distribution* : India (Sikkim).

*Remarks* : Evans (1932), Talbot (1947) and Betts (1952) referred to *Ypthima sakra austeni* (Moore) occurring from Assam to Burma (Karen Hills) and distinguished it from the nominate subspecies being paler and underside of fore wing bearing obscure discal and submarginal bands which are rarely present on hind wing. The specimens from Kameng and Subansiri District being of dark colour are considered as belonging to the nominate subspecies. This subspecies was recorded earlier from Subansiri District (Momba and Apa Tani), and is a new record for Kameng District.

VII Genus **Zipaetis** Hewitson

1863. *Zipaetis* Hewitson, *Ill. expt. Butts.* 3 : 100.

*Type species* : *Zipaetis saitis* Hewitson, 1863.

*Diagnostic characters* : Wings comparatively broad. Costa of fore wing widely archcd. Hind wing broadly pear shaped with the termen somewhat scalloped and angulated at the terminations of veins Culb Cu1a, M<sub>3</sub> and M<sub>1</sub>.

*Distribution* : India (Southern India, Sikkim to Assam) and Burma.

*Remarks* : The butterflies of this genus are commonly called 'The Cat's eyes'. Of the two species viz., *Z. scylax* Hewitson and *Z. saitis* Hewitson occurring in India, the former is dealt with here.

19. **Zipaeti scylax** Hewitson  
(The Dark Cat's Eye)

1863. *Zipaetis scylax* Hewitson, *Ill. exot. Butts.*, 3 : 100.

*Material examined* : Assam, Kaziranga, 100 m., 1 ex., 24.ii. 1969 (Coll. S.K. Tandon). *Fore wing length* : 28 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : This species was earlier recorded from Subansiri District (Tassar ; Puttu, 3500 feet, and Pite, 2000 feet) in Arunachal Pradesh.

### VIII Genus *Orsotriaena* Wallengren

1858. *Orsotriaena* Wallengren, *Ofvers, Vetensk. Akad. Forh., Stockh.* 15 79.

*Type species* : *Papilio hesione* Cramer, 1775.

*Diagnostic characters* : Eyes smooth. Fore wing broadly triangular and with subcostal vein swollen at base.

*Distribution* : Indo-Australian Region.

*Remarks* : The butterflies of this genus are popularly known as 'The Niggers'. Only a single species i.e. *O. medus medus* (Fabricius) occurring in India is dealt with here.

#### 20. *Orsotriaena medus medus* (Fabricius)

(The Nigger)

(Plate III, nos. 23-24)

1775. *Papilio medus* Fabricius, *Syst. Ent.*, : 488.

1947. *Orsotriaena medus medus*, Talbot, *The Fauna of British India, (Butterflies)* 2 : 349-351.

*Material examined* : Kameng District, Sonai Rupai Forest, 343 m., 2 exs., 28.xi.1965, 1 ex., 29.xi.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph). Subansiri District, Chakma village, 800 feet, 2 exs., 25.xi.1969 (Coll. J. M. Julka and party). Tirap District, Jairampur, 225 m., 1 ex., 25.x.1971, 1 ex., 27.x.1971, Changlong, 500 m., 2 exs., 31.x.1971 (Coll. G. S. Arora). Lohit District, Sunpura, 100 m., 1 ex., 3.iii.1969, Namsai, 200 m., 1 ex., 15.iii.1969, Chowkhana Road, 100m., 1 ex., 16.iii.1969, Kaziranga, 100 m., 1 ex., 24.iii.1969, Charduar Forest, 125 m., 1 ex., 24.iii.1973 (Coll. S. K. Tandon). North Lakhimpur, Sarab Bati, Rangajan, 2 exs., 3.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 23-26 mm.

*Distribution* : India (Sikkim, Andaman Islands) to Burma, Nepal, Tongking, Hainan, and extends southwards to Australia and New Guinea.

*Remarks* : This nominate subspecies was previously reported from Subansiri District (Dalmata, 1500 feet) and Siang District (Abor). It is a new record for Lohit and Tirap Districts.

*Food plants* : Grasses.

IX Genus *Melanitis* Fabricius

1807. *Melanitis* Fabricius, *Mag. f. Insektenk* (Illiger) 6 : 282.

*Type species* : *Papilio leda* Linnaeus, 1758.

*Diagnostic characters* : Characteristic wing shape, wings being more falcate in female than in male. In hind wing veins  $Cu_{1a}$  and  $M_3$  separated at their origin.

*Distribution* : Africa, Malagassic Region and throughout the Indo-Australian Region.

*Remarks* : The butterflies of this genus are popularly known as 'The Evening Browns'. Of the three species occurring in India *Melanitis leda ismene* (Cramer) is dealt with here.

21. *Melanitis leda ismene* (Cramer)

(The Common Evening Brown)

(Plate IV, nos. 25-26)

1775. *Papilio ismene* Cramer, *Pap. Exot.*, 1 : 41 p., pl. 26, figs. A,B.

1947. *Melanitis leda ismene*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 366-369.

*Material examined* : Siang District, Meghabasti, 1 ex., 8.x.1966, Lekhabali, 1 ex., 2.xi.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Wakro, 1700 feet, 1 ex., 4.x.1969. (*Coll. J. K. Julka and Party*). Assam, Kaziranga, 100 m., 1 ex., 24.ii.1969, 1 ex., 25.ii. 1969 (*Coll. S. K. Tandon*). *Fore wing length* : 36-38 mm.

*Distribution* : India, Sri Lanka and Burma.

*Remarks* : The upperside of hind wing has three white submarginal dots and an ocellus in interspace 2. The underside of hind wing has ocelli enclosing a single white spot each whereas the tornal ocellus contains two white spots. This subspecies previously reported from Siang District (Abor) is a new record for Lohit District.

*Food plants* : *Ficus religiosa* Linnaeus, Grasses and *Panicum maximum* Nees.

X Genus *Elymnias* Huebner

1818. *Elymnias* Huebner, *Zutr. z. Samml. exot. Schmett.*, 1 : 12.

*Type species* : *Elymnias jynx* Huebner, 1818.

*Diagnostic characters* : Antennal club long and gradual. Eyes smooth. Hind wing with a pre-disoidal cell and toothed at vein  $M_3$ .

*Distribution* : Indo-Australian Region.

*Remarks* : The butterflies of this genus are commonly called 'The Palmflies'. They are brightly coloured and usually mimic danaiids in one or both the sexes. In males, near the base of the upperside of the hind wing there is a prominent band covered by a tuft. Of the 12 species occurring in India, two are dealt with here.

*Key to species*

|                                |     |                                |
|--------------------------------|-----|--------------------------------|
| Apex of fore wing produced     | ... | <i>malelas</i> (Hewitson)      |
| Apex of fore wing not produced | ... | <i>hypermnestra</i> (Linnaeus) |

22. ***Elymnias hypermnestra undularis*** (Drury)

(The Common Palmfly)

(Plate IV, nos. 27-28)

1773. *Papilio undularis* Drury, *Ill. exot. Ins.*, 2 : pl. 10, figs. 1, 2♂.

1947. *Elymnias hypermnestra undularis*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 386-387.

*Material examined* : Kameng District, Bhalukpong, 213 m., 6.v.1966 (Coll. A.N.T. Joseph). Lohit District, Tezu, 150 m., 1 ex., 10.iii.1969, Chako Road, 6000 feet, 1 ex., 17.iii.1969 (Coll. S. K. Tandon). Assam foot hills, 1 exs., 2.iii.1973 (Coll. S. K. Tandon and Party). Tirap District, Deomali Forest, 250 m., 1 ex., 2.xi.1971 (Coll. G. S. Arora). Lakhimpur, Officer's Mess, 1 ex., 4.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 29-40 mm.

*Distribution* : India (Dehra Dun, Bengal) to North Burma.

*Remarks* : This subspecies is a new record for the Districts of Kameng, Lohit and Tirap.

*Food plants* : Palms and *Pancovia rubiginosa* Baill.

23. ***Elymnias malelas malelas*** (Hewitson)

(The Spotted Palmfly)

(Plate IV, nos. 29-30)

1863. *Melanitis malelas* Hewitson, *Exot. Butts*, 3 : pl. 1, figs. 6, 7♂.

1947. *Elymnias malelas malelas*, Talbot, *The Fauna of British India (Butterflies)*, 2 : 395-396.

*Material examined* : Assam, Kaziranga, 100 m., 1 ex., 24.ii.1969 (Coll. S.K. Tandon). *Fore wing length* : 43 mm.

*Distribution* : India (Sikkim) to Burma,

*Remarks* : The male and female of *E. malelas* mimic *Euploea sylvestri harrisii* Felder and *Euploea mulciber* (Cramer), respectively.

*Food plants* : Banana and palms.

### Family NYMPHALIDAE

Pattern and colour on wings most varied. Wings of various shapes ; hind wing may be tailed, toothed, scalloped, sharply angled or evenly rounded ; channelled to receive the abdomen, Fore legs imperfect in both sexes, brushlike two jointed tarsi in males and four jointed tarsi in males and four jointed tarsi with very short hairs in female.

This family is represented in Arunachal Pradesh by 68 species belonging to 34 genera.

#### *Key to genera*

- |   |                              |
|---|------------------------------|
| 1. Fore wing with origin of vein $R_4$ nearer apex of cell than to apex of wing ...   | 2                            |
| Fore wing with origin of vein $R_4$ nearer apex of wing than to apex of cell ...  | 3                            |
| 2. Upperside of both wings predominantly reddish to dark brown and discal areas not white. Hind wing with cell slenderly closed and with a single tooth or tail at vein $M_3$ ... | <i>Charaxes</i> Ochsenheimer |
| Upperside of both wings predominantly pale-yellowish or greenish. Hind wing with subequal pointed tails at veins $Cu_{1b}$ and $M_3$  | <i>Polyura</i> Billberg      |
| 3. Fore wing with vein Sc dilated at base ...   | <i>Ariadne</i> Horsfield     |
| Fore wing vein Sc not dilated at base ...   | 4                            |
| 4. Mid-and hind tarsal claws very long (1 mm.). Hind wing with interspace 1a barely channelled to accomodate abdomen ...  | <i>Cethosia</i> Fabricius    |
| Mid-and hind tarsal claws short as usual. Hind wing with interspace 1a channelled to accomodate abdomen ...   | 5                            |
| 5. Fore wing with vein $R_4$ reaching costal margin ...   | 6                            |
| Fore wing with vein $R_4$ reaching termen ...   | 7                            |
| 6. Fore wing vein $R_2$ arising directly from cell ...  | <i>Cyrestis</i> Boisduval    |
| Fore wing with vein $R_2$ arising from vein $R_5$   | <i>Chersonesia</i> Distant   |

- |     |   |     |                             |
|-----|---|-----|-----------------------------|
| 7.  | Hind wing with precostal vein arising at or before origin of vein Sc  | ... | 8                           |
|     | Hind wing with precostal vein arising beyond origin of vein Sc  | ... | 12                          |
| 8.  | Hind wing with vein Sc reaching costa   | ... | <i>Neptis</i> Fabricius     |
|     | Hind wing with vein Sc reaching termen  | ... | 9                           |
| 9.  | Fore wing with discocellular vein highly concave  | ... | <i>Abrota</i> Moore         |
|     | Fore wing with discocellular vein nearly straight   | ... | 10                          |
| 10. | Eyes hairy  | ... | <i>Limenitis</i> Fabricius  |
|     | Eyes smooth (except in <i>Parathyma ranga</i> )   | ... | 11                          |
| 11. | Underside of fore wing with a white longitudinal cell streak (orange or tawny in some female), usually present on upperside | ... | <i>Parathyma</i> Moore      |
|     | Underside of fore wing without a white pale longitudinal cell streak  | ... | <i>Moduza</i> Moore         |
| 12. | Fore wing with vein R <sub>4</sub> bent near its middle   | ... | <i>Parthenos</i> Huebner    |
|     | Fore wing with vein R <sub>4</sub> not bent near its middle   | ... | 13                          |
| 13. | Labial palpi with second joint much inflated and third joint very short   | ... | 14                          |
|     | Labial palpi with second joint not inflated and third joint relatively long as usual  | ... | 18                          |
| 14. | Fore wing with vein R <sub>2</sub> arising from vein R <sub>5</sub> and vein R <sub>3</sub> ending at costa                 | ... | 15                          |
|     | Fore wing with vein R <sub>2</sub> arising from cell and vein R <sub>3</sub> ending at apex                                 | ... | 16                          |
| 15. | Hind wing with a short tail at vein M <sub>3</sub>  | ... | <i>Vagrans</i> Hemming      |
|     | Hind wing without a tail  | ... | <i>Phalanta</i> Horsfield   |
| 16. | Hind wing tailed at vein M <sub>3</sub> . Fore wing longer than 36 mm.  | ... | <i>Vindula</i> Hemming      |
|     | Hind wing not tailed. Fore wing less than 36 mm.  | ... | 17                          |
| 17. | Hind wing with cell completely closed by a non-tubular vein   | ... | <i>Argynnis</i> Fabricius   |
|     | Hind wing with cell partially closed by an inconspicuous fold   | ... | <i>Cirrochroa</i> Doubleday |
| 18. | Underside of wings with large irregular spots in cells and in interspaces 6 and 7 on hind wing                              | ... | 19                          |

|     |  |     |                                     |
|-----|--|-----|-------------------------------------|
|     | Underside of wings without these irregular spots in cells and in interspaces 6 and 7 on hind wing                                  | ... | 20                                  |
| 19. | Fore wing with cell, if closed, lower disco-cellular vein ending at origin of vein $Cu_{1a}$                                       | ... | <i>Euthalia</i> Huebner             |
|     | Fore wing with cell closed and lower disco-cellular vein ending beyond origin of vein $Cu_{1a}$                                    | ... | <i>Aconthea</i> Boisduval           |
| 20. | Hind wing lobed at vein 1A+2A (slightly so in <i>Hypolimnas</i> )  | ... | 21                                  |
|     | Hind wing not lobed at vein 1A+2A  | ... | 27                                  |
| 21. | Eyes hairy   | ... | 22                                  |
|     | Eyes smooth  | ... | 24                                  |
| 22. | Hind wing with a short pointed tail at vein $M_3$ and cell open  | ... | <i>Symbrenthia</i> Huebner          |
|     | Hind wing without a tail or tooth at vein $M_3$ and cell slenderly closed  | ... | 23                                  |
| 23. | Mid-and hind tarsi with paronychia simple  | ... | <i>Cynthia</i> Fabricius            |
|     | Mid-and hind tarsi with paronychia bifid   | ... | <i>Vanessa</i> Fabricius            |
| 24. | Head and thorax black, each with a pair of white dots. Labial palpi black above and white beneath. Fore wing only slightly falcate | ... | <i>Hypolimnas</i> Huebner           |
|     | Head and thorax without white dots. Labial palpi neither black above nor white beneath. Fore wing markedly falcate                 | ... | 25                                  |
| 25. | Hind wing not tailed, submarginal ocelli present   | ... | <i>Precis</i> Huebner               |
|     | Hind wing tailed or prominently toothed and submarginal ocelli absent  | ... | 26                                  |
| 26. | Cell open. Upperside orange-brown with a black apical border on fore wing  | ... | <i>Doleschallia</i> Felder & Felder |
|     | Cell slenderly closed. Upperside purple blue with a broad, orange subapical band on fore wing                                      | ... | <i>Kallima</i> Doubleday            |
| 27. | Cell in fore wing and hind wing slenderly closed   | ... | 28                                  |
|     | Cell in fore wing and hind wing open   | ... | 30                                  |
| 28. | Eyes smooth  | ... | <i>Pseudergolis</i> Felder          |
|     | Eyes hairy   | ... | 29                                  |
| 29. | Fore wing with termen excavate between veins $Cu_{1a}$ and $M_3$ . Submarginal markings sagittate on fore-and hind wing            | ... | <i>Dichorragia</i> Butler           |

|  |                           |
|--|---------------------------|
| Fore wing with termen not excavate between veins $Cu_{1a}$ and $M_3$ . Submarginal marking not sagittate on fore-and hind wing ... | <i>Stibochiona</i> Butler |
| 30. Fore wing with vein $R_2$ arising from Sc ...  | 31                        |
| Fore wing with vein $R_2$ arising from cell ...  | 32                        |
| 31. Fore wing vein $R_3$ arising from before middle of vein $R_4$ ...  | <i>Apatura</i> Fabricius  |
| Fore wing vein $R_3$ arising from beyond middle of vein $R_4$ ...  | <i>Hestina</i> Westwood   |
| 32. Eyes hairy ...   | <i>Diagora</i> Snellen    |
| Eyes smooth ...  | 33                        |
| 33. Hind wing with terminal margin entire ...  | <i>Sephisia</i> Moore     |
| Hind wing with terminal margin biemarginate near tornus ...  | <i>Euripus</i> Doubleday  |

### XI Genus *Charaxes* Ochseneheimer

1816. *Charaxes* Ochseneheimer, *Schmett. Europe*, 4 : 18.

*Type species* : *Papilio jasius* Linnaeus, 1767.

*Diagnostic characters* : Both wings predominantly reddish to dark brown and discal areas not white. Hind wing with cell slenderly closed and a single tooth or tail at vein  $M_3$ .

*Distribution* : Palaearctic, Ethiopian, Indo-Malayan and Indo-Australian regions.

*Remarks* : The butterflies of this genus commonly known as 'The Rajahs' are often coloured beautifully. Of the five species of this genus occurring in India, *C. polyxena hierax* Felder is dealt with here.

#### 24. *Charaxes polyxena hierax* Felder (The Tawny Rajah) (Plate V, nos. 33-34)

1867. *Charaxes hierax* Felder, *Reise Novara Lep. Rhop.* : 442.

1932. *Charaxes polyxena hierax*, Evans, *The Identification of Indian Butterflies* : 141.

*Material examined* : Tirap District, Jairampur, 225 m., 1 ex., 26.x.1971 (Coll. G. S. Arora). *Fore wing length* : 38 mm.

*Distribution* : India (Sikkim) to North Burma.

*Remarks* : The upperside of fore wing has four small black spots arranged in a form of a lunule in the middle of the cell. This Sub.

species has been previously recorded from Districts of Siang (Dejoo and Pite) and Tirap (Miao and Namdhapa) and it is a new record for Jairampur in Tirap.

*Food plants* : *Aglaia roxburghiana* Miq., *Dalbergia latifolia* Roxburgh and *Saccopetalium tomentosum* Hook. f. & Th.

## XII Genus *Polyura* Billberg

1820. *Polyura* Billberg, *Enum. Ins. Mus. Billb.* : 79.

*Type species* : *Papilio pyrrhus* Linnaeus, 1758.

*Diagnostic characters* : Both wings predominantly pale yellowish or greenish white. Hind wing with cell open and subequal pointed tails at vein  $Cu_{1b}$  and  $M_3$

*Distribution* : Indo-Malayan and Australian Regions.

*Remarks* : The butterflies of this genus are popularly called 'The Nawabs' There are nine species occurring in India of which two are dealt with here.

### *Key to species*

|   |     |                        |
|---|-----|------------------------|
| Upper side of fore-and hind wing with discal band pale yellow         | ... | <i>athamas</i> (Drury) |
| Upper side of fore-and hind wing with discal band pale greenish white | ... | <i>arja</i> (Felder)   |

### 25. *Polyura athamas athamas* (Drury)

(The Common Nawab)

(Plate V, nos. 33-34)

1770. *Papilio athamas* Drury, *Ill. exot. Ent.* 1 : 5, pl. 2, fig. 4.

1905. *Eulepis athamas*, Bingham, *The Fauna of British India (Butterflies)*, 1 : 220-222.

1932. *Eriboea athamas athamas*, Evans, *The Identification of Indian Butterflies* : 143.

1956. *Polyura athamas athamas*, Corbet and Pendlebury, *The Butterflies of the Malay Peninsula* : 244.

*Material examined* : Siang District, New Jining, 200 m., 1 ex., 19.x.1966, Old Jining, 500 m., 1 ex., 20. x.1966 (Coll. S. K. Tandon and G. S. Arora). Tirap District, Deomali Forest, 250 m., 1 ex., 10.xi.1971 (Coll. G. S. Arora). *Fore wing length* : 34-36 mm.

*Distribution* : India (Kulu) to North Burma.

*Remarks* : The underside of hind wing has a marginal row of dark orange lunules or rods placed in the interspaces. Betts (1950) referred

to its occurrence at elevations of 5000 feet in the Balipara and Subansiri areas. It is a new record for Siang and Tirap Districts.

*Food plants* : *Acacia caesia* Willd., *A. catechu* Willd., *A. pennata* Willd., *Adenantha pavonia* Boivin, *Albizia julibrissin* Boivin, *A. lebbek* Linnaeus, *A. moluccana* Miq., *A. stipulata* Boivin, *Caesalpinia crista* Linnaeus (Fever nut, bonduc nut), *C. ruga* (Linn.) Ait., *C. sappan* Linnaeus, *Grewia* sp. (Til) and *Poinciana regia* Bojer ex. Hook (Gold Mohur).

26. **Polyura arja** (Felder)  
(The Pallid Nawab)  
(Plate V, nos. 35-36)

1867. *Charaxes arja* Felder, *Reise Novara, Lep. Rhop.* : 438.

1932. *Eriboea arja*, Evans, *The Identification of Indian Butterflies* : 143.

1983. *Polyura arja*, Varshney, *Rec. Zool. Surv. India, Occ. Paper No. 47* : 29.

*Material examined* : Tirap District, Nampong Camp, 350 m., 1 ex., 23.x.1971 (Coll. G. S. Arora). *Fore wing length* : 34 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The discal band on the upperside of wings is bluish white instead of pale greenish as referred to by Evans (1932) and Wynter-Blyth (1957). This species is a new record for Tirap District as well as for Arunachal Pradesh.

*Food plant* : *Tectona grandis* L. F.

XIII Genus **Apatura** Fabricius

1807. *Apatura* Fabricius, *Mag. f. Insektenk.* (Illiger), 6 : 280.

*Type species* : *Papilio iris* Linnaeus, 1758.

*Diagnostic characters* : Antennal club well developed, long, narrow, slender and cylindrical. Eyes usually smooth.

*Distribution* : The butterflies of this genus are popularly called 'The Emperors'. Of the six species known from India three are dealt with here.

*Key to species*

- |  |     |                           |
|--|-----|---------------------------|
| 1. Eyes hairy  | ... | <i>parvata</i> Moore      |
| Eyes smooth  | ... | 2                         |
| 2. Under side of fore wing with a row of minute subapical white dots in interspaces 5, 6 and 8 |     | <i>parisatis</i> Westwood |
| Under side of fore wing without a row of minute subapical white dots in interspaces 5, 6 and 8 | ... | <i>ambica</i> Kollar      |

27. *Apatura ambica ambica* Kollar

(The Indian Purple Emperor)

(Plate V, nos. 37-38)

1844. *Apatura ambica* Kollar, *In Huegel's Kaschmir*, 4(2) : 431.1932. *Apatura ambica ambica*, Evans, *The Identification of Indian Butterflies* : 146.

*Material examined* : Kameng District, Dirang Dzong, 1830 m., 1 ex., 16.vii.1961 (*Coll. S. Biswas*). *Fore wing length* : 33 mm.

*Distribution* : India (Kashmir) to Burma (Dawnas).

*Remarks* : This nominate subspecies earlier recorded from Balipara, Subansiri area, and Lohit District (Namdhapa) is a new record for Kameng District.

*Food plants* : *Celtis tetrandra* Roxburgh and *Ulmus wallichina* Planch.

28. *Apatura parvata* Moore

(The Brown Prince)

1857. *Apatura parvata* Moore, *Cat. Lep. Ins. Mus. East. India Coy.*, 1 : 202, pl. 6a, fig. 6♂.

*Material examined* : Lohit District, 17 kms. from Chikrung upstream of Kamlang River, 3600 feet, 1 ex., 23.xii.1969 (*Coll. J. M. Julka and Party*). *Fore wing length* : 24 mm.

*Distribution* : India (Sikkim to Assam).

*Remarks* : This species is rare in status and a new record for Lohit District as well as entire Arunachal Pradesh.

29. *Apatura parisatis parisatis* Westwood

(The Black Prince)

1850. *Apatura parisatis* Westwood, *Gen. diurn. Lep.* 2 : 305.1932. *Apatura parisatis parisatis*, Evans, *The Identification of Indian Butterflies* : 147.

*Material examined* : Siang District, Dali village, 200 m., 1 ex., 10.x.1966 ; Dalicamp. 300 m., 2 exs., 12.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Tirap District, Changlang Village, 600 m., 1 ex., 20.xi.1971 (*Coll. G. S. Arora*). *Fore wing length* : 20-22 mm.

*Distribution* : India (Uttar Pradesh : Kumaon) to Burma.

*Remarks* : The characteristic white apical spot on upperside of fore wing tends to be obsolete. This subspecies was earlier reported

from Balipara and Subansiri area along the rivers in forest and the forest itself at elevation upto 3000 feet. Presently, it is a new record for Siang and Tirap Districts.

*Food plants* : *Celtis cinnamomea* Planch. and *C. tetrandra* Roxburgh.

#### XIV Genus *Sephisa* Moore

1882. *Sephisa* Moore, *Proc. zool. Soc. Lond.*, : 240.

*Type species* : *Limenitis dichroa* Kollar, 1844.

*Diagnostic characters* : Labial palpi very long, black white apically. Cell of fore-and hind wing open ; in fore wing vein  $R_2$  arising out of vein  $R_5$ .

*Distribution* : India and Palaearctic China to the mountains of Malaya.

*Remarks* : The butterflies of this genus are commonly called 'The Courtiers'. Two species viz., *Sephisa dichroa* (Kollar) and *S. chandra* (Moore) occur in India, of which the latter is dealt with here.

#### 30. *Sephisa chandra* (Moore) (The Eastern Courtier) (Plate V, nos. 39-40)

1858. *Castalia chandra* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 200, pl. 6a, fig. A.

1932. *Sephisa chandra*, Evans, *The Identification of Indian Butterflies* : 147.

*Material examined* : Kameng District, Naphra, 1220 m., 1 ex., 3.vii.1961, Dirang, 1601 m., 1 ex., 20.vii.1961 (*Coll. S. Biswas*). *Fore wing length* : 36-40 mm.

*Distribution* : India (Sikkim) to Burma (Karens).

*Remarks* : The upperside of wings have tawny and white markings of varying size and submarginal dots tinted with violet. This species previously reported from an elevation of 2000 feet at Pite (Balipara and Subansiri area) is a new record for Kameng District.

#### XV Genus *Euripus* Doubleday

1848. *Euripus* Doubleday, *Gen. diurn. Lep.* (2) : pl. 41, fig. 2.

*Type species* : *Euripus halitherses* Doubleday, 1848.

*Diagnostic characters* : This genus differs from *Sephisa* Moore by the labial palpi being short and only whiter at base. Eyes smooth.

*Distribution* : Oriental Region.

*Remarks* : The butterflies of this genus are commonly known as 'The Courtesans'. Corbet (1943) assigned a new name *Idrusia* for the genus *Euripus* Doubleday and the latter was revalidated by Hemming (1967). Of the two species viz., *Euripus consimilis* Westwood and *E. halitherses* Doubleday occurring in India, the latter is dealt with here.

### 31. *Euripus halitherses* Doubleday

(The Courtesan)

(Plate VI, nos. 41-44)

1848. *Euripus halitherses* Doubleday, *Gen. diurn. Lep.* (2) : pl. 41, fig. 2.

*Material examined* : Subansiri District, Tamen, 305 m., 1 ex., 19.v.1966 (Coll. A. N. T. Joseph). Siang District, Daporijo, 150 m., 1 ex., 26.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Digaru Road, 150 m., 1 ex., 2.iii.1969 (Coll. S. K. Tandon and party).  
*Fore wing length* : 34-38 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The upperside of fore wing has three submarginal white spots and on underside there is an elongate white spot beyond the middle on the inner margin. This species earlier reported from Dejoo (Subansiri district) is a new record for Siang and Lohit Districts.

*Food plant* : *Albizia stipulata* Boivin.

## XVI Genus *Diagora* Snellen

1894. *Diagora* Snellen, *Tijdschr. Ent.* 37 : 67.

*Type species* : *Apatura japonica* Felder and Felder, 1862.

*Diagnostic characters* : This genus differs from *Euripus* Doubleday in having eyes hairy.

*Distribution* : From Indo-Malayan Region extending to China.

*Remarks* : The butterflies of this genus are commonly called 'The Sirens'. Of the two species viz. *Diagora persimilis* (Westwood) and *D. nicévillei* Moore occurring in India, the former is dealt with here.

32. **Diagora persimilis** (Westwood)  
(The Siren)  
(Plate VI, nos. 45-46)

1850. *Hestina persimilis* Westwood, In Doubleday, *Gen. diurn. Lep.* 2 : 281.  
1932. *Diagora persimilis*, Evans, *The Identification of Indian Butterflies*, : 148.

*Material examined* : Lohit District, Digaru Road, 150 m., 1 ex., 11.iii.1969 (Coll. S. K. Tandon). *Fore wing length* : 30 mm.

*Distribution* : India (Himachal Pradesh-Simla to Assam and Orissa).

*Remarks* : The upperside of fore wing has a broad and dark brownish band in the cell. The upperside as well as underside of hind wing is tinted with yellow at inner margin. This species previously reported from Pite (Subansiri district) is a new record for Lohit District. Its status is rare.

*Food plant* : *Celtis australis* Linnaeus.

XVII Genus **Hestina** Westwood

1850. *Hestina* Westwood, In Doubleday, *Gen. diurn. Lep.* 2 : 281.

*Type species* : *Papilio assimilis* Linnaeus, 1758.

*Diagnostic characters* : Fore wing falcate between veins  $M_1$  and  $R_5$  and hind wing produced slightly at vein  $1A + 2A$ .

*Distribution* : From India to China and through Malaysia to Sulawesi.

*Remarks* : This genus is represented in India by a single species i.e. *Hestina nama* (Doubleday) which is dealt with here.

33. **Hestina nama** (Doubleday)  
(The Circe)  
(Plate VI, nos. 47-48)

1845. *Diadema nama* Doubleday, *Ann. Mag. nat. Hist.*, 16 : 232.  
1932. *Hestina nama*, Evans, *The Identification of Indian Butterflies* : 148.

*Material examined* : Kameng District, the bank of Pangbari Chu, 2 miles south to Ankaling village, 848 m., 1 ex., 10.iii.1961 ; Norgum river bank 1 mile below Bokhar, 909 m., 1 ex., 13.iii.1961 ; 1 ex., 14.iii.1961 (Coll. K.C. Jairam). Siang District, Daporijo, 150 m., 1 ex., 27.x.1966, 1 ex., 28.x.1966 ; Bame, 600 m., 1 ex., 30.x.1966 (Coll. S.K. Tandon and G.S. Arora). Lohit District, Dumbak, 2 exs., 5.iii.1969 (Coll. S. K. Tandon). Assam, Sadiya Road, 300 m., 2 exs., 8.iii.1969 (Coll. S. K. Tandon). *Fore wing length* : 38-48 mm.

*Distribution* : India (Uttar Pradesh) to Burma.

*Remarks* : There are four preapical whitish spots tinged with bluish on the upperside of the fore wing. One of these preapical spots is absent in a specimen collected from Daporijo. This species was earlier reported from Districts of Subansiri (Pite) Siang (Rotung, between Kobo and Janakmukh), and Tirap (Namdhapa). It is a new record for the Districts of Kameng and Lohit.

### XVIII Genus *Dichorragia* Butler

1869. *Dichorragia* Butler, *Proc. zool. Soc. London* (3) : 614.

*Type species* : *Adolias nesimachus* Boisduval, 1846.

*Diagnostic characters* : Fore wing slightly excavated between veins Cu<sub>1b</sub> and M<sub>1</sub>, hind wing slightly produced at vein 1A+2A.

*Distribution* : From India through the Archipelago to New Guinea.

*Remarks* : This genus is represented in India by a single species i.e. *Dichorragia nesimachus* (Boisduval) which is dealt with here.

### 34. *Dichorragia nesimachus* (Boisduval)

(The Constable)

(Plate VII, nos. 49-50)

1836. *Adolias nesimachus* Boisduval, Crochard's edit., *Cuv. Reg. Anim. Ins.*, 2 : pl. 139, bis, fig. 1.

1932. *Dichorragia nesimachus*. Evans, *The Identification of Indian Butterflies* : 149.

*Material examined* : Siang District, Lekhabali, 140 m., 1 ex.. 6.x.1966 (Coll. S.K. Tandon and G.S. Arora). *Fore wing length* : 34 mm.

*Distribution* : India (Kulu) to Burma.

*Remarks* : The upperside of fore wing has a faint zig-zag marginal line, a submarginal row of >—shaped markings shorter towards inner and costal margins. Inner to this submarginal row, three of such >—markings are subcostal and two in interspace 3 and 4. There are bluish green spots at the apex of cell and the discal area on the upperside of hindwing. This species previously known from Pite (2000 feet) and Litchi (2500 feet) is a new record for Siang District.

### XIX Genus *Stibochiona* Butler

1869. *Stibochiona* Butler, *Proc. zool. Soc. Lond.* (3) : 614.

*Type species* : *Hypolimnas coresia* Huebner, 1826.

*Diagnostic characters* : This genus differs from *Dichorragia* Butler in having short cell in fore as well as in hind wing. Eyes hairy in *Stibochiona nicea* (Gray) but smooth in others (do not occur in India). Fore tarsus in female with a pair of claws.

*Distribution* : From India, Burma extending to western China and Malayan sub-region.

*Remarks* : This genus is represented in India by a single species i.e. *Stibochiona nicea* (Gray) which is dealt with here.

### 35. *Stibochiona nicea nicea* (Gray)

(The Popinjay)

(Plate VII, nos. 51-52)

1833-46. *Adolias nicea* Gray, *Lep. Ins. Nepal.*, : 13, pl. 12, fig. 1.

1932. *Stibochiona nicea nicea*, Evans, *The Identification of Indian Butterflies* : 150.

*Material examined* : Lohit District, Manbhum, 100 m., 1 ex., 17.iii.1969 (Coll. S. K. Tandon); Kamlang River, 600 m., 1 ex., —. — 1969-70 (Coll. J.M. Julka and party). Assam, Sadiya Road, 300 m., 2 exs., 8.iii.1969 (Coll. S.K. Tandon). *Fore wing length* : 28-33 mm.

*Distribution* : India (Kulu) to N. Burma.

*Remarks* : The underside of hind wing has the bluish and white lines varying in width and the marginal lunules narrow to broader. This nominate subspecies was previously reported from Districts of Kameng (Rupa), Subansiri (Lichi, Pite), Siang (Janakmukh) and Tirap (Namdhapa). It is a new record for Lohit District.

## XX Genus *Euthalia* Huebner

1819. *Euthalia* Huebner, *Verz. bekannt. Schmett.* (3) : 41.

*Type species* : *Papilio lubentina* Cramer, 1777.

*Diagnostic characters* : Cell in fore and hind wing open or if closed in fore wing then lower discocellular vein ends at the origin of vein  $Cu_{1a}$ , vein  $R_8$  arising well before before the middle of vein  $R_5$  or if from the middle of  $R_5$  then vein  $R_1$  anastomosing with  $Sc$ .

*Distribution* : The butterflies of this genus are popularly known as 'The Barons, Counts, Earls etc.' Of the 24 species occurring in India only four are dealt with here.

*Key to species*

- |   |                                |
|---|--------------------------------|
| 1. In fore wing vein R <sub>5</sub> arising from middle of vein R <sub>5</sub> ...  | <i>lepidea</i> (Butler)        |
| In fore wing vein R <sub>5</sub> arising from basal half of vein R <sub>5</sub> ... | 2                              |
| 2. In male, upperside of hind wing with a blue submarginal or marginal band ...     | <i>telchinia</i> (Ménétrières) |
| In male, upperside of hind wing without a blue submarginal or marginal band ...     | 3                              |
| 3. Underside of both wings more or less yellow or bright ochraceous ...             | <i>kesava</i> (Moore)          |
| Underside of both wings brown, sometimes slightly ochraceous, but never yellow ...  | <i>garuda</i> (Moore)          |

**36. *Euthalia lepidea lepidea* (Butler)**

(The Grey Count)

(Plate VII, nos. 53-54)

1868. *Adolias lepidea* Butler, *Ann. Mag. nat. Hist. Lond.* (4) : 71.1932. *Euthalia lepidea lepidea*, Evans, *The Identification of Indian Butterflies* : 150.

*Material examined* : Assam, Gilagudi, N. Lakhimpur, 1 exs., 4 exs.,—1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 34-36 mm.

*Distribution* : India (Uttar Pradesh to Assam).

*Remarks* : The upperside of fore wing bears five black transverse markings across the cell but the first marking extends to the vein 1A+2A, second and third markings joined below to form a loop in the interspace 1. In the male, the ash grey band is narrowly bordered with brown. The underside of the fore wing has the postmedial line waved and running from vein R<sub>5</sub> to vein Cu1b.

*Food plants* : *Butea monosperma* (Lam.) Kuntze (Dhak, Palas, The Flame of the Forest), *Careya arborea* Roxburgh (Kimbi) and *Melastoma malabathricum* Linnaeus.

**37. *Euthalia kesava kesava* (Moore)**

(The Powdered Baron)

1859. *Adolias kesava* Moore, *Trans. ent. Soc. Lond.* (new ser.) (5) : 67, pl. 3, fig. 5, ♂.1932. *Euthalia kesava kesava*, Evans, *The Identification of Indian Butterflies* : 152.

*Material examined* : Lohit District, Wakro, 515 m., 1 ex., 3.x.1969 (Coll. J. M. Julka and party). *Fore wing length* : 35 mm.

*Distribution* : India (Assam) to N. Burma.

*Remarks* : This nominate subspecies is a new record from Lohit District.

### 38. *Euthalia telchinia* (Ménétrières)

(The Blue Baron)

(Plate VII, nos. 55-56)

1857. *Adolias telchinia* Ménétrières, *Enum. Carp. Anim. Mus. Petrop.*, *Lep.* 2 : 120, pl. 9, fig. 3.

1932. *Euthalia telchinia*, Evans, *The Identification of Indian Butterflies* : 153

*Material examined* : Siang District, New Jining, 200 m., 1 ex., 19.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 37 mm.

*Distribution* : India (Karnataka—Coorg, Sikkim) to N. Burma.

*Remarks* : The upperside of fore wing is marked with a curved medial band of 5 white spots (the spot in interspace 4 being smaller), the dark brown border running from apex to two-third along the inner margin and continued on the hind wing upto vein 1A+2A. The underside of the hind wing is without any trace of the sixth white spot below the medial band of 5 white spots. This species is very rare in status and earlier reported from Pite and Tasser Puttu. It is a new record for Siang District.

### 39. *Euthalia garuda garuda* (Moore)

(The Baron)

1857. *Adolias garuda* Moore, *Cat. Lep. Ins. Mus. East. India Coy*, 1 : 186, pl. 6, figs. 2, 2a, larva and pupa.

1932. *Euthalia garuda garuda*, Evans, *The Identification of Indian Butterflies* : 154.

*Material examined* : Tirap District, Deomali Forest, 200 m., 1 ex., 9.x.1971 (Coll. G. S. Arora). *Fore wing length* : 31 mm.

*Distribution* : India (Assam) to Burma.

*Remarks* : The upperside of fore wing has a medial band of four white spots lying in the interspaces 2, 4, 5 and 6 ; a black transverse line and two black loops in the cell. The upperside of hind wing bears two black loops in the cell. The underside of fore wing is marked with a medial band of five white spots and that in interspace 3 being very large, and five black lines in the cell. The underside of hind wing has two black lines in the cell followed by a black loop and other

three loops above the former. This nominate subspecies is a new record for Tirap District as well as for Arunachal Pradesh.

*Food plants* : *Anacardium occidentale* Linnaeus (Cashew nut), *Bryonia* sp., *Mangifera indica* Linnaeus (Mango) and *Streblus asper* Lour.

### XXI Genus *Aconthea* Horsfield

1829. *Aconthea* Horsfield, *Descr. Cat. lep. Ins. Mus. East India Coy* (2) : explic. pls. 5, 8.

*Type species* : *Aconthea primaria* Horsfield, 1829.

*Distribution* : India, Bhutan, Burma and Malayan Peninsula.

*Diagnostic characters* : Cell in fore and hind wing open. In the fore wing vein  $R_2$  arising from the Sc and free. In hind wing the vein  $R_s$  close to vein  $Sc+R_1$  than to vein  $M_1$ .

*Remarks* : The butterflies of this genus are popularly known as 'The Archdukes'. Of the three species occurring in India *Aconthea khasiana* (Swinhoe) is dealt with here.

#### 40. *Aconthea khasiana khasiana* (Swinhoe) (The Dark Archduke) (Plate VIII, nos. 57-58)

1893. *Symphaedra khasiana* Swinhoe, *Trans. ent. Soc. Lond.*, : 284.

1932. *Adolias khasiana khasiana*, Evans, *The Identification of Indian Butterflies* : 158.

1983. *Aconthea khasiana*, Varshney, *Rec. zool. Surv. India, Occ. Paper No. 47* : 9.

*Material examined* : Tirap District, Jairampur, Check Post, 225 m., 1 ex., 26.x.1971 (Coll. G. S. Arora). *Fore wing length* : 37 mm.

*Distribution* : India (Assam).

*Remarks* : The upperside of fore wing bears two orange spots in the cell. The upperside of hind wing is marked with violaceous sub-marginal band anteriorly merging into bluish and finally whitish posteriorly. The underside of fore wing bears orange spots towards the base and blue whitish spots beyond the post medial line. This nominate subspecies previously reported from Likha is a new record for Tirap District.

### XXII Genus *Parthenos* Huebner

1819. *Parthenos* Huebner, *Verz. bekannt. Schmett.* (3) : 38.

*Type species* : *Papilio sylvia* Cramer, 1775.

*Diagnostic characters* : Fore wing with the costa not serrated, vein Sc not swollen at base. Hind wing with the predorsal cell present.

*Distribution* : Indo-Malayan Region.

*Remarks* : This genus represented in India by a single species i.e. *Parthenos sylvia* (Cramer) is dealt with here.

#### 41. *Parthenos sylvia gambrisius* (Fabricius)

(The Clipper)

1787. *Papilio gambrisius* Fabricius, *Mantissa Ins.* 2 : 12.

1932. *Parthenos sylvia gambrisius* Evans, *The Identification of Indian Butterflies* : 159.

*Material examined* : Tirap District, Jairampur, 225 m., 1 ex., 25.x.1971 (Coll. G. S. Arora). *Fore wing length* : 44 mm.

*Distribution* : India (Bengal) to Burma.

*Remarks* : This subspecies is a new record for Tirap District as well as entire Arunachal Pradesh.

*Food plants* : *Adenia* spp.

### XXIII Genus *Abrota* Moore

1857. *Abrota* Moore, In Horsfield and Moore, *Cat. Lep. Ins. Mus. East India Coy* (1) : 176.

*Type species* : *Abrota ganga* Moore, 1857.

*Diagnostic characters* : Eyes smooth. Fore wing with the cell closed, vein  $R_2$  arising well before upper angle of cell,  $Cu_{1a}$  slightly before and  $M_3$  from the lower angle of cell. Cell open in hind wing.

*Distribution* : India (Sikkim, Abor Hills, Naga Hills) and Bhutan.

*Remarks* : This genus is represented in India by a single species i.e., *Abrota ganga* Moore which is dealt with here.

#### 42. *Abrota ganga* Moore

(The Sergeant-Major)

1857. *Abrota ganga* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 178, pl. 6a, fig. 1, ♂.

*Material examined* : Siang District, Rimi Bridge, 300 m., 1 ex., 2.x.1966 (Coll. S.K. Tandon and G.S. Arora). *Fore wing length* : 45 mm.

*Distribution* : India (Sikkim) and Bhutan.

*Remarks* : The upperside of fore wing bears an additional small whitish spot in the interspace 5. The sub-basal and postmedial bands

are paler in hind wing. This species is a new record for Siang District as well as for Arunachal Pradesh.

#### XXIV Genus *Limenitis* Fabricius

1807. *Limenitis* Fabricius, *Mag. f. Insektenk* (Illiger), 6 : 281.

*Type species* : *Papilio populi* Linnaeus, 1758.

*Diagnostic characters* : Eyes hairy. Labial palpi hairy beneath. Upperside of fore and hind wing marked with a pale green band. Lower discocellular vein straight and short and vein  $M_3$  arising very close to vein  $Cu_{1a}$ .

*Distribution* : North and Central America and throughout the Palaearctic and Oriental Regions.

*Remarks* : The butterflies of this genus are commonly known as 'The Admirals and Commodores'. Of the seven species occurring in India three are dealt with here.

#### *Key to species*

- |  |                         |
|--|-------------------------|
| 1. Eyes smooth. Labial palpi smooth. Upperside of fore wing without any prominent pale discal band. Cell closed in hind wing ... | <i>danava</i> Moore     |
| Eyes hairy. Labial palpi hairy. Upperside of fore wing with a prominent pale discal band. Cell open in hind wing ...             | 2                       |
| 2. Upperside of fore wing with discal band yellow ...  | <i>zayla</i> Doubleday  |
| Upperside of fore wing with discal band green  | <i>daraxa</i> Doubleday |

#### 43. *Limenitis danava* Moore (The Commodore) (Plate VIII, nos. 59-60)

1857. *Limenitis danava* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 180, pl. 6a, fig. 2, ♂ ♀.

*Material examined* : Kameng District, Dirang Dzong, 1601 m., 1 ex., 19.vii.1961 ; 1676 m., 1 ex., 23.vii.1961 (*Coll. S. Biswas*). *Fore wing length* : 39-40 mm.

*Distribution* : India (Himalayas—Simla eastward, Hills of Assam) and Burma.

*Remarks* : The underside of fore wing bears the lilacine band having inner dark brown line more angulated. This species, previously known from Tirap District (Namdhapa), is a new record for Kameng District. Its status is rare.

44. ***Limenitis zayla*** Doubleday  
(The Bi-colour Commodore)  
(Plate VIII, nos. 61-62)

1850. *Limenitis zayla* Doubleday, In Doubleday, *Gen. diurn. Lep.*, 2 : 276, pl. 35, fig. 4.

*Material examined* : Kameng District, Dirang, 2155 m., 1 ex., 10.vii.1961 ; Dirang Dzong, 1601 m., 1 ex., 19.vii.1961, 5 exs., 20.vii.1961, 2430 m., 4 exs., 20.vii.1961 ; Chug village, 2135 m., 1 ex., 25.vii.1961 ; Jungle Camp, 1 ex., 29.ix.1961 (*Coll. S. Biswas*). *Fore wing length* : 37-41 mm.

*Distribution* : India (Sikkim and Hills of North-East India).

*Remarks* : The basal two-third area is paler on the upperside of fore and hind wings in two specimens whereas it is darker in other specimens. Betts (1950) reported this species from Apa Tani and remarked that it is found in the company of *Euthalia duda* Staudinger and *E. sahadava* (Moore). This species is a new record for Kameng District.

45. ***Limenitis daraxa*** Doubleday  
(The Green Commodore)  
(Plate VIII, nos. 63-64)

1850. *Limenitis daraxa* Doubleday, In Doubleday, *Gen. diurn. Lep.* 2 : 276, pl. 34, fig. 4.

*Material examined* : Kameng District, Dirang Dzong, 1813 m., 1 ex. 16.viii.1961 (*Coll. S. Biswas*). *Fore wing length* : 30 mm.

*Distribution* : India (Himalayas from Kumaon to Eastward, Hills of North East India) and Burma.

*Remarks* : This species previously known from Districts of Subansiri (Pite, 2000 feet and Apa Tani) and Tirap (Namdhapa) is a new record for Kameng District.

XXV Genus **Moduza** Moore

1881. *Moduza* Moore, *Lep. Ceylon*, 1(2) : 47.

*Type species* : *Papilio procris* Cramer, 1777.

*Diagnostic characters* : Upperside of fore and hind wings dark reddish brown with a broad, white and macular discal band. Lower discocellular vein curved outwards, vein  $M_3$  arising some distance from vein  $Cu_{1a}$ .

*Distribution* : Throughout the Oriental Region.

*Remarks* : This genus is represented in India by a single species, *Moduza procris* (Cramer) and dealt with here.

46. **Moduza procris procris** (Cramer)

(The Commander)

(Plate IX, nos. 65-66)

1777. *Papilio procris* Cramer, *Pap. exot.* 2 : pl. 106, figs. E, F, ♀.

1905. *Moduza procris*, Bingham, *The Fauna of British India (Butterflies)*, 1 : 291.

*Material examined* : Tirap District, Jairampur, Check post, 225 m., 1 ex., 25.x.1971, 1 ex., 26.x.1971 (*Coll. G. S. Arora*). Assam, Elephant Flat, 400 m., 1 ex., 22.iii.1973 (*Coll. S. K. Tandon and party*). *Fore wing length* : 27-34 mm.

*Distribution* : India (Uttar Pradesh—Dehra Dun) to Burma.

*Remarks* : The upperside of fore wing has a postmedial series of large black and lunulate spots joined one another in specimens from Tirap whereas spots are small, rounded and separated in the specimen from Assam. This nominate subspecies, previously reported from Subansiri District (Pite and Dejoo) and Tirap (Namdhapa) is a new record from Jairampur in Tirap.

*Food plants* : *Anthocephalus cadamba* Miq., *Cinchona* sp., *Stephegyne parviflora* Korth, *Wendlandia exserta* D. C., and *W. notoniana* Wall.

XXVI Genus **Parathyma** Moore

1898. *Parathyma* Moore, *Lep. ind.* 3 (32) : 146.

*Type species* : *Papilio sulphitia* Cramer, 1779.

*Diagnostic characters* : Eyes smooth (except in *P. ranga* and *P. abiasa*). Labial palpi smooth. Underside of fore wing with a white longitudinal cell streak (orange, tawny brown in some females), the

latter usually present on the upperside. Fore wing with vein  $R_2$  from the upper angle of cell, vein  $Cu_{1a}$  and  $M_3$  from the lower angle of the cell or  $Cu_{1a}$  may arise slightly before the lower angle of the cell.

*Distribution* : Indo-Malayan Region.

*Remarks* : The butterflies of this genus are commonly known as 'The Sergeants'. Of the 14 species occurring in India, seven are dealt with here.

#### *Key to species*

- |   |   |                             |
|---|---|-----------------------------|
| 1. Fore wing with discocellular cell open ...   | 2 |                             |
| Fore wing with discocellular cell closed ...  | 3 |                             |
| 2. Streak in cell of fore wing divided into three or four portions ...  |   | <i>perius</i> (Linnaeus)    |
| Streak in cell of fore wing entire ...  |   | <i>kanwa</i> (Moore)        |
| 3. Sexes similar, wings without blue or orange tinting on upperside ...   | 4 |                             |
| Sexes dissimilar. Wings in male with discal band margined with pale blue on upperside ...                       | 5 |                             |
| 4. Cell of fore wing on underside containing several large white spots occupying its whole width ...            |   | <i>ranga</i> (Moore)        |
| Cell of fore wing on underside containing a longitudinal streak ...   |   | <i>opalina</i> (Kollar)     |
| 5. Upperside of fore wing with discal spot in interspace 3 absent. Female with orange broad markings ...        |   | <i>cama</i> (Moore)         |
| Upperside of fore wing with discal spot in interspace 3 present. Female with white sullied brownish bands ...   | 6 |                             |
| 6. Male with discoidal streak obsolete on upperside of fore wing ; twice divided on underside in both sexes ... |   | <i>selenophora</i> (Kollar) |
| Male with discoidal streak prominent on upperside of fore wing, undivided on underside in both sexes ...        |   | <i>zeroa</i> (Moore)        |

#### 47. *Parathyma cama* (Moore)

(The Orange Staff Sergeant)

(Plate IX, nos. 67-68)

1857. *Athyma cama* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 174, pl. 5, fig. 5,  
♂, ♀
1937. *Parathyma cama*, Piele, *A Guide to the collecting Butterflies of India*, : 120.

*Material examined* : Lohit District, Hayuliang Road, 700m., 1 ex., 12.iii.1969 (Coll. S. K. Tandon). *Fore wing length* : 30 mm.

*Distribution* : India (Uttar Pradesh—Mussoorie) to Burma.

*Remarks* : The upperside of fore and hind wing bears white macular spots forming band diffused with bluish colour. The apical ferruginous and quadrate spots are somewhat diffused. This species is a new record for Lohit District as well as for Arunachal Pradesh.

#### 48. *Parathyma selenophora selenophora* (Kollar)

(The Staff Sergeant)

1844. *Limenitis selenophora* Kollar, In *Huegel's Kaschmir*, 4(2) : 426, pl. 7, figs. 1, 2♂.

1937. *Parathyma selenophora selenophora*, Piele, *A Guide to the Collecting Butterflies of India* : 120.

*Material examined* : Assam, Elephant flat, 400 m., 1 ex., 22.iii.1973 (Coll. S. K. Tandon and party). *Fore wing length* : 27 mm.

*Distribution* : India (Uttar Pradesh—Mussoorie) to Burma.

*Remarks* : The upperside of fore wing is without any trace of white cell streak. The white spots of two submarginal rows are faint and small whereas those in interspaces 3 and 4 are larger. The upperside of hind wing bears a broader inner submarginal band of whitish spots which is outlined by a submarginal whitish discontinuous line. The underside of fore wing bears an indistinct whitish spot beyond the end of cell. This nominate subspecies was earlier reported from Tirap District (Namdhapa).

*Food plant* : *Adina cordifolia* Hook. f. (Haldu).

#### 49. *Parathyma zeroa* (Moore)

(The Small Staff Sergeant)

(Plate IX, nos. 69-70)

1872. *Athyma zeroa* Moore, *Proc. zool. Soc. Lond.*, : 564, ♂.

1937. *Parathyma zeroa*, Piele, *A Guide to the Collecting of Butterflies of India* : 235.

*Material examined* : Lohit District, Hayuliang Road, 700 m., 1 ex., 12.iii.1969 (Coll. S. K. Tandon). Assam, Elephant flat, 400 m., 1 ex., 22.iii.1973 (Coll. S. K. Tandon). *Fore wing length* : 25-27 mm.

*Distribution* : India (Uttar Pradesh—Kumaon) to Burma.

*Remarks* : This species resembles *P. selenophora* (Kollar) but can be distinguished from it by three subapical white spots and continuous submarginal lines on the fore wing. In hind wing, the inner submarginal whitish band is narrower than in *P. selenophora*. The underside of fore wing has whitish and undivided discoidal streak present in the cell. This species was previously known from Tirap District (Namdhapa). It is now a new record for Lohit District.

50. **Parathyma kanwa phorkys** (Fruhstorfer)  
(The Dot Dash Sergeant)

1909. *Pantoporia phorkys* Fruhstorfer, In Seitz, *The Macrolepidoptera of the World*, 9 : 629.

1932. *Pantoporia kanwa phorkys*, Evans, *The Identification of Indian Butterflies* : 163.

*Material examined* : Tirap District, Jairampur, 225 m., 1 ex., 25.x.1971 (Coll. G. S. Arora). *Fore wing length* : 32 mm.

*Distribution* : India (Assam) to Burma.

*Remarks* : The upperside of fore wing bears a white triangular spot which extends from the end of cell into interspace 4 and in interspace 1, a white oval spot consists of a large spot and a smaller one lying over it. The underside of hind wing has two diffused small whitish submarginal spots near the costa and white suffusion extending towards apex. This subspecies is rare in status as well as a new record for Tirap District and for entire Arunachal Pradesh.

51. **Parathyma opalina orientalis** (Elwes)  
(The Himalayan Sergeant)  
(Plate IX, nos. 71-72)

1888. *Athyma orientalis* Elwes, *Trans. ent. Soc. Lond.*, : 354, pl. 9, fig. 4, ♂.

1937. *Parathyma opalina orientalis*, Piele, *A Guide to the Collecting of Butterflies of India* : 121.

*Material examined* : Kameng District, Dirang Dzong, 2135 m., 1 ex., 9.viii.1961 ; 1601 m., 2 exs., 21.ix.1961 (Coll. S. Biswas). *Fore wing length* : 31-33 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The white markings on the upperside of fore and hind wing are broader in dry season forms but narrow and smaller in wet season form. The preapical white spot on costa of fore wing is obscure in one specimen. This subspecies is a new record for Kameng District as well as for Arunachal Pradesh.

*Food plants* : *Berberis aristata* DC. *B. lycium* Royle and *Mahonia nepaulensis* DC.

### 52. *Parathyma ranga ranga* (Moore)

(The Black Vein Sergeant)

(Plate X, nos. 73-74)

1857. *Athyma ranga* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 175, pl. 5a, fig. 6, ♂.

1937. *Parathyma ranga ranga*, Piele, *A Guide to the Collecting of Butterflies of India* : 265.

*Material examined* : Lohit District, Tezu, 150 m., 2 exs., 10.iii.1969 ; Lohitpur Road, 150 m., 1 ex., 13.iii.1969 (*Coll. S. K. Tandon*). *Fore wing length* : 27-33 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The specimen from Tezu is darker in colouration with white spots being obscure in the cell on the upperside of fore wing. The other two specimens are paler in colouration and have well marked white spots in the cell on the upperside of fore wing. The other markings on the wings vary slightly in size. This nominate subspecies reported earlier from Districts of Kameng (Doimara), Subansiri (Pite) and Tirap (Namdhapa), is a new record for Lohit District. It is rare in status.

*Food plants* : *Olea dioica* Roxburgh and *Linociera malabarica* Wall. ex G. Don.

### 53. *Parathyma perius* (Linnaeus)

(The Common Sergeant)

(Plate X, nos. 75-76)

1758. *Papilio perius* Linnaeus, *Syst. Nat.*, 10 : 471.

1937. *Parathyma perius*, Piele, *A Guide to the Collecting of Butterflies of India*, : 122.

*Material examined* : Siang District, New Jining, 500 m., 2 exs., 20.x.1966 ; Tappi Dulla, 500 m., 1 ex., 22.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Tirap District, Jairampur, 225 m., 2 exs., 25.x.1971, 1 ex., 27.x.1971 (*Coll. G. S. Arora*). *Fore wing length* : 29-32 mm.

*Distribution* : India (Himachal Pradesh—Simla, South India) to Burma.

*Remarks* : The white markings on upperside of fore and hind wing vary in size and shape. The submarginal line of white lunules

is discontinuous in fore wing. The underside of fore and hind wings bears a continuous lunular white submarginal line bordered on both sides by blackish colouration or bordered with black on inner side in hind wing. The white postdiscal spot is larger on the underside of hind wing than on its upperside. This species, previously reported from Kameng District (Rupa and Rahung), is a new record for Siang and Tirap Districts.

*Food plants* : *Glochidion arboreum* Wight, *G. lanceolarium* Dalz., *G. velutinum* Wight and *Terminalia paniculata* Roth.

### XXVII Genus *Neptis* Fabricius

1807. *Neptis* Fabricius, *Mag. f. Insektenk* (Illiger), 6 : 282.

*Type species* : *Neptis aceris* Linnaeus, 1783.

*Diagnostic characters* : This genus differs from *Euthalia* Huebner in respect of vein  $R_3$  arising from beyond the middle of vein  $R_5$  in fore wing.

*Distribution* : Eastern and southern Europe ; western, southern and eastern Africa ; Malagasy Mauritius ; India ; China ; Japan and southwards through the Malayan subregion to Australia.

*Remarks* : The butterflies of this genus are commonly known as 'The Sailors and Lascars'. The uniform pattern of the markings on the wings makes the identification of species rather difficult. Of the 30 species occurring in India, 12 are dealt with here.

#### *Key to species*

- |  |                           |
|--|---------------------------|
| 1. In fore wing vein $R_2$ arising from $R_6$ ...  | <i>hordonia</i> (Stoll)   |
| In fore wing vein $R_2$ arising from cell ...  | 2                         |
| 2. Upperside of fore wing with cell streak always divided in a basal streak and a spot beyond ...  | 3                         |
| Upperside of fore wing with cell streak and spot conjoined ...   | 8                         |
| 3. Upperside of fore wing with discal spots in interspaces 2 and 3 in line with the discal spots in interspace 5, this line being directed to costa well before apex ...                     | <i>columella</i> (Cramer) |
| Upperside of fore wing with discal spots in interspaces 2 and 3 not in line with spot in interspace 5, and line joining spots in interspaces 2 and 3 being directed to termen below apex ... | 4                         |

4. Hind wing with termen prominently chequered black and white, and markings on underside more or less black edged, particularly the inner discal band ... 5  
 Hind wing with termen not prominently chequered and markings on underside not black-edged ... 6
5. Upperside of fore wing with apical part of discal band nearer termen, crossing base of vein  $R_4$  and almost at right angle to costa ; discal spot at end cell outwardly blunt. Upperside of hind wing with discal band widening towards costa. Underside of both wings with black edgings to markings obscure ... *mahendra Moore*  
 Upperside of fore wing with apical part of discal band well behind base of vein  $R_4$  and oblique ; discal spot at end cell outwardly sharply pointed. Upperside of hind wing with discal band not widening towards costa. Underside of both wings with black edgings to markings well defined ... *hylas (Linnaeus)*
6. Upperside of hind wing with inner discal band very narrow, not entering base 3, or if so, there being equivalent darkspace at base 2. Markings on upperside of wings being usually sullied. Underside of both wings dark ochreous brown ... *soma Moore*  
 Upperside of hind wing with the inner discal band broader, always filling base 3 and extends upto base 2 or beyond. Markings on upperside of both wings normally clear. Underside of both wings bright brown ... 7
7. Upperside of fore wing with upper 3 spots of submarginal line markedly shifted in and at right angle to costa. Underside of hind wing with two submarginal white lines equally prominent ... *yerburyi Butler*  
 Upperside of fore wing with upper 3 spots of submarginal line not markedly shifted in. Underside of hind wing with two pale submarginal lines not equally prominent ... *nandina Moore*
8. Upperside of both wings with orange and yellow markings ; submarginal line on upperside of fore wing being obscure ... 9  
 Upperside of both wings without orange and yellow markings ; submarginal line on upperside of fore wing distinct ... 10

9. Upperside of fore wing with discal spots in interspaces 1 and 2 conjoined or very close, termen even. Underside of hind wing with the basal costal streak narrow and a streak at base of the cell present ... *miah* Moore
- Upperside of fore wing with discal spots in interspaces 1 and 2 well separated, termen excavated in middle. Underside of hind wing with the basal costal streak broad and without streak at the base of cell ... *ananta* Moore
10. Underside of hind wing with basal costal streak broad and extending to vein Sc+R<sub>1</sub> and no streak at base of cell ... *cartica* Moore
- Underside of hind wing with basal costal streak narrow, the latter and streak at the base of cell may or may not be prominent ... 11
11. Upperside of both wings with all markings broad and clear. Upperside of fore wing without any line between discal and sub-marginal markings ... *sankara* (Kollar)
- Upperside of both wings with all the markings very narrow. Underside of fore wing with usual pale line between discal and sub-marginal markings ... *vikasi* Horsfield

54. *Neptis columella ophiana* Moore  
(The Short-banded Sailer)  
(Plate X, nos. 77-78)

1872. *Neptis ophiana* Moore, *Proc. zool. Soc. Lond.*, : 561, ♂.

1932. *Neptis columella ophiana*, Evans, *The Identification of Indian Butterflies* : 164.

*Material examined* : Lohit District, Digaru Road, 150 m., 1 ex., 2.iii.1969 ; Dambuck, 1 ex., 5.iii.1969 (*Coll. S. K. Tandon and party*).  
*Fore wing length* : 32-34 mm.

*Distribution* : India (Uttar Pradesh—Dehra Dun) to Burma.

*Remarks* : In a specimen from Digaru Road, a white spot is broader and shorter in interspace 2 on upperside of fore wing whereas this spot is elongate and narrow in a specimen collected from Dambuck. This subspecies, previously reported from Subansiri District (Dejoo) is a new record for Lohit District.

*Food plants* : *Dalbergia* spp.

55. *Neptis mahendra* Moore

(The Himalayan Sailer)

(Plate X, nos. 79-80)

1872. *Neptis mahendra* Moore, *Proc. zool. Soc. Lond.*, : 560, pl. 32, fig. 3, ♂.

*Material examined* : Kameng District, Bhalukpong, 150 m., 1 ex., 23.iii.1973 (*Coll. S. K. Tandon and party*). Siang District, Kambang, 200 m., 1 ex., 14.x.1966, 1 ex., 16.x.1966 ; New Jining, 200 m., 3 exs., 18.x.1966 ; Daporijo Bela, 150 m., 2 exs., 27.x.1966 ; Lekhabali river, 1 ex., 6.x.1966, 1 ex., 7.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Tirap District, Deomali Forest, Nahar Katiya Road, 250 m., 1 ex., 11.x.1971 ; Jairampur, Check-post, 225 m., 1 ex., 26.x.1971 (*Coll. G. S. Arora*). Assam, North Lakhimpur, Gilagudi, 1 ex., 4.x.1966 (*Coll. S. K. Tandon and G. S. Arora*) ; Foot Hills, 1 ex., 2.iii.1973 (*Coll. S. K. Tandon and party*). *Fore wing length* : 24-29 mm.

*Distribution* : Pakistan (Chitral) to India †(Uttar Pradesh—Kumaon).

*Remarks* : The upperside of fore wing has a white discal spot in interspace 2 and this spot may be truncate or rounded. This species is a new record for the Districts of Kameng, Siang, Tirap and for Arunachal Pradesh.

56. *Neptis hylas astola* Moore

(The Common Sailer)

(Plate, XI, nos. 81-82)

1872. *Neptis astola* Moore, *Proc. zool. Soc. Lond.*, : 560.1932. *Neptis hylas astola*, Evans, *The Identification of Indian Butterflies*, : 166.

*Material examined* : Kameng District, Bom Dila Road, 650 m., 2 exs., 18.iii.1973 (*Coll. S. K. Tandon and party*). Siang District, Maghi Basti, 1 ex., 8.x.1966 ; Dali Village, 200 m., 1 ex., 10.x.1966 ; Rimi Bridge, 300 m., 1 ex., 11.x.1966 ; Kambang, 200 m., 1 ex., 14.x.1966, 2 exs., 16.x.1966 ; New Jining, 200 m., 4 exs., 18.x.1966, 2 exs., 19.x.1966 ; Old Jining, 500 m., 1 ex., 20.x.1966 ; Tappi Dulla, 500 m., 1 ex., 22.x.1966 ; Tachidoni, 400 m., 3 exs., 24.x.1966 ; Daporijo, 150 m., 1 ex., 26.x.1966, 1 ex., 27.x.1966 ; Bame, 600 m., 3 exs., 30.x.1966 ; Basar, 550 m., 1 ex., 31.x.1966 ; Lekhabali River, 50 m., 2 exs., 2.xi.1966 (*Coll. S. K. Tandon and G. S. Arora*) ; Tappi, 175 m., 2 exs., 20.iii.1973, Chako Road, 1800 m. 1 ex., 17.iii.1973 (*Coll. S. K. Tandon and party*). Assam, Charduar Forest, 125 m., 1 ex., 24.iii.1973 (*Coll. S. K. Tandon and party*). *Fore wing length* : 20-28 mm.

*Distribution* : India (Kashmir) to Burma (Karen Hills).

*Remarks* : The upperside of fore wing bears a white discoidal streak which may be entire or divided distinctly or indistinctly. On upperside of hind wing, the spots of post discal series vary in size and this series may or may not reach the costa. This subspecies is a new record for the Districts of Kameng and Siang.

*Food plants* : *Dalbergia sisoo* Roxburgh, *Spatholobus roxburghii* Benth. and *Vigna catiang* Endl.

### 57. *Neptis soma soma* Moore (The Sullied Sailer)

1859. *Neptis soma* Moore, *Proc. zool. Soc. Lond.*, : 9, pl. 49, fig. 6, ♀.

1932. *Neptis soma soma*, Evans, *The Identification of Indian Butterflies* : 166.

*Material examined* : Tirap District, Changlong Village, 600 m., 1 ex., 2.xi.1971 (*Coll. G. S. Arora*). *Fore wing length* : 21 mm.

*Distribution* : India (Uttar Pradesh—Mussoorie) to Burma.

*Remarks* : This nominate subspecies, previously reported from Assam (Sadiya and Kobo), is a new record for Tirap District. It is rare in status.

### 58. *Neptis nandina susruta* Moore (The Clear Sailer) (Plate XI, nos. 83-84)

1872. *Neptis susruta* Moore, *Proc. zool. Soc. Lond.*, : 563, pl. 32, fig. 4, ♂.

1932. *Neptis nandina susruta*, Evans, *The Identification of Indian Butterflies* : 167.

*Material examined* : Kameng District, Charduar forest, 125 m., 1 ex., 20.iii.1973, 1 ex., 24.iii.1973 ; Elephant Flat, 400 m., 1 ex., 20.iii.1969 ; Bhalukpong, 150 m., 1 ex., 23.iii.1973 (*Coll. S. K. Tandon and party*). Subansiri District, Tamen, 457 m., 1 ex., 18.v.1966, 1 ex., 20.v.1966 (*Coll. A. N. T. Joseph*). Siang District, Lekhabali river, 1 ex., 7.x.1966 ; Siji (Lekhabali), 165 m., 1 ex., 8.x.1966 ; Dali Village, 200 m., 2 exs., 10.x.1966 ; Pading village, 300 m., 1 ex., 11.x.1966 ; Rimi village, 300 m., 1 ex., 11.x.1966 ; Dali Camp 300 m., 2 exs., 12.x.1966 ; New Jining, 200 m., 1 ex., 18.x.1966 ; 3 exs., 19.x.1966 ; Tachidoni, 400 m., 1 ex., 24.x.1966 ; Daporijo, Pekho Camp, 150 m., 1 ex., 26.x.1966 ; Daporijo Bela, 150 m., 2 exs., 27.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Tezu, 150 m., 1 ex., 10.ii.1969 ; Sunpura,

100 m., 1 ex., 3.iii.1969 ; Digaru Road, 150 m., 2 exs., 11.iii.1969, Hayuliang Road, 700 m., 1 ex., 12.iii.1969 ; Chowkham Road, 100 m., 1 ex., 16.iii.1969 (*Coll. S. K. Tandon and party*) ; Chakma Village, 242 m., 2 exs., 25.ii.1969 (*Coll. J. M. Julka and party*). Tirap District, Deomali forest, 250 m., 1 ex., 4.xi.1971 (*Coll. G. S. Arora*). Assam, N. Lakhimpur, Sarabati (Rangajan), 1 ex., 3.x.1966 (*Coll. S. K. Tandon and G. S. Arora*) ; Sadiya, 100 m., 1 ex., 1.iii.1969 ; Sadiya Road 300 m., 1 ex., 8.iii.1969 ; (*Coll. S. K. Tandon and party*). *Fore wing length* : 21-28 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The upperside of the fore wing has white spots in interspaces 2 and 3 which are outwardly concave, or squarish or rounded (*Vs. concave or square vide Evans, 1932*). The discal or post discal band varies in width on the upperside of hind wing. This subspecies earlier known from Tirap District (Namdhapa) is a new record for Districts of Kameng, Subansiri, Siang and Lohit.

#### 59. *Neptis yerburyi sikkima* Evans

(The Yerburi's Sailer)

(Plate XI, nos. 85-86)

1924. *Neptis sikkima* Evans, *J. Bombay nat. Hist. Soc.*, 30 : 72-76, 4 pls.

1932. *Neptis yerburyi sikkima*, Evans, *The Identification of Indian Butterflies* : 167.

*Material examined* : Kameng District, Ankaling village, 854 m., 1 ex., 10.iii.1961 (*Coll. K.C. Jairam*). Siang District, Bame, 600 m., 4 exs., 30.xi.1966 (*Coll. S.K. Tandon and G. S. Arora*). Lohit District, Hayuliang Road, 700 m., 2 exs., 12.iii.1969 (*Coll. S. K. Tandon and party*) ; Gogai camp, 242 m., 1 ex., 29.xi.1969, Kamlang river, 640 m., 1 ex., 17.xii.1969 (*Coll. J. M. Julka and party*). Tirap District, Changlang village, 600 m., 1 ex., 2.xi.1971 (*Coll. G. S. Arora*). Assam, Foot Hills, 1 ex., 2.iii.1973 (*Coll. S. K. Tandon and party*). *Fore wing length* : 26-28 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The white markings on upperside of fore and hind wings vary in size and form. The upperside of fore wing bears white spots which are outwardly rounded or straight. This subspecies is a new record for Districts of Kameng, Siang, Lohit and Tirap as well as for Arunachal Pradesh.

*Food plant* : *Celtis australis* Linnaeus.

60. *Neptis sankara quilta* Swinhoe  
(The Broad Banded Sailer)

1897. *Neptis quilta* Swinhoe, *Ann. Mag. nat. Hist. London*, 6 (19) : 408.

1932. *Neptis sankara quilta*, Evans, *The Identification of Indian Butterflies* : 167.

*Material examined* : Kameng District, Dirang Dzong (Jungle Camp), 1 ex., 21.vii. 1961 (*Coll. S. Biswas*). *Fore wing length* : 32 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : This subspecies was also previously recorded from Rahung and Nyukmadong in Kameng District.

61. *Neptis vikasi pseudovikasi* (Moore)  
(The Dingy Sailer)  
(Plate XI, nos. 87-88)

1899-1900. *Bimbisara pseudovikasi* Moore, *Lep. ind.*, 4 : 7, pl. 291, figs. 1, 1a-1c, ♂ ♀.

1932. *Neptis vikasi pseudovikasi*, Evans, *The Identification of Indian Butterflies* : 168.

*Material examined* : Kameng District, Elephant Flat, 400 m., 2 exs., 22.iii.1973, 1 ex., 25.iii.1973, (*Coll. S. K. Tandon and party*). Siang District, Daporijo, 150 m., 1 ex., 21.x.1966, 1 ex., 26.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 26-31 mm.

*Distribution* : India (Uttar Pradesh—Kumaon to Assam).

*Remarks* : The white markings on the fore and hind wing are prominent in females than in males. This subspecies previously known from Tirap District (Namdhapa) is a new record for Kameng and Siang Districts.

62. *Neptis cartica cartica* Moore  
(The Plain Sailer)  
(Plate XII, nos. 89-90)

1872. *Neptis cartica* Moore, *Proc. zool. Soc. Lond.*, : 562, ♂ ♀.

1932. *Neptis cartica cartica*, Evans, *The Identification of Indian Butterflies* : 168.

*Material examined* : Kameng District, Elephant Flat, 400 m., 1 ex., 22.iii.1973 ; Charduar forest, 125 m., 1 ex. 24.iii. 1973 (*Coll. S.K. Tandon and party*). *Fore wing length* : 26-28 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : Evans (1932) distinguished the nominate subspecies (Sikkim—Assam) from *N. cartica burmana* de Nicéville (Assam—Burma) by broader markings. The specimens in present collection resemble

*N. cartica cartica* Moore represented in the National Zoological Collection of the Zoological Survey of India. This nominate subspecies is a new record for Kameng District.

63. ***Neptis ananta ochracea* Evans**

(The Yellow Sailer)

(Plate XII, nos. 91-92)

1924. *Neptis ananta ochracea* Evans, *J. Bombay nat. Hist. Soc.*, 30 : 79.

*Material examined* : Kameng District, Dirang Dzong (Jungle camp), 1601 m., 1 ex., 21.ix. 1961 (*Coll. S. Biswas*). *Fore wing length* : 32 mm.

*Distribution* : India (Sikkim) to Burma (Dawnas).

*Remarks* : The subspecies earlier recorded from Tirap District (Namdhapa), is a new record for Kameng District. It is rare in status.

64. ***Neptis miah miah* Moore**

(The Small Yellow Sailer)

(Plate XII, nos. 93-94)

1857. *Neptis miah* Moore, *Cat. Lep. Ins. Mus. East India Coy* : 164, pl. 4a, fig. 1♂.

1932. *Neptis miah miah*, Evans, *The Identification of Indian Butterflies* : 169.

*Material examined* : Kameng District, Elephant Flat, 400 m., 1 ex., 22.iii.1973 ; 1 ex., 25.iii.1973 (*Coll. S. K. Tandon and party*). Siang District, Tappi Dulla, 500 m., 1 ex., 22.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Sunpura, 100 m., 1 ex., 3.iii.1969 (*Coll. S. K. Tandon*). Tirap District, Changlang Village, 600 m., 1 ex., 2.xi.1971 (*Coll. G. S. Arora*). *Fore wing length* : 26-28 mm.

*Distribution* : India (Sikkim-Assam).

*Remarks* : The upperside of fore and hind wing bears a faint narrow pale submarginal line. In one of the specimens the discoidal orange red streak is not indented at the discocellular of the right side of the wing. On the upperside of hind wing there is a post-medial orange band which varies in width. This nominate subspecies is a new record for the Districts of Kameng, Siang, Lohit and Tirap as well as for Arunachal Pradesh.

65. ***Neptis hordonia hordonia* (Stoll)**

(The Common Lascar)

(Plate XII, nos. 95-96)

1791. *Papilio hordonia* Stoll, In Cramer, *Pap. exot. Suppl.*, : pl. 33, fig. 4, 4D.

1932. *Neptis hordonia hordonia*, Evans, *The Identification of Indian Butterflies* : 172.

*Material examined* : Kameng District, Bhalukpong, 150 m., 20.iii.1973 ; Charduar Forest, 125 m., 2 exs., 24.iii.1973 (*Coll. S. K. Tandon and party*). Subansiri District, Dejoo, 183 m., 1 ex., 10.v.1966 (*Coll. A. N. T. Joseph*). Siang District, New Jining, 200 m., 1 ex., 18.x.1966, 1 ex., 19.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Hayuliang, 700 m., 1 ex., 12.iii.1969 (*Coll. S. K. Tandon*). Assam, N. Lakhimpur, Gilagudi, 1 ex., 4.x.1966 (*Coll. S. K. Tandon and G. S. Arora*), Sadiya 100 m., 1 ex., 1.iii.1969 (*Coll. S. K. Tandon*). *Fore wing length* : 20-22 mm.

*Distribution* : India (Uttar Pradesh—Dehra Dun and Southern India) to Burma.

*Remarks* : The upperside of fore wing bears an orange submarginal line incurved in the middle. This nominate subspecies, previously recorded from Tirap (Namdhapa), is a new record for Kameng, Siang and Lohit Districts.

*Food plants* : *Acacia pennata* Willd and *Albizzia odoratissima* Benth.

## XXVIII Genus *Cyrestis* Boisduval

1832. *Cyrestis* Boisduval, in d' urville, Voy. 'Astrolae' *Ent.*, 1 : 117.

*Type species* : *Papilio thyonneus* Cramer, 1779.

*Diagnostic characters* : Surface of the wings crossed by dark, narrow and transverse lines ; in hind wing veins  $M_1$  and  $R_3$  approximated at origin.

*Distribution* : From India eastward through the Malaya Archipelago to Solomon islands.

*Remarks* : The butterflies of this genus are commonly known as 'The Map Butterflies'. Of the three species occurring in India, *Cyrestis thyodamas* Boisduval is dealt with here.

### 66. *Cyrestis thyodamas thyodamas* Boisduval (The Common Map)

1836. *Cyrestis thyodamas* Boisduval, *Cuv. Reg. Anim. Ins.*, 2 : pl. 138, fig. 4.

1932. *Cyrestis thyodamas thyodamas*, Evans, *The Identification of Indian Butterflies* : 173.

*Material examined* : Kameng District, Dzung, 2134 m., 2 exs., 10.vii.1961, 1 ex., 30.vii.1961 (*Coll. S. Biswas*). Siang District, Rimi Bridge, 300 m., 1 ex., 11.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Gogoi Camp, 800 m., 2 exs., 29.xi.1969 (*Coll. J. M. Julka and party*). Tirap District, Nahar Katiya Road, 250 m., 2 exs., 11.xi.1971 (*Coll. G. S. Arora*). *Fore wing length* : 28-31 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The general colouration of wings is white to pale. The upperside of fore wing bears apical and marginal dark areas which vary in width. This nominate subspecies was previously reported from Assam (Sadiya), Districts of Kameng (Momba), Subansiri (Apatani) and Tirap (Namdhapa). Varshney and Chanda (1971) reported its locality 'somewhere in NEFA'. This nominate subspecies is a new record for the Districts of Siang, Lohit and Tirap.

*Food plants* : *Ficus benghalensis* Linnaeus, *F. indica* Linnaeus, *F. memorialis* Wall., *F. palmata* Forsk, *F. racemosa* Linnaeus and *F. religiosa* Linnaeus.

### XXIX Genus *Chersonesia* Distant

1883. *Chersonesia* Distant, *Rhop. Malayana*, 1 : 86, 142.

*Type species* : *Cyrestis rahria* Moore, 1857.

*Diagnostic characters* : Fore wing with veins  $Cu_{1a}$  and  $M_3$  arising from the lower angle of cell and stalked, vein  $R_2$  arising from vein  $R_5$ .

*Distribution* : India, Indo-China to Malaysia and the Philippines.

*Remarks* : The butterflies of this genus are called 'The Maplets'. Of the two species viz., *Chersonesia risa* (Doubleday) and *C. rahria* Moore occurring in India, the former is dealt with here.

#### 67. *Chersonesia risa risa* (Doubleday) (The Common Maplet) (Plate XIII, nos. 97-98)

1850. *Cyrestis risa* Doubleday, In Doubleday, *Gen. diurn. Lep.*, 2 : 262, pl. 32, fig. 4.

1932. *Chersonesia risa risa*, Evans, *The Identification of Indian Butterflies* : 173.

*Material examined* : Siang District, Tappi Dulla, 500 m., 1 ex., 22.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Dambuk, 1 ex., 5.iii.1969 (Coll. S. K. Tandon) ; near Chakma village, 242 m., 1 ex., 29.xi.1969 (Coll. J. M. Julka). *Fore wing length* : 19-21 mm.

*Distribution* : India (Uttar Pradesh—Kumaon) to Burma.

*Remarks* : The upperside of fore wing has a straight sixth black line (vs. waved *vide*, Bingham, 1905). This nominate subspecies was previously recorded from Districts of Subansiri (Lichi and Pite) and Tirap (Deban North, Namdhapa). It is a new record for Siang and Lohit Districts.

XXX. Genus **Pseudergolis** Felder and Felder

1868. *Pseudergolis* Felder and Felder, *Reise Novara Lep. Rhop.* (3) : 404.

*Type species* : *Pseudergolis avesta* Felder and Felder, 1867.

*Diagnostic characters* : This genus differs from foregoing *Chersonesia* in respect of vein  $R_2$  free in fore wing.

*Distribution* : Indo-malayan Region and China.

*Remarks* : The butterflies of this genus are popularly called 'The Tabbies'. *Pseudergolis wedah* (Kollar) is the only species represented in India and is dealt with here.

68. **Pseudergolis wedah** (Kollar)

(The Tabby)

(Plate XIII, nos. 99-100)

1848. *Aridna wedah* Kollar, In *Huegel's Kaschmir*, 4(2) : 437.

1932. *Pseudergolis wedah*, Evans, *The Identification of Indian Butterflies* : 173.

*Material examined* : Subansiri District, Tamen, 457 m., 3 exs., 18.x.1966 (*Coll. A. N. T. Joseph*). Siang District, Daporijo, 150 m., 2 exs., 26.x.1966 ; Tappi Dulla, 500 m., 1 ex., 29.v.1966 ; Basar, 550 m., 2 exs., 31.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Dambuk, 1 ex., 5.iii.1969 ; Hayuliang Road, 700 m., 1 ex., 12.iii.1969 (*Coll. S. K. Tandon*) ; Wakro, 515 m., 1 ex., 2.xii.1969 (*Coll. J. M. Julka*). *Fore wing length* : 27-31 mm.

*Distribution* : India (Himachal Pradesh—Kulu) to Burma.

*Remarks* : The fore wing has outer margin concave between veins  $M_1$  and  $R_3$  and there are three blackish lines in the cell and the fourth one beyond the cell. The black spots of the discal row also vary in size in fore wing. This species was earlier recorded from Districts of Kameng (Rahung) and Siang (Kundum). It is a new record for Lohit District.

*Food plant* : *Debregeasia hypoleuca* Wedd.

XXXI Genus **Hypolimnas** Huebner

1819. *Hypolimnas* Huebner, *Verz. bekannt. Schmett.* (3) : 45.

*Type species* : *Papilio pipleis* Linnaeus, 1758.

*Diagnostic characters* : Eyes smooth. Cell closed in fore and hind wing ; fore wing with costa not serrated, vein Sc not swollen at base ;

hind wing without pre-discoidal cell, veins  $Cu_{1a}$  and  $M_3$  arising from the lower angle of cell and stalked.

*Distribution* : Indo-Malayan Region.

*Remarks* : The butterflies of this genus are commonly known as 'The Egg Flies'. Of the two species viz., *H. bolina* (Linnaeus) and *H. missipus* (Linnaeus) occurring in India, the former is dealt with here.

### 69. *Hypolimnas bolina* (Linnaeus)

(The Great Eggfly)

1758. *Papilio bolina* Linnaeus, *Syst. Nat.* ed. 10 : 479.

1905. *Hypolimnas bolina*, Bingham, *The Fauna of British India (Butterflies)*, 1 : 386-388.

*Material examined* : Assam, Dibrugarh, 100 m., 1 ex., 27.ii.1969 (Coll. S. K. Tandon). *Fore wing length* : 49 mm.

*Distribution* : Pakistan (Baluchistan), India, Burma and Sri Lanka.

*Remarks* : On the upperside of hind wing, the submarginal white spots are reduced in size. Evans (1932) and Wynter-Blyth (1957) referred to its occurrence being 'Common'. In 1981, this species has been listed in the 'Rare and Endangered Animals of India'. Previously this species was recorded from Siang District (between Kobo and Janakmukh).

*Food plants* : *Elatostemma cuneatum* Wight, *Fleurya interrupta* Gaud. (Nettle) and *Portulaca oleracea* Linnaeus (Pur slane).

### XXXII Genus *Doleschallia* Felder and Felder

1860. *Doleschallia* Felder and Felder, *Wien. ent. Monats*, 4 : 399.

*Type species* : *Papilio bisaltide* Cramer, 1777.

*Diagnostic characters* : Cell of fore and hind wing open. Fore wing with the costa not serrated, vein  $R_2$  free and arising out of Sc, vein  $R_3$  arising from beyond the middle of vein  $R_5$ . Hind wing tailed or lobed, vein  $R_5$  close to  $M_1$  than to vein  $Sc+R_1$  at base.

*Distribution* : India, from Sri Lanka through the Archipelago to Australia, the Bismark Archipelago and Solomon Islands.

*Remarks* : This genus in India is represented by a single subspecies i. e. *Doleschallia bisaltide indica* Moore and is dealt with here.

70. ***Doleschallia bisaltide indica* Moore**

(The Autumn Leaf)

(Plate XIII, nos. 101-102)

1900. *Doleschallia indica* Moore, *Lep. ind.*, 4 : 155, pl. 336, figs. 1, 1a-1c and 2, 2a, 2b. ♂, ♀, larva and pupa.  
 1932. *Doleschallia bisaltide indica*, Evans, *The Identification of Indian Butterflies* : 175.

*Material examined* : Siang District, Daporijo, 150 m., 1 ex., 26.x. 1966 (Coll. S. K. Tandon and G. T. Arora). Lohit District, Tezu, 150 m., 1 ex., 10.iii.1961 (Coll. S. K. Tandon). *Fore wing length* : 38-40 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The termen of fore wing is concave between veins  $R_3$  and  $R_5$ . The upperside of fore wing bears a black spot which is smaller in interspace 2 than that in interspace 5. These spots appear as ocelli on the underside. The inner margin of fore wing is whitish at the tornus. This subspecies previously reported from Subansiri District (Pite and Dodo Seram) is a new record for Siang and Lohit Districts.

*Food plants* : Plants belonging to the family Acanthaceae.

XXXIII Genus ***Kallima*** Doubleday

1849. *Kallima* Doubleday, *Gen. diurn. (paralekta)* Lep. (2) : 52, pl. 52, figs. 2, 3.

*Type species* : *Paphia paralekta* Horsfield, 1828.

*Diagnostic characters* : Fore wing with the costa not serrated, vein Sc not swollen at base, veins  $Cu_{1a}$  and  $M_3$  arising from the lower angle of cell and separated at base, in hind wing vein  $Cu_{1a}$  and  $M_3$  stalked and arising from the lower angle of the cell.

*Remarks* : The butterflies of this genus are popularly known as 'The Oak Leaf Butterflies'. Of the four species occurring in India, only *Kallima inachus inachus* (Boisduval) is dealt with here.

71. ***Kallima inachus inachus* (Boisduval)**

(The Orange Oak Leaf)

(Plate XIII, nos. 103-104)

1836. *Paphia inachus* Boisduval, In Crochard's ed., *Cuv. Reg. Anim. Ins.* 2 : pl. 139, fig. 3 ♀.  
 1932. *Kallima inachus inachus*, Evans, *The Identification of Indian Butterflies* : 175.

*Material examined* : Kameng District, Tenga valley, 1646 m., 1 ex.,- 1973 (Coll. S. K. Tandon and party). Siang District, Daporijo, 150 m.,

1 ex., 28.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Sunpura, 100 m., 1 ex., 3.iii.1969 (Coll. S. K. Tandon). Assam, Sadiya Road, 300 m., 1 ex., 8.iii.1969 (Coll. S. K. Tandon). Fore wing length : 47-49 mm.

*Distribution* : India (Sikkim to Assam).

*Remarks* : On the upperside of fore wing a straight transverse, narrow and dark brown line runs from apex or below vein  $M_3$  and the similar one on the hind wing extends to its tornus. This nominate subspecies, earlier reported from Districts of Subansiri (Apatani) Siang (between Kobo and Junakmuk), and Tirap (Namdhapa) is a new record for Lohit District.

*Food plants* : *Girardinia heterophylla* Decne and *Prunus persica* Benth. & Hook. f.

#### XXXIV Genus *Precis* Huebner

1819. *Precis* Huebner, *Verz. bekannt. Schmett.* (3) : 33.

*Type species* : *Papilio octavia* Cramer, 1777.

*Diagnostic characters* : Antennal club short, broad, flat and concave below. Wings angulated.

*Distribution* : Throughout the World except Europe.

*Remarks* : The butterflies of this genus are commonly called 'The Pansies'. All the six species occurring in India, are dealt with here.

#### *Key to species*

- |  |     |                           |
|--|-----|---------------------------|
| 1. Upperside of fore wing without an ocellus in interspace 2                           | ... | <i>iphita</i> (Cramer)    |
| Upperside of fore wing with a black spot or variegated ocellus in interspace 2         | ... | 2                         |
| 2. Upperside of hind wing with a black spot in interspace 2                            | ... | <i>hierta</i> (Fabricius) |
| Upperside of hind wing with a variegated ocellus in interspace 2                       | ... | 3                         |
| 3. Upperside of fore wing and hind wing with submarginal ocelli in all interspaces     | ... | <i>atlites</i> (Linnaeus) |
| Upperside of fore wing and hind wing without submarginal ocelli in interspaces 3 and 4 | ... | 4                         |
| 4. Upperside of fore wing with a whitish sub-apical band                               | ... | <i>orthya</i> (Linnaeus)  |
| Upperside of fore wing without whitish sub-apical band                                 | ... | 5                         |

5. Upperside of fore wing brown with pale yellow spots ... *lemonias* (Linnaeus)  
 Upperside of fore wing fulvous orange, and without pale yellow spots ... *almana* (Linnaeus)

72. ***Precis hierta magna* Evans**  
 (The Yellow Pansy)

(Plate XIV, nos. 105-106)

1932. *Precis hierta magna* Evans, *The Identification of Indian Butterflies* : 176.

*Material examined* : Kameng District, Bomdila, 2620 m., 2 exs., 2.vii.1961 ; But, 1678 m., 1 ex., 4.vii.1961, Salaron village, 1220 m., 1 ex., 10.vii.1961 (*Coll. S. Biswas*) ; Siggon (on the bank of Duplako River), 600 m., 1 ex. 31.iii.1961 (*Coll. K. C. Jairam*) ; Tenga Road, 1 ex., 18.xii.1965, Tawang Road, 1 ex., 18.xii.1965 (*Coll. S. K. Bhattacharya and A. N. T. Joseph*) ; Saitan Bridge, 1524 m., 1 ex., 23.iv.1966 (*Coll. A. N. T. Joseph*) ; Chako Road, 1800 m., 2 exs., 17.iii.1973 (*Coll. S. K. Tandon and party*). Assam, foot Hills, 1 ex., 2.iii.1973 (*Coll. S. K. Tandon and party*). *Fore wing length* : 23-28 mm.

*Distribution* : India (Sikkim and Andamans) to Burma.

*Remarks* : The female is often distinguished from the male by the presence of ocelli in the interspaces 2 and 5 of the hind wing. The black narrow bands in the cell of fore wing of male are very much reduced whereas in female these bands cross the cell. The upper-side of forewing bears three subapical yellowish spots forming a slightly transverse short band. This subspecies is a new record for Kameng District.

*Food plants* : *Asteracantha longifolia* Nees, *Barleria alata* S. Moore and *B. rubra* Ham.

73. ***Precis orithya ocyale* Huebner**  
 (The Blue Pansy)

(Plate XIV, nos. 107-108)

1819. *Precis ocyale* Huebner, *Verz. bekannt. Schmett.*, : 34.

1932. *Precis orithya ocyale*, Evans, *The Identification of Indian Butterflies* : 176.

*Material examined* : Kameng District, Salarai, 1 ex., 3.vii.1961, But 1 ex., 9.vii.1961, Dzong, 2134 m., 1 ex., 10.vii.1961, Bomdila, 2620 m., 1 ex., 11.vii.1961, 2430 m., 3 exs., 23.vii.1961, 1 ex., 28.vii.1961 (*Coll. S. Biswas*) ; Siggon, 2012 m., 1 ex., 31.iii.1961, on

bank of Duplako, 2 miles S. W. to Rupa, 1680 m., 1 ex., 1.iv.1961 (Coll. K. C. Jairam); Tenga river, 1 ex., 18.xii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph); Chako 2012 m, 1 ex., 17.iii.1973 (Coll. S. K. Tandon and party). Subansiri District, Ziro, 1585 m., 1 ex., 14.v.1966, Hapoli, 1585 m., 2 exs., 15.v.1966, Godak, 975 m., 1 ex., 23.v.1966 (Coll. A. N. T. Joseph). Siang District, Bame, 600 m., 1 ex., 30.x.1966, Basar, 550 m., 1 ex., 31.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 21-26 mm.

*Distribution* : India (Sikkim and Car Nicobar) to Burma.

*Remarks* : In female, on the upperside of fore wing there are two short orange red transverse bands bordered on both sides by black lines across the cell. These orange-red bands are absent in male. In one of the male specimens, there is a basal black angular patch curved across the cell towards the anal angle but this patch is absent in other specimens. In female, the basal half of the upperside of hind wing is black whereas the outer is brown and shaded with blue. This subspecies previously reported from Subansiri District (Jorum and Korel), is a new record for Kameng and Siang Districts.

*Food plants* : *Justicia micrantha* Heyne ex. Wall, *J. procumbens* Linnaeus and *Lepidagathis prostrata* Dalz.

#### 74. *Precis lemonias lemonias* (Linnaeus)

(The Lemon Pansy)

(Plate XIV, nos. 109-110)

1758. *Papilio lemonias* Linnaeus, *Syst. Nat.* (ed. 10) : 473.

1932. *Precis lemonias lemonias*, Evans, *The Identification of Indian Butterflies* : 176.

*Material examined* : Subansiri District, Tamen, 305 m., 1 ex., 14.v.1966 (Coll. A. N. T. Joseph). Tirap District, Wood house, Top slip, 1 ex., 30.xi.1971 (Coll. G. S. Arora). Assam, Missamari, 343 m., 1 ex., 1.vii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph); Foot hills, 1 ex., 1.iii.1973, Tezpur, 1 ex., 3.iii.1973 (Coll. S. K. Tandon and party). *Fore wing length* : 24-26 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The upperside of fore wing bears a yellowish submarginal line which may be obscure, the ocellus in interspace 5 may or may not be distinct. A black loop at the apex of cellular area is absent in hind wing. The cilia in fore and hind wing are chequered alternately with brown and light yellow. This nominate subspecies is a new record for Subansiri and Tirap Districts.

*Food plants* : *Asteracantha longifolia* Nees, *Nelsonia campestris* Br., *Sida rhombifolia* Linnaeus and *Strobilanthus* sp.

75. ***Precis almana almana*** (Linnaeus)

(The Peacock Pansy)

(Plate XIV, nos. 111-112)

1758. *Papilio almana* Linnaeus, *Syst. Nat.* (ed. 10) : 472.

1932. *Precis almana almana*, Evans, *The Identification of Indian Butterflies* : 176.

*Material examined* : Siang District, Lekhabali River, 1 ex., 7.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Gogoi camp, 800 m., 1 ex., 29.ix.1969 ; Wakro, 515 m., 4 exs., 1.xii.1969 (Coll. J. M. Julka and party). Assam, Foot Hills, 2 exs., 2.iii.1973 ; Tezpur, 1 ex., 20.iii.1973 (Coll. S. K. Tandon and party). *Fore wing length* : 25-28 mm.

*Distribution* : India, Sri Lanka and Burma.

*Remarks* : On the upperside of fore wing the first short bar consists of two lateral fuscous lines enclosing yellow colouration whereas other such bars inside or beyond the cell are filled with black colouration. In one of the specimens the upperside of hind wing is more darker than in others. This nominate subspecies, previously reported from Districts of Kameng (Rahung) and Subansiri (Dejoo and Apa Tani), is a new record for Siang and Lohit Districts.

*Food plants* : *Asteracantha longifolia* Nees, *Hygrophila* sp. and *Osbeckia* sp.

76. ***Precis atlites*** (Linnaeus)

(The Grey Pansy)

(Plate XV, nos. 113-114)

1763. *Papilio atlites* Linnaeus, *Centur. Ins.*, : 24.

1932. *Precis atlites*, Evans, *The Identification of Indian Butterflies* : 176.

*Material examined* : Siang District, New Jining, 200 m., 1 ex., 19.x.1966, Old Jining, 500 m., 2 exs., 22.x.1966, Daporijo, 150 m., 1 ex., 28.x.1966, Basar, 550 m., 1 ex., 31.x.1966, Lekhabali river, 50 m, 3 exs., 2.xi.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Chakma village, 242 m., 3 exs., 25.xi.1966, Chowkham, 242 m., 1 ex., 27.xi.1969 ; Wakro, 515 m., 1 ex. 2.xii.1969, 1 ex., 3.xii.1969 (Coll. J. M. Julka and party) ; Sunpura, 100 m., 2 exs., 3.iii.1969 (Coll. S. K. Tandon). Tirap District, Jairampur, 225 m., 1 ex., 26.x.1971 (Coll.

*G. S. Arora*). Assam, Sonai, Rupai forest, 343 m. 3 exs., 29.ii.1965 (Coll. *S. K. Bhattacharya* and *A. N. T. Joseph*); Lakhimpur, Officers' Mess, 1 ex., 4.x.1966 (Coll. *S.K. Tandon* and *G. S. Arora*); Sadiya, 100 m., 3 exs., 1.iii.1969 (Coll. *S. K. Tandon*). Fore wing length : 26-33 mm.

*Distribution* : India, Sri Lanka and Burma.

*Remarks* : Some of the specimens exhibit predominance of lilacine pink colouration in hind wings. On upperside of fore and hind wing the post discal line is smooth or irregular. This species, previously reported from Subansiri District (Dejoo and Apa Tani), is a new record for Siang, Lohit and Tirap Districts.

*Food plants* : *Asteracantha longifolia* Nees and *Barleria* sp.

77. ***Precis iphita iphita*** (Cramer)  
(The Chocolate Pansy)  
(Plate XV, nos. 115-116)

1779. *Papilio iphita* Cramer, *Pap. exot.*, 3 : pl. 209, fig. C, D.

1932. *Precis iphita iphita*, Evans, *The Identification of Indian Butterflies* : 177.

*Material examined* : Kameng District, Dirang village, 1601 m., 1 ex., 19.vii.1961, Kalikat, 290 m., 1 ex., 27.viii.1961 (Coll. *S. Biswas*); Denzy, 1227 m., 1 ex., 15.v.1961 (Coll. *K. C. Jairam*); Bhalukpong, 213 m., 1 ex., 6.v.1961 (Coll. *A. N. T. Joseph*); 150 m., 2 exs., 23.iii.1973, Charduar forest, 125 m., 4 exs., 24.iii.1973 (Coll. *S. K. Tandon* and party). Subansiri District, Tamen, 305., m., 2 exs., 14.v.1966, 2 exs., 20.v.1966 (Coll. *A. N. T. Joseph*). Siang District, Daporijo Bela, 150 m., 1 ex., 27.x.1966, Daporijo, 150 m., 1 ex., 28.x.1966; Lekhabali, Bank of Siji River, 50 m., 1 ex., 2.xi.1966, Lekhabali river, 50 m., 2 exs., 2.xi.1966 (Coll. *S. K. Tandon* and *G. S. Arora*). Lohit District, Digaru Road, 150 m., 1 ex., 2.iii.1969, Lohitpur Road, 150 m., 1 ex., 13.iii.1969 (Coll. *S. K. Tandon*). Tirap District, Deomali Forest, 250 m., 1 ex., 10.xi.1971, 1 ex., 11.xi.1971 (Coll. *G. S. Arora*). Fore wing length : 26-35 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : On the upperside of fore wing there is a well defined or a faint ocellus in interspace 2, cilia white at outer margin of the interspaces 3 and 4 and at the truncate margin. In male, there is a white postmedial spot near the costa. This nominate subspecies previously reported from Districts of Kameng (Momba and Rahung), Subansiri (Dejoo and Apa Tani), is a new record for Siang, Lohit and Tirap Districts.

*Food plants* : *Asteracantha longifolia* Nees, *Justicia micrantha* Heyne ex Wall and *Strobilanthes callosus* Nees.

### XXXV Genus *Cynthia* Fabricius

1807. *Cynthia* Fabricius, *Mag. f. Insektenk* (Illiger), 6 : 281.

*Type species* : *Papilio cardui* Linnaeus, 1758.

*Diagnostic characters* : Eyes hairy. Cell in fore and hind wing closed.

*Distribution* : World wide.

*Remarks* : Field (1971) resurrected this genus and removed it from *Vanessa* Fabricius. This genus is represented in India by a single species of *Cynthia cardui* (Linnaeus) and is dealt with here.

### 78. *Cynthia cardui* (Linnaeus)

(The Painted Lady)

(Plate XV, nos. 117-118)

1758. *Papilio cardui* Linnaeus, *Syst. Nat.* (ed. 10), 1 : 475.

1932. *Vanessa cardui*, Evans, *The Identification of Indian Butterflies* : 177.

1971. *Cynthia cardui*, Field, *Smithson. Contr. Zool.* 84 : 37.

1977. *Cynthia cardui*, Varshney, *Newsl. zool. Surv. India*, 3(1) : 13-14.

*Material examined* : Subansiri District, Zero, 1585 m., 1 ex., 13.v.1966, 2 exs., 14.v.1966 ; Hapoli, 1585 m., 1 ex., 15.v.1966 (*Coll. A. N. T. Joseph*). Lohit District, Wakro, 515 m., 3.xii.1969 (*Coll. J. M. Julka and party*). *Fore wing length* : 25-28 mm.

*Distribution* : India, Burma and Sri Lanka.

*Remarks* : The underside of hind wing bears unique markings with bluish colouration and ocelli in interspaces 3, 4, 6 are almost similar whereas those in interspaces 2 and 5 are larger. This species, earlier reported from Districts of Kameng (Momba) and Subansiri (Apatani), is a new record for Lohit District.

*Food plants* : *Argemone maxicana* Linnaeus (Hollyhock, barseem) *Artemisia vulgaris* Linnaeus, *Blumea* sp., *Debregeasia hypoleuca* Wedd. (Sinar, Searu), *Girardinia heterophylla* Decne and *Zornia diphylla* Pers.

### XXXVI *Vanessa* Fabricius

1807. *Vanessa* Fabricius, *Mag. f. Insektenk* (Illiger), 6 : 281.

*Type species* : *Papilio atalanta* Linnaeus, 1758.

*Diagnostic characters* : Eyes hairy ; cell closed in fore and hind wing and costa of forewing not serrated.

*Distribution* : World-wide.

*Remarks* : Butterflies of this genus are commonly called 'The Vanessas'. Of the 11 species occurring in India, two are dealt with here.

### *Key to species*

|   |     |                             |
|---|-----|-----------------------------|
| Hind wing with outer margin produced at vein M,     | ... | <i>cashmiriensis</i> Kollar |
| Hind wing with outer margin not produced at vein M, | ... | <i>indica</i> Herbst        |

### 79. *Vanessa indica indica* (Herbst)

(The Indian Red Admirable)

(Plate XV, nos. 119-120)

1794. *Papilio atlanta indica* Herbst, *Nat. Syst. Schmett.* 7 : 171, pl. 180, fig. 1, 2.

1912. *Vanessa indica*, Evans, *Rec. Zool. Surv. India*, 8 : 62.

1932. *Vanessa indica indica*, Evans, *The Identification of Indian Butterflies* : 177.

*Material examined* : Lohit District, Chowkham, 242 m., 2 exs., 27.xi.1969, Wakro, 515 m., 1 ex., 2.xii.1969 (*Coll. J. M. Julka & party*) ; Tezu, 150 m., 1 ex., 10.iii.1969 (*Coll. S. K. Tandon*). Tirap District, Changlang village, 600 m., 1 ex., 2.xi.1971 (*Coll. G. S. Arora*).

*Fore wing length* : 27-31 mm.

*Distribution* : India (Kashmir) to Burma.

*Remarks* : This nominate subspecies previously reported from Kameng (Momba) and Subansiri Districts (Apa Tani) is a new record for Lohit and Tirap Districts.

*Food plants* : *Girardinia heterophylla* Decne (Giant nettle) and *Urtica parviflora* Roxburgh.

### 80. *Vanessa cashmiriensis aesis* Fruhstorfer

(The Indian Tortoiseshell)

(Plate XVI, nos. 121-122)

1909. *Vanessa aesis* Fruhstorfer, In Seitz : *Macrolepidoptera of the World*, 9 : 520.

1932. *Vanessa cashmiriensis aesis*, Evans, *The Identification of Indian Butterflies* : 179.

*Material examined* : Kameng District, Naphra, 1678 m., 1 ex., 4.xii.1961 (*Coll. S. Biswas*) ; But village, 1646 m., 4 exs., 24.vi.1961 (*Coll.*

*K. C. Jairam*) ; Bomdila, 1 ex., 6.xii.1965 (Coll. *S. K. Bhattacharya* and *A. N. T. Joseph*) ; Bomdila Road, 1980 m., 1 ex., 18.iii.1973, Bhalukpong, 150 m., 23.iii.1973 (Coll. *S. K. Tandon* and party). Fore wing length : 24-30 mm.

*Distribution* : India (Himachal Pradesh—Simla to Sikkim).

*Remarks* : The upperside of fore wing has fuscous and tawny borders almost of equal width and the black spots in interspaces 1 to 3 being smaller in male than those in female. The marginal fuscous band in fore wing of female is crossed by a series of faint white lunules whereas in male this band is crossed by a white lunular line. This subspecies earlier reported from Kameng District (Momba), is a new record for But, Naphra, Bomdila and Bhalukpong of Kameng District.

*Food plants* : *Girardinia heterophylla* Decne and *Urtica dioica* Linnaeus.

### XXXVII Genus *Symbrenthia* Huebner

1819. *Symbrenthia* Huebner, *Verz. bekannt. Schmett.* (3) : 43.

*Type species* : *Symbrenthia hippocle* Huebner, 1819.

*Diagnostic characters* : Butterflies of small size, upperside of wings black and marked with orange brown bands, underside of wings being richly variegated ; vein  $R_2$  arising well before the upper angle of cell in forewing.

*Distribution* : India and Palaeartic China through the Archipelago to New Guinea.

*Remarks* : The butterflies of this genus are commonly called 'The Jesters'. Of the four species occurring in India, only *S. hippocle* Moore is dealt with here.

#### 81. *Symbrenthia hippocle khasiana* Moore

(The Common Jester)

(Plate XVI, nos. 123-124)

1874. *Symbrenthia khasiana* Moore, *Proc. zool. Soc. Lond.*, : 569, ♂ ♀

1932. *Symbrenthia hippocle khasiana*, Evans, *The Identification of Indian Butterflies* : 180.

*Material examined* : Subansiri District, Pamir, 564 m., 2 exs., 17.v. 1966 ; Tamen, 457 m., 1 ex., 18.v.1966, 1 ex., 20.v.1966 (Coll. *A. N. T. Joseph*). Siang District, Rimi bridge, 300 m., 2 exs., 11.x.1966 ; Dali

Camp, 300 m., 1 ex., 12.x.1966 ; Dali village, 300 m., 1 ex., 12.x.1966 ; 3 kms. north of Dali village 300 m., 2 exs., 12.x.1966 ; New Jining, 200 m., 1 ex., 18.x.1966 ; Old Jining, 500 m., 1 ex., 20.x.1966 ; Daporijo, 150 m., 2 exs., 27.x.1966 ; Basar 550 m., 1 ex., 31.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Digaru Road, 150 m., 1 ex., 2.iii.1969, Sunpura, 100 m., 3.iii.1969 ; Dambuk, 1 ex., 5.iii.1969, 1 ex., 8.iii.1969, Digaru Road, 150 m., 1 ex., 11.iii.1969 (Coll. S. K. Tandon) ; Wakro, 515 feet, 1 ex., 2.xii.1969, (Coll. J. M. Julka and party). Assam, Kaziranga, 1 ex., 24.ii.1969 ; Sadiya Road, 300 m., 1 ex., 8.iii.1969 (Coll. S. K. Tandon). Fore wing length : 20-26 mm.

*Distribution* : India (Eastern Ghats and Kulu) to Burma.

*Remarks* : This subspecies exhibits considerable variations regarding the size and colouration of markings. On the upperside of fore wing, the broader end of orange red sub-apical streak may or may not touch the distal end of discoidal streak. On the upperside of hind wing there is an interrupted fulvous line beyond the submarginal band and the latter being without black dots. This subspecies, previously reported from Assam (Sadiya), and Districts of Subansiri (Lichi and Apa Tani) and Tirap (Namdhapa) is a new record for Siang and Lohit Districts.

*Food plants* : *Debregeasia hypoleuca* Wedd. and *Boehmeria platyphylla* D. Don.

### XXXVIII Genus *Argynnis* Fabricius

1807. *Argynnis* Fabricius, *Mag. f. Insektenk* (Illiger) 6 : 283.

*Type species* : *Papilio paphia* Linnaeus, 1758.

*Diagnostic characters* : Antennal club abrupt and spatulate, eyes smooth and labial palpi hairy.

*Distribution* : Almost World-wide.

*Remarks* : The butterflies of this genus are popularly called 'The Fritillaries'. Of the 14 species occurring in India, only three are dealt with here.

#### *Key to species*

- |  |     |                            |
|--|-----|----------------------------|
| 1. Hind wing with precostal vein straight and rather obscure | ... | <i>lathonia</i> (Linnaeus) |
| Hind wing with precostal vein well curved forward            | ... |                            |

2. Upperside of hind wing ochreous and olive brown ... *hyperbius* (Johanssen)  
 Upperside of hind wing dark green with silvery markings ... *childreni* Gray

82. ***Argynnis hyperbius hyperbius*** (Johanssen)  
 (The Indian Fritillary)  
 (Plate XVI, nos. 125-128)

1764. *Papilio hyperbius* Johanssen, *Amoen. acad.* 6 : 408, ♀.  
 1912. *Argynnis hyperbius*, Evans, *Rec. zool. Surv. India*, 8 : 63.  
 1932. *Argynnis hyperbius hyperbius*, Evans, *The Identification of Indian Butterflies* : 182.

*Material examined* : Kameng District, Rahung village, 1800 m., 1 ex., 7.iv.1961, Salari, 400 m., 3 exs., 22.vi.1961 (*Coll. K. C. Jairam*) ; Jungle Camp, Chug valley, 2430 m., 1 ex., 10.vii.1961, Dirang, Dzong, 2135 m. 2 exs., 10.vii.1961, 1 ex., 2.viii.1961 (*Coll. S. Biswas*). Subansiri District, Denling, 229 m., 1 ex., 5.v.1966 ; Zero, 1585 m., 2 exs., 14.v.1966 ; Hapoli, 1585 m., 2 exs., 15.v.1966 ; Tamen, 457 m., 1 ex., 20.v.1966 ; Didi Camp, 1128 m., 1 ex., 20.v.1966 (*Coll. A. N. T. Joseph*). Siang District, Kambang, 200 m., 2 exs., 16.x.1966 ; Bame, 600 m., 2 exs., 30.x.1966 ; Basar, 550 m., 1 ex., 31.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Digaru Road, 150 m., 2 exs., 11.iii.1969 (*Coll. S. K. Tandon*). Assam, N. Lakhimpur, Bhaligaon, 1 ex., 2.x.1966 (*Coll. S. K. Tandon and G. S. Arora*) ; Dibrugarh, 100 m., 1 ex., 27.ii.1969 (*Coll. S. K. Tandon*). *Fore wing length* : 28-41 mm.

*Distribution* : Pakistan (Baluchistan and Chitral), India (Rajasthan—Mount Abu, Madhya Pradesh) to North Burma.

*Remarks* : In male, the upperside of fore wing has a broad transverse streak in the cell (*vs.* streak beyond the cell *vide* Bingham, 1905). In female, a black spot at the lower discocellular is very much reduced. The cilia are chequered in fore and hind wing. This nominate subspecies earlier reported from Subansiri District (Dafla and Apa Tani) is a new record for Kameng and Lohit Districts.

*Food plants* : *Antirrhinum majus* Linnaeus and *Voila* spp.

83. ***Argynnis childreni childreni*** Gray  
 (The Larger Silverstripe)  
 (Plate XVII, nos. 129-130)

1831. *Argynnis childreni* Gray, *Zool. Misc.*, 1 : 33.  
 1932. *Argynnis childreni childreni*, Evans, *The Identification of Indian Butterflies* : 182.

*Material examined* : Kameng District, Naphra, 1800 m., 1 ex.,

25.vi.1961 (Coll. K. C. Jairam). Subansiri District, Zero, 1585 m., 2 exs., 14.v.1966 ; Hapoli, 1585 m., 1 ex., 15.v.1966 ; Pamir, 564 m., 17.v.1966 (Coll. A. N. T. Joseph). Fore wing length : 42-47 mm.

*Distribution* : India (Uttar Pradesh—Kumaon) to N. Burma.

*Remarks* : The upperside of hind wing bears six black spots and that in the interspace 2 being faint and elongated. Betts (1950) referred to its habitat as that for *A. hyperbius* but much rarer. This nominate subspecies is a new record for Kameng District.

*Food plant* : *Viola* sp.

84. *Argynnis lathonia issoea* Doubleday  
(The Queen of Spain Fritillary)  
(Plate XVII, nos. 131-132)

1848. *Argynnis issoea* Doubleday, In Gray, *Lep. Ins. Nepal* : 11.

1932. *Argynnis lathonia issoea*, Evans, *The Identification of Indian Butterflies* : 183.

*Material examined* : Kameng District, Twang Camp, 2 exs., 12.xii.1965, 1 ex., 14.xii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph). Fore wing length : 21-24 mm.

*Distribution* : Pakistan (Safed Koh and Chitral), India to N. Burma.

*Remarks* : This subspecies is a new record for Kameng District as well as for Arunachal Pradesh.

XXXIX Genus *Phalanta* Horsfield

1829. *Phalanta* Horsfield, *Descr. Cat. Lep. Ins. Mus. East India Coy* (2) : pl. 7.

*Type species* : *Papilio phalantha* Drury, 1773.

*Diagnostic characters* : Cell slenderly closed in fore and hind wing ; fore wing with vein  $R_2$  arising from  $R_5$ , vein  $R_3$  ending on costa,  $R_4$  ending almost at apex.

*Distribution* : Tropical Africa and Indo-Australian Region.

*Remarks* : The butterflies of this genus are popularly known as 'The Leopards'. There are two species occurring in India of which *P. phalantha* (Drury) is dealt with here.

85. *Phalanta phalantha phalantha* (Drury)  
(The Common Leopard)

1770. *Papilio phalantha* Drury, *Exot. Inst.*, 1 : 41, pl. 21, figs. 1, 2.

1932. *Atella phalantha*, Evans, *The Identification of Indian Butterflies* : 187.

1980. *Phalanta phalantha phalantha*, Varshney et. al., *Rec. zool. Surv. India Occ. Paper No. 31* : 18-19.

*Material examined* : Lohit District, Sunpura, 100 m., 1 ex., 3.iii.1969 (Coll. S. K. Tandon). *Fore wing length* : 23 mm.

*Distribution* : India, Sri Lanka and Burma.

*Remarks* : The black markings on the upper and underside of wings are faint. The nominate subspecies previously recorded from Jorum (4000 feet) is a new record for Lohit District.

*Food plants* : *Aberia gardneri* Clos (Ketambilla), *Flacourtia montana* Grah., *F. ramontchi* L'Hert and *Salix tetrasperma* Roxburgh.

#### XL Genus *Vagrans* Hemming

1934. *Vagrans* Hemming, *Entomologist*, 67 : 77.

*Type species* : *Papilio egista* Cramer, 1780.

*Diagnostic characters* : This genus resembles the foregoing genus *Phalanta* but differs by having a tail at vein  $M_3$  in hind wing.

*Distribution* : From India, through the Archipelago, to the South Pacific Islands.

*Remarks* : The genus is represented in India by a single species, *Vagrans sinha* (Kollar) popularly known as 'The Vagrant' and is dealt with here.

#### 86. *Vagrans sinha sinha* (Kollar) (The Vagrant) (Plate XVII, nos. 133-134 )

1844. *Terinos sinha* Kollar, *In Huegel Kaschmir*, 4 (2) : 438.

1932. *Issoria sinha sinha*, Evans, *The Identification of Indian Butterflies* : 187.

1956. *Vagrans sinha sinha*, Corbet and Pendlebury, *The Butterflies of the Malay Peninsula* : 195.

*Material examined* : Siang District, Rimi Bridge, 300 m., 4 exs., 11.x.1960 ; Dali Camp, 300 m., 1 ex., 12.x.1966 ; Old Jining, 500 m., 1 ex., 20.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 28-30 mm.

*Distribution* : India (Orissa, Bengal and Sikkim) to Burma.

*Remarks* : The upperside of fore wing has a fourth transverse black line placed a little beyond the discocellular cell. The upperside of hind wing bears a postmedial series of small black spots of variable size. The interspace 4 on the underside of hind wing may bear a small yellow spot or a black speck or the spot may altogether be absent. This nominate subspecies was previously reported from Subansiri District (Pite, 2000 feet and Dejo, 250 feet). Presently, it is a new record for Siang District.

XLI Genus *Vindula* Hemming

1934. *Vindula* Hemming, *Entomologist*, 67 : 77.

*Type species* : *Papilio arsinoe* Cremer, 1777.

*Diagnostic characters* : In fore wing vein  $R_2$  arising from the cell and  $R_3$  ending at apex. Cell in hind wing partially closed by a fold ; hind wing tailed at vein  $M_3$ .

*Distribution* : India, from Sri Lanka through the Archipelago to Australia, New Guinea and the Solomon Islands.

*Remarks* : This genus is represented in India by a single species, *Vindula erota* (Fabricius), commonly known as 'The Cruiser' and it is dealt with here.

87. *Vindula erota erota* (Fabricius)  
(The Cruiser)

(Plate XVII, nos. 135-136)

1793. *Papilio erota* Fabricius, *Ent. Syst.*, 3 (1) : 76.

1932. *Cynthia erota erota*, Evans, *The Identification of Indian Butterflies* : 188.

1956. *Vindula erota erota*, Corbet and Pendlebury, *The Butterflies of the Malay Peninsula* : 196.

*Material examined* : Subansiri District, Tamen, 457 m., 1 ex., 20.v.1966 (Coll. A.N.T. Joseph). Siang District, Lekhabali, Jeep Camp, 140 m., 1 ex., 6.x.1966 ; Daporijo, 150 m., 2 exs., 26.x.1966, 1 ex., 27.x.1966 ; Tappidulla, 500 m., 1 ex., 29.x.1966, 1 ex., 31.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Hayuliang Road, 700 m., 1 ex., 12.iii.1969 (Coll. S. K. Tandon) ; Tihun Village, 1260 m., 1 ex., —. — 1969—70, Gogoi Camp, 242 m., 1 ex., —. — 1969-70 (Coll. J. M. Julka and party). *Fore wing length* : 39-49 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : On the upperside of fore wing there is a U-shaped black marking in the cell followed by a black sinuous line and a postmedial curved series of black spots ; the latter may be large in interspace 5 and 6 whereas these spots are small in other interspaces and one or two spots may be obsolete altogether. The upperside of hind wing has a ocellus in interspace 5 and this ocellus may be with or without a central lilac dot. This nominate subspecies was previously recorded from Districts of Kameng (Rupa, 6000 feet), Subansiri (Dejoo, 250 feet ; Apatani, 6000 feet) and Siang (Janakmukh). It is a new record from Lohit District.

*Food plant* : *Adenia palmata* Engl. (Wild Passion Flower).

XLII Genus **Cirrochroa** Doubleday

1847. *Cirrochroa* Doubleday, *Gen. diurn. Lep.* (1) : pl. 21, fig. 2.

*Type species* : *Cirrochroa aoris* Doubleday, 1847.

*Diagnostic characters* : Antennal club not well defined. In male veins  $M_1$  and  $R_5$  in fore wing and  $M_1$  and  $R_5$  in hind wing narrowly edged with specialized paler scales.

*Distribution* : India and Sri Lanka through the Archipelago to New Guinea.

*Remarks* : The butterflies of this genus are commonly known as 'The Yeomen'. This genus is represented in India by four species of which *C. aoris* Doubleday is dealt with.

88. **Cirrochroa aoris aoris** Doubleday

(The Large Yeomen)

(Plate XVIII, nos. 137-138)

1847. *Cirrochroa aoris* Doubleday, In Doubleday, *Gen. diurn. Lep.* (1) : 157, pl. 21, fig. 2, ♀.

1932. *Cirrochroa aoris aoris*, Evans, *The Identification of Indian Butterflies* : 188.

*Material examined* : Kameng District, Pinjuli, 244 m., 1 ex., 4.v.1966 ; Denling, 229 m., 2 exs., 5.v.1966 (*Coll. A. N. T. Joseph*). Subansiri District, Kemin, 198 m., 1 ex., 9.v.1966, 457 m., 1 ex., 18.v.1966, 3 exs., 20.v.1966 (*Coll. A. N. T. Joseph*). Siang District, Lekhabali, 140 m., 1 ex., 6.x.1966, Rimi Bridge, 300 m., 1 ex., 11.x.1966, 1 ex., 6.x.1966, 1 ex., 31.x.1966 ; Dali camp, 300 m., 4 exs., 12.x.1966 ; 3 kms. of North of Dali village, 300 m., 1 ex., 12.x.1966 ; New Jining, 200 m., 2 exs., 19.x.1966 ; Tappidulla, 500 m., 2 exs., 22.x.1966, 2 exs., 24.x.1966, 1 ex., 29.x.1966 ; Daporijo, 150 m., 2 exs., 26.x.1966, 1 ex., 27.x.1966, 1 ex., 28.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Digaru Road, 150 m., 1 ex., 11.iii.1969, Lohitpur Road, 150 m., 1 ex., 13.iii.1969 (*Coll. S. K. Tandon*) ; Wakro, 515 m., 3 exs., 1.xii.1969, 2 exs., 2.xii.1969, 1 ex. 4.xii.1969, Tihun, 1260 m., 1 ex., 11.xii.1969, Kamlang River, 640 m., 1 ex., 17.xii.1969 (*Coll. J. M. Julka and party*). Tirap District, Jairampur, 225 m., 1 ex., 25.x.1971 ; Nampong camp, 350 m., 2 exs., 18.x.1971 ; Changlang village, 600 m., 1 ex., 2.xi.1971 ; Khonsa, 850 m., 2 exs., 4.xi.1971 ; Deomali Forest, Nahar Katiya Road, 250 m., 1 ex., 11.xi.1971 (*Coll. G. S. Arora*). *Fore wing length* : 35-44 mm.

*Distribution* : India (Sikkim, Assam).

*Remarks* : Only the nominate subspecies is represented in India. On the upperside of fore wing black colouration from apex reaches vein  $Cu_{1b}$  or the inner margin. A medial black or brown zig-zag line distinct or reduced is present and a small black spot in interspace 6 is also present. Two wavy black submarginal lines are present and in some cases inner one may be indistinct. The post medial black spots are diffused in interspaces 1 and 2. The upperside of hind wing has two black and wavy submarginal lines, the outer one or both the lines may be indistinct. On the underside of fore wing there are subapical, excurved, short ashy lines in the interspaces 7 and 8. Previously reported from Districts of Subansiri (from plains and foot hills up, 3000 feet), Siang (Rotung) and Tirap (Namdhapa), this nominate subspecies is a new record for the Districts of Kameng and Lohit.

### XLIII. Genus *Cethosia* Fabricius

1806. *Cethosia* Fabricius, *Mag. f. Insektenk.* (Illiger), 6 : 280.

*Type species* : *Papilio cydippe* Linnaeus, 1767.

*Diagnostic characters* : Antennal club narrow, gradual, not flat or concave below. Outer margin of fore and hind wing deeply crenulate ; upperside of wings bright orange red (rarely green) with black bordering and with a white band or fascia on fore wing ; underside of wings richly variegated.

*Distribution* : India, Sri Lanka, through the Malay Archipelago to the Papua subregion.

*Remarks* : The butterflies of this genus are popularly known as 'The Lacewings'. Of the three species occurring in India, two are dealt with here.

#### *Key to species*

- |  |     |                       |
|--|-----|-----------------------|
| A central pale, straight and irregular band present on underside across both wings. Upperside of hind wing not marked at base with black spots below vein $Sc$ | ... | <i>biblis</i> (Drury) |
| A central pale, straight and irregular band absent on underside across both wings. Upperside of hind wing marked at base with black spots below vein $Sc$      | ... | <i>cyane</i> (Drury)  |

89. **Cethosia biblis tisamena** Fruhstorfer  
(The Red Lacewing)

(Plate XVIII, nos. 139-140)

1909. *Cethosia tisamena* Fruhstorfer, In Seitz, *Macrolepidoptera of the World*, 9 : 725.

1932. *Cethosia biblis tisamena*, Evans, *The Identification of Indian Butterflies* : 190.

*Material examined* : Kameng District, Kalaktang, 1 ex., 14.x.1961 (Coll. S. Biswas) ; Dunn Bridge, 524 m., 2 exs., 1.v.1966, Pinjuli, 244 m., 1 ex., 4.v.1966 (Coll. A. N. T. Joseph). Siang District, Daporijo, 150 m., 2 exs., 27.x.1966, 1 ex., 28.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Lohitpur Road, 150 m., 2 exs., 13.iii.1969 (Coll. S. K. Tandon). Tirap District, Deomali Forest, 1 ex., 11.xi.1971 (Coll. G. S. Arora). *Fore wing length* : 41-46 mm.

*Distribution* : India (Sikkim) to Burma.

*Remarks* : The upperside of fore wing bears a postmedial series of five lunules followed by five reniform eye spots and two small and faint subcostal spots. This subspecies previously reported from Districts of Subansiri (fairly common at all elevations upto 400 feet), Siang (Rotung) and Tirap (Namdhapa), is a new record for Districts of Kameng and Lohit.

90. **Cethosia cyane** (Drury)  
(The Leopard Lacewing)

(Plate XVIII, nos. 141-144)

1770. *Papilio cyane* Drury, *Ill. exot. Ent.* 1 : pl. 4, fig. 1.

1932. *Cethosia cyane*, Evans, *The Identification of Indian Butterflies* : 190.

*Material examined* : Siang District, Kambang, 1 ex., 16.x.1966, Daporijo, 150 m., 2 exs., 28.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Chakma village, 242 m., 1 ex., 25.xi.1969, Wakro, 515 m., 1 ex., 4.xii.1969 (Coll. J. M. Julka and party). Tirap District, Agricultural Training Farm, Changlang, 500 m., 1 ex., 1.xi.1971 ; Deomali Forest, on Deomali Nahar Katiya Road, 250 m., 1 ex., 11.xi.1971 (Coll. G. S. Arora). Assam, Tezpur, 1 ex., 31.xii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph). *Fore wing length* : 34-42 mm.

*Distribution* : India (Uttar Pradesh—Mussoorie) to Burma.

*Remarks* : In male, the upperside of fore wing has a costal white spot of subapical white band, tinged prominently with bluish. The upperside of hind wing has two black spots beyond the cell, a post-medial row of black spots of variable size but the spot being absent

in interspace 6. In female, the black spots of submarginal row join to form a line unlike that in male. This species previously known from Subansiri District (Lichi, 3000 feet) is a new record for Districts of Lohit and Tirap.

*Food plants* : *Passiflora* spp.

#### XLIV Genus *Ariadne* Horsfield

1829. *Ariadne* Horsfield, *Descr. Cat. Lepid. Ins. Mus. East India Coy* (2) : 3 (ref. pl. vi).

*Type species* : *Papilio coryta* Cramer, 1776.

*Diagnostic characters* : Eyes smooth. Wings reddish brown and crossed by narrow, black and sinuate lines but underside being greyer. In male, the underside of fore wing has a large black and velvety scales whereas a greyish nacreous area is present on the costal area of upperside of hind wing.

*Distribution* : Throughout the Oriental Region.

*Remarks* : The butterflies of this genus are commonly called 'The Castors' Of the two species, viz., *Ariadne merione* Cramer and *Ariadne ariadne* (Linnaeus), the former is dealt with here.

#### 91. *Ariadne merione assama* (Evans)

(The Common Castor)

(Plate XIX, nos. 145-146)

1924. *Ergolis merione assama* Evans, *J. Bombay nat. Hist. Soc.*, 30 : 72-96, 4 pls.

1956. *Ariadne merione*, Corbet and Pendlebury, *The Butterflies of Malay Peninsula* : 192.

*Material examined* : Siang District, Daporijo, 150 m., 1 ex., 26.x.1966, 4 exs., 27.x.1966 ; Daporijo village, 150 m., 2 exs., 27.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Subansiri District, Pamir Bridge, 564 m., 1 ex., 17.v.1966 (*Coll. A. N. T. Joseph*). Lohit District, Santipur, 100 m., 1 ex., 2.iii.1969 (*Coll. S. K. Tandon*) ; Wakro, 515 m., 3 exs. 4.xii.1969, near Chakma village, 242 m., 4 exs., 25.xi.1969 (*Coll. J. M. Julka*). Assam, N. Lakhimpur, Gilagudi, 1 ex., 3.x.1969, 1 ex., 4.x.1966 (*Coll. S. K. Tandon and G. S. Arora*) ; Foot Hills, 1 ex., 2.iii.1971 (*Coll. S. K. Tandon and party*). *Fore wing length* : 25-31 mm.

*Distribution* : India (Sikkim) to N. Burma.

*Remarks* : On the upperside of fore wing there is a prominent white and subapical spot in female whereas in male, the spot may be faint

or obsolete. This subspecies is a new record for Districts of Subansiri, Siang and Lohit as well as Arunachal Pradesh.

*Food plants* : *Ricinus communis* Linnaeus (Castor oil plant), *Tragia cannabina* Linnaeus and *T. involucrata* Linnaeus.

Family RIODINIDAE

Fore legs imperfect and brushlike in male but completely developed in female.

This family is represented in Arunachal Pradesh by four species distributed over three genera.

*Key to genera*

- |   |     |                           |
|---|-----|---------------------------|
| 1. Palpi porrect and very long  | ... | <i>Libythea</i> Fabricius |
| Palpi porrect and short   | ... | 2                         |
| 2. Eyes smooth. Hind wing not produced at tornus and without a tail at vein 1A+2A | ... | <i>Zemeros</i> Boisduval  |
| Eyes hairy. Hind wing produced at tornus and with a tail at vein 1A+2A            | ... | <i>Dodona</i> Hewitson    |

XLV Genus *Libythea* Fabricius

1807. *Libythea* Fabricius, *Mag. f. Insektenk.* (Illiger), 6 : 284.

*Type species* : *Papilio celtis* Laicharting, 1782.

*Diagnostic characters* : Very long and porrect palpi and characteristic wing shape.

*Distribution* : South Europe, Africa, the Indo-Australian Region and America.

*Remarks* : The butterflies of this genus are commonly called 'The Beaks'. The underside of the wings mimic dry leaves. Of the five species occurring in India, two are dealt with here.

*Key to species*

- |   |     |                      |
|---|-----|----------------------|
| Upperside of fore wing with an orange-yellow elongate and oval spot beyond lower angle of cell  | ... | <i>myrrha</i> Godart |
| Upperside of fore wing with an orange yellow and a quadrate spot beyond the lower angle of cell | ... | <i>lepita</i> Moore  |

92. *Libythea myrrha sanguinalis* Fruhstorfer

(The Club Beak)

1898. *Libythea myrrha* var. *sanguinalis* Fruhstorfer, *Berl. ent. Zeits.*, 43 : 169.1950. *Libythea myrrha sanguinalis*, Betts, *J. Bombay nat. Hist. Soc.*, 49 : 508.

*Material examined* : Kameng District, Charduar Forest, 125 m., 1 ex., 24.iii.1973 (*Coll. S. K. Tandon and party*). Siang District, Dali village, 200 m., 1 ex., 10.x.1966 (*Coll. S. K. Tandon and G. S. Arora*).  
*Fore wing length* : 24-26 mm.

*Distribution* : India (Himachal Pradesh—Kulu) to Burma.

*Remarks* : On the upperside of fore wing there is a small yellowish apical spot which is reduced to a speck in one specimen. The upperside of hind wing is marked with a medial orange band, the latter running from vein 1A to a little below the vein Rs (*Vs.* upto vein  $M_2$ , Bingham, 1905). This subspecies previously known from Subansiri District (Pite, 2000 feet), is a new record for Kameng and Siang Districts.

*Food plants* : *Celtis australis* Linnaeus and *C. tetrandra* Roxburgh.

93. *Libythea lepita lepita* Moore

(The Common Beak)

(Plate XIX, nos. 147-148)

1857. *Libythea lepita* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 240.1932. *Libythea lepita lepita*, Evans, *The Identification of Indian Butterflies* : 194.

*Material examined* : Lohit District, Tezu, 150 m., 1 ex., 10.iii.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 23 mm.

*Distribution* : India (Kashmir) to N. Burma.

*Remarks* : A white quadrate spot on the mid costa on the upper-side of fore wing, is absent. This nominate subspecies is a new record from Lohit District.

*Food plant* : *Celtis australis* Linnaeus.

XLVI, Genus *Zemeris* Boisduval1836. *Zemeris* Boisduval, (Roret's Suite a Buffon), *Hist. nat. Ins. Spec. gen. Lepid.*, 1 : pl. 21 [=pl. 5c], fig. 5.

*Type species* : *Papilio allica* Fabricius, 1787.

*Diagnostic characters* : Apex of fore wing acute in male and the hind wing slightly dentate at vein  $M_3$  particularly in female.

*Distribution* : Indo-Malayan Region.

*Remarks* : The butterflies of this genus are popularly called 'The Punchinellos'. The only subspecies i.e. *Zemerus flegyas indicus* Fruhstorfer occurring in India, is dealt with here.

94. *Zemerus flegyas indicus* Fruhstorfer  
(The Punchinello)

(Plate XIX, nos. 149-150)

1897. *Zemerus flegyas indicus* Fruhstorfer, *Berl. ent. Zeits.*, 42 : 333.

*Material examined* : Subansiri District, Dejoo, 180 m., 1 ex., 10.v.1966 (*Coll. A. N. T Joseph*). Siang District, Meghabasti, 1 ex., 8.x.1966 ; Siji, Lekhabali, 165-200 m., 2 exs., 8.x.1966 ; Dali village, 200 m., 1 ex., 10.x.1966 ; Kambang, 200 m., 1 ex., 14.x.1966, 2 exs., 15.x.1966, 4 exs., 19.x.1966 ; Old Jining, 500 m., 1 ex., 20.x.1966 ; Tachidoni, 400 m., 3 exs., 24.x.1966 ; Daporijo, 150 m., 1 ex., 27.x.1966 ; Bame, 600 m., 2 exs., 30.x.1966 ; Basar, 500 m., 1 ex., 31.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Wakro, 515 m., 1 ex., 2.xii.1969, 1 ex., 3.xii.1969 ; Gilo village, 1312 m., 1 ex., 11.xii.1969 ; Kamlang River, 640 m., 1 ex., 17.xii.1969 (*Coll. J. M. Julka and party*). Tirap District, Jairampur, 225 m., 2 exs., 26.x.1971, 3 exs., 27.x.1971 ; Changlang village, 600 m., 3 exs., 2.xi.1971 (*Coll. G. S. Arora*). Assam, N. Lakhimpur, Rangajan, 6 exs., 3.x.1966, 1 ex., 4.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 16-19 mm.

*Distribution* : India (Uttar Pradesh—Mussoorie) to N. Burma.

*Remarks* : The males are more darker in colour than in females. The discal series of white spots on upperside of fore wing is bordered inwardly by elongated black spots and outwardly by black lunules (*Vs.* bordered inwardly by elongate black spots *vide* Bingham, 1905). In dry season form, the white apical spots are enlarged. This subspecies previously reported from Subansiri District (Dejoo, 1500 feet ; Lichi, 3500 feet and Kore, 5000 feet) and Siang District (Rotung). This is a new record for Districts of Lohit and Tirap.

*Food plants* : *Maesa chisia* Don. and *M. indica* Wall.

XLVII Genus *Dodona* Hewitson

1861. *Dodona* Hewitson, *Ill. exot. Butts.* 2 : 91.

*Type species* : *Melitaea durga* Kollar, 1844.

*Diagnostic characters* : Underside of wings crossed by dark

transverse lines converging towards the tornus of hind wing ; veins  $M_1$  and  $R_s$  stalked in hind wing.

*Distribution* : Indo-Malayan Region.

*Remarks* : The butterflies of this genus are commonly called 'The Punches' Of the seven species occurring in India, *D. adonira* Hewitson is dealt with here.

### 95. *Dodona adonira adonira* Hewitson

(The Striped Punch)

(Plate XIX, figs. 151-152)

1866. *Dodona adonira* Hewitson, *Exot. Butts.*, 3 : pl. 1, figs. 1, 2, ♂.

1932. *Dodona adonira adonira*, Evans, *The Identification of Indian Butterflies*, : 195.

*Material examined* : Kameng District, Chug valley, 2430 m., 1 ex., 28.vii.1961 (Coll. S. Biswas). Lohit District, Chikrung, 1120 m., 1 ex., 18.xii.1969 (Coll. J. M. Julka). *Fore wing length* : 18-20 mm.

*Distribution* : India (Sikkim and Assam) and Nepal.

*Remarks* : This nominate subspecies is a new record for the Districts of Kameng and Lohit. It is rare in status.

*Food plant* : *Maesa chisia* Don.

### Family LYCAENIDAE

Butterflies predominantly blue in colour. Upperside of wings usually suffused, spotted, or banded with a variety of colours and in others may be unmarked. Precostal vein absent in hind wing, the latter may be provided with filamentous tails. Fore legs functional in both sexes and fore tarsus in female bears two claws whereas the male only one claw.

The family Lycaenidae is represented in Arunachal Pradesh by 33 species distributed over 20 genera.

#### *Key to the genera*

- |  |     |    |
|--|-----|----|
| 1. Antennal club flattened and spatulate or hollow beneath   | ... | 2  |
| Antennal club gradual and cylindrical                        | ... | 13 |
| 2. Fore wing with vein $R_s$ from before end cell            |     | 3  |
| Fore wing with veins $R_s$ and $M_1$ stalked beyond end cell | ... |    |

*Heliophorous* Geyer

|  |                             |
|--|-----------------------------|
| 3. Underside of wings with dark markings from their bases ...  | 4                           |
| Underside of wings without dark markings at their bases ...  | 5                           |
| 4. Fore wing with veins $R_1$ and $R_2$ shortly anastomosed, or touching, and then free at costa   | <i>Castalius</i> Huebner    |
| Fore wing with veins $R_1$ and $R_2$ free ...  | <i>Syntarucus</i> Butler    |
| 5. Eyes smooth or very slightly to moderately hairy ...  | 6                           |
| Eyes densely hairy ...   | 9                           |
| 6. Markings on the underside of wings not white-edged ...  | <i>Celastrina</i> Tutt      |
| Markings on the underside of wings white-edged ...   | 7                           |
| 7. Underside of hind wings with jewelled spots along margin or at tornus ...   | <i>Freyeria</i> Courvoisier |
| Underside of hind wings without jewelled spots ...   | 8                           |
| 8. Eyes slightly hairy. Underside of hind wing with a post-discal spot in interspace 6 moved in and not in line with spots in interspace 5 and 7 ...   | <i>Zizina</i> Chapman       |
| Eyes smooth. Underside of hind wing with post-discal spots in interspace 5 to 7 in line  | <i>Zizeeria</i> Chapman     |
| 9. Fore wing with veins $R_1$ and $R_2$ free ...   | 10                          |
| Fore wing with veins $R_1$ and $R_2$ free but connected by a short spur or $R_1$ and $R_2$ anastomosed ...   | 11                          |
| 10. Hind wing with cilia prolonged into three short tails at veins $1A$ , $Cu_{1b}$ and $Cu_{1a}$ ...  | <i>Anthene</i> Doubleday    |
| Hind wing with a long tail at vein $Cu_{1b}$ ...   | <i>Lampides</i> Huebner     |
| 11. Fore wing with veins $R_1$ and $R_2$ free but connected by a short spur ...  | <i>Jamides</i> Huebner      |
| Fore wing with veins $R_1$ and $R_2$ anastomosed   | 12                          |
| 12. Underside of fore wing with the post discal spot in interspace 2 in line with the spots in interspace 1b and 3. Underside of hind wing with a tornal spot in interspace 2 and there may be a small spot in interspace 1b ... | <i>Nacaduba</i> Moore       |
| Underside of fore wing with the discal spot in interspace 2 moved inwards and out of line with spots in interspace 1b and 3. Underside of hind wing with two black tornal small and equal spots ...                              | <i>Petrelaea</i> Toxopeus   |

|   |                             |    |
|---|-----------------------------|----|
| 13. Fore wing with vein $R_s$ ending on outer margin ...  | <i>Curetis</i> Huebner      |    |
| Fore wing with vein $R_s$ ending on costa ...   |                             | 14 |
| 14. Eyes smooth ...   |                             | 15 |
| Eyes hairy ...  |                             | 18 |
| 15. Hind wing without tail at vein 2A, always lobed and with a tail or tooth almost always at vein $Cu_{1b}$ , sometimes at vein $Cu_{1a}$ and even $M_s$ ... |                             | 16 |
| Hind wing always tailed at veins 2A and $Cu_{1b}$ , sometimes also at vein $Cu_{1a}$ ...  |                             | 17 |
| 16. Fore wing with veins $M_1$ and $R_s$ separate at origin. Hind wing not produced at vein $Cu_{1b}$ or tornus, tail comparatively short ...                 | <i>Surendra</i> Moore       |    |
| Fore wing with veins $M_1$ and $R_s$ close at origin. Hind wing produced at vein $Cu_{1b}$ and tail long ...  | <i>Loxura</i> Horsfield     |    |
| 17. Fore wing veins $M_1$ and $R_s$ stalked or from a point ...   | <i>Spindasis</i> Wallengren |    |
| Fore wing with veins $M_1$ and $R_s$ separate at their origin ...   | <i>Cheritra</i> Moore       |    |
| 18. Fore wing with veins $R_3$ and $R_4$ absent, Hind wing with a tail at vein 2A longer and knobbed ...  |                             | 19 |
| Fore wing with vein $R_4$ absent. Hind wing with a prominent, pendulous lobe at vein 2A ...   | <i>Rapala</i> Moore         |    |
| 19. Antennal club flattened and somewhat spatulate ...  | <i>Chliaria</i> Moore       |    |
| Antennae cylindrical as usual ...   | <i>Zelus</i> Nice ville     |    |

#### XLVIII Genus *Castalius* Huebner

1816. *Castalius* Huebner, *Verz. bekannt. Schmett.*, : 70.

*Type species* : *Castalius rosimon* Fabricius, 1775.

*Diagnostic characters* : Upperside of wings white or with a broad white discal band. Underside of wings white with very characteristic markings.

*Distribution* : Sri Lanka, India, through the Malay Archipelago to New Guinea and the Bismarck Archipelago and also tropical Africa.

*Remarks* : The butterflies of this genus are popularly called 'The Pierrots'. Of the five species occurring in India, two are dealt with here.

*Key to species*

|  |     |                            |
|--|-----|----------------------------|
| Upperside of both wings white with black spots               | ... | <i>rosimon</i> (Fabricius) |
| Upperside of both wings black with a broad white discal band | ... | <i>elna</i> (Hewitson)     |

96. *Castalius rosimon rosimon* (Fabricius)

(The Common Pierrot)

(Plate XX, nos. 153-154)

1775. *Papilio rosimon* Fabricius, *Syst. Ent.*, : 523.1912. *Castalius rosimon*, Evans, *Rec. Zool. Surv. India*, 8 : 64.1962. *Castalius rosimon rosimon*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies, 1932*, : 31.

*Material examined* : Kameng District, Bhalukpong, 150 m., 1 ex., 23.iii.1973 (Coll. S. K. Tandon and party). Lohit District, Dambuk, 1 ex., 5.iii.1969 (Coll. S. K. Tandon). Assam, Tezpur, 1 ex., 3.iii.1973, (Coll. S. K. Tandon and party). *Fore wing length* : 14-16 mm.

*Distribution* : India, Pakistan, Burma and Sri Lanka.

*Remarks* : The upperside of wings shows variations in the size of spots and bands. This nominate subspecies previously reported from Assam (Sadiya), is a new record for Lohit District as well as for Arunachal Pradesh.

*Foot plants* : *Ziziphus mauritiana* Lamarck (Ber) and *Z. rugosa* Lamarck (Wild Ber Bush).

97. *Castalius elna noliteia* Fruhstorfer

(The Elbowed Pierrot)

(Plate XX, nos. 155-156)

1918. *Castalius elna noliteia* Fruhstorfer, *Tijdschr. Ent.*, 61 : 37.

*Material examined* : Siang District, Dali village, 200 m., 2 exs., 10.x.1966, 300 m., 1 ex., 12.x.1966 (Coll. S. K. Tandon and G. S. Arora). Tirap District, Deomali Forest, 250 m., 1 ex., 9.xi.1971 (Coll. G. S. Arora and party). *Fore wing length* : 14-16 mm.

*Distribution* : India (Orissa, Sikkim and Andaman Islands) to Burma.

*Remarks* : The upperside of fore wing bears a white medial band varying in width, the outer margin of which is regular than the inner

one. Earlier known from Assam (Sadiya and Kobo) and Tirap District (Namdhapa), this subspecies is a new record for Siang District.

#### XLIX Genus *Syntarus* Butler

1901. *Syntarucus* Butler, *Proc. zool. Soc. Lond.*, (1900), (4) : 929.

*Type species* : *Papilio telicanus* Lang, 1789.

*Diagnostic characters* : In fore wing veins  $R_1$  and  $R_2$  free,  $R_5$  before end cell. Underside of wings with dark markings from their extremities bases.

*Distribution* : India, Nepal, Burma and Sri Lanka.

*Remarks* : The butterflies of this genus are commonly known as 'The Zebras'. Only a single species i. e. *Syntarucus plinius* (Fabricius) occurring in India, is dealt with here.

#### 98. *Syntarucus plinius* (Fabricius)

(The Blue Zebra)

1793. *Hesperia plinius* Fabricius, *Ent. Syst.*, 3 : 284.

1907. *Tarucus plinius*, Bingham, *The Fauna of British India (Butterflies)*, 2 : 420-421.

1962. *Syntarucus plinius*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 34.

*Material examined* : Lohit District, Gogoi camp, 242 m. , 1 ex., 25.xi.1962 (Coll. J. M. Julka). *Fore wing length* : 14 mm.

*Distribution* : India, Nepal, Burma, Sri Lanka and Pakistan.

*Remarks* : The markings on the underside of wings are variable in form (*Vs.* definite form). This species is a new record for Lohit District.

*Food plants* : *Albezzia lebbek* (Linnaeus) Benth. (Kokko), *Indigofera* sp. and *Sesbania aculeata* Pers. (Jainta).

#### L Genus *Celastrina* Tutt.

1906. *Celastrina* Tutt, *Ent. Rec.*, 18 : 131.

*Type species* : *Papilio argiolus* Linnaeus, 1758.

*Diagnostic characters* : Upperside of wings in male usually blue with a rather narrow black borders ; in female, the upperside of wings white, pale blue or purple, often with white discal areas and broadly bordered with black. Underside usually pale, bluish white or grey, with usual lycaenine markings indicated by narrow dark streaks.

*Distribution* : In Oriental Region from Sri Lanka and India through the Archipelago to New Guinea and Bismarcks.

*Remarks* : The butterflies of this genus are commonly called 'The Hedge Blues' Of the 14 species occurring in India, three are dealt with here.

*Key to species*

- |   |                                 |
|---|---------------------------------|
| <p>1. Fore wing with veins R<sub>1</sub> and Sc bent towards or may even touch each other. Vein Sc ending over end cell ...</p>   | <p><i>puspa</i> (Horsfield)</p> |
| <p>Fore wing with veins R<sub>1</sub> and Sc more or less straight and separate. Vein Sc ending before end cell ...</p>   | <p>2</p>                        |
| <p>2. Underside of both wings pale bluish white, with markings rather faint and not white edged. In male, upperside of fore wing with black border thread like ...</p>            | <p><i>dilectus</i> (Moore)</p>  |
| <p>Underside of both wings grey, with reddish dusting, and the heavier markings edged with white. In male, upperside of fore wing with black border widening towards apex ...</p> | <p><i>limbata</i> (Moore)</p>   |

**99. *Celastrina puspa gisca* (Fruhstorfer)**

(The Common Hedge Blue)

1910. *Cyaniris puspa gisca* Fruhstorfer, *Stett. Ent. Ztg.*, 71 : 285.

1962. *Celastrina puspa gisca*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 42.

*Material examined* : Siang District, Dali Village, 200 m., 2 exs., 10.x.1966 ; 3 kms. North of Dali Village, 300 m., 1 ex., 12.x.1966 ; Kambang, Perying, 200 m., 1 ex., 15.x.1966 ; New Jining, 200 m., 2 exs., 18.x.1966, 2 exs., 19.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 14-16 mm.

*Distribution* : India, Nepal, Northern Burma and Pakistan.

*Remarks* : This subspecies is a new record for Siang District as well as for entire Arunachal Pradesh.

*Food plants* : *Cycas circinalis* Linnaeus (Janglimadan-mast-ka-phul), *C. rumphii* Miq., *Cylista scariosa* Roxburgh, *Hiptage benghalensis* (Linnaeus) Kurz., *Litchi chinensis* Sonn. (Lichi), *Schleichera oleosa* (Lour.) Oken and *Xylia xylocarpa* (Roxb.) Taub.

100. **Celastrina limbata placida** (de Nicéville)  
(The Plain Hedge Blue)  
(Plate XX, nos. 157-158)

1883. *Cyaniris placida* de Nicéville, *J. Asiat. Soc. Beng.*, 52 : 68, pl. 1, fig. 8, ♂.  
1912. *Cyaniris limbata placida*, Evans, *Rec. Zool. Surv. India*, 8 : 64.  
1962. *Celastrina limbata placida*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 47.

*Material examined* : Siang District, Daporijo, Bela, 150 m., 1 ex., 27.x.1966 ; Bame, 600 m., 1 ex., 29.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 12 mm.

*Distribution* : India (Uttar Pradesh—Dehra Dun) to Burma and Nepal.

*Remarks* : The upperside of fore wing has a marginal black border varying in its width. The underside of fore and hind wing bears black spots of variable size. Earlier, this subspecies was known from District of Tirap (Namdhapa). It is a new locality record for Siang District.

101. **Celastrina dilectus** (Moore)  
(The Pale Hedge Blue)  
(Plate XX, nos. 159-160)

1879. *Polyommatus dilecta* Moore, *Proc. zool. Soc. Lond.* : 139.  
1912. *Cyaniris dilecta*, Evans, *Rec. zool. Surv. India*, 8 : 64.  
1962. *Celastrina dilectus*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 47.

*Material examined* : Siang District, Rimi Bridge, 300 m., 1 ex., 11.x.1966 ; Kambang, 200 m., 1 ex., 14.x.1966 ; New Jining, Tarak, 200 m., 1 ex., 18.x.1966 ; Daporijo, 150 m., 1 ex., 27.x.1966 ; Basar, 550 m., 2 exs., 31.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). *Fore wing length* : 14-16 mm.

*Distribution* : Previously, this species was reported from Siang (Rotung). It is a new record for Kambang, New Jining, Daporijo and Basar in the Siang District.

LI Genus **Freyeria** Courvoisier

1920. *Freyeria* Courvoisier, *Dt. ent. Z. Iris*, Dresden. 34 : 234.

*Type species* : *Lycaena trochylas* Freyer, 1845.

*Diagnostic characters* : Eyes slightly hairy. Fore wing with vein R<sub>5</sub> arising before end cell. Underside of fore and hind wing without

dark markings at their bases, other markings white edged ; jewelled spots along margin or tornus.

*Distribution* : Pakistan , South to North Eastern India, Burma and Sri Lanka.

*Remarks* : This genus is represented by a subspecies i.e. *Freyeria trochilus putli* (Kollar) in India and is dealt with here.

## 102. *Freyeria trochilus putli* (Kollar)

(The Ceylon Grass Jewel)

1848. *Lycaena putli* Kollar, In *Huegel's Kaschmir*, 4(2) : 422, no. 8.

1932. *Zizeeria trochilus putli*, Evans, *The Identification of Indian Butterflies* : 233.

1962. *Freyeria trochilus putli*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 62.

*Material examined* : Lohit District, Alubari, 242 m., 1 ex., 23.xi.1969 ; Wakro, 515 m, 1 ex., 2.xii.1969 (*Coll. J. M. Julka and party*). *Fore wing length* : 10-11 mm.

*Distribution* : South to North East India, Sri Lanka and Burma.

*Remarks* : This subspecies is a new record for Lohit District as well as for Arunachal Pradesh.

*Food plants* : *Heliotropium strigosum* Willd., *Indigo* sp., *Lotus corniculatus* Linnaeus (Pea pods), *Rhynchosia minima* DC. and Vetches.

## LII Genus *Zizina* Chapman

1910. *Zizina* Chapman, *Trans. ent. Soc. Lond.* : 482.

*Type species* : *Polyommatus labradus* Godart, 1824.

*Diagnostic characters* : Upperside of wings in male dark blue, usually broader variable borders ; upperside of wings in female with more or less basal suffusion. Underside of fore wing without costal spots or spot in cell ; in hind wing discal spots in interspace 6 shifted in and not in line with spots in interspaces 5 and 7.

*Distribution* : India (Madhya Pradesh, from Himalaya to Andaman), Indo-china, Malaya, Taiwan. Australia, Sydney, Salomons and from Brisbane to Cape York.

*Remarks* : The butterflies of this genus are known as 'The Lesser Grass Blues' and a single species occurring in India, is dealt with here.

103. *Zizina otis sangra* (Moore)  
(The Lesser Grass Blue)

1865. *Polyommatus sangra* Moore, *Proc. zool. Soc. Lond.* : 772, pl. 61, fig. 8, ♂.  
1890. *Zizera sangra*, de Nicéville, *The Butterflies of India, Burma, and Ceylon*, 3 : 120-121.  
1962. *Zizina otis sangra*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 63.

*Material examined* : Kameng District, Dirang Dzong, 1 ex., 10.vii. 1961 (Coll. S. Biswas). *Fore wing length* : 11 mm.

*Distribution* : India (Bengal, Sikkim, Assam, Andaman and Nicobar Islands), Burma and South East Asia.

*Remarks* : This subspecies is a new record for Kameng District as well as for Arunachal Pradesh.

*Food plants* : *Alysicarpus vaginalis* DC (Gram), *Sesbania aculeata* Pers. (Jainta) and *Zornia diphylla* Pers.

LIII Genus *Zizeeria* Chapman

1910. *Zizeeria* Chapman, *Trans. ent. Soc. Lond.* : 480, 482.

*Type species* : *Polyommatus karsandra* Moore, 1865.

*Diagnostic characters* : Underside of fore wing with a grey spot in cell and a spot in interspace 7 on costa between discal spot in interspace 6 and a spot at the end cell. Underside of hind wing with a spot near the base of 1c below the cell, a discal spot in interspace 1c, a discal spot in interspace 6 mid way between spots in interspaces 5 and 7.

*Distribution* : India, Arabia, Africa, Southern Europe, spread across whole of western and southern Asia, to the east it even proceeds beyond the whole southern part of eastern Asia, extending to the southern Australia and in the Africa as far as the Cape of Good Hope.

*Remarks* : The butterflies of this genus are popularly known as 'The Grass Blues'. Two species viz., *Zizeeria maha* (Kollar) and *Z. knysna karsandra* (Moore) occurring in India are dealt with here.

*Key to species*

|  |     |                        |
|--|-----|------------------------|
| In male, upperside of both wings light blue and sometimes silvery blue. In female, upperside of both wings brownish black, sometimes purplish at bases | ... | <i>maha</i> (Kollar)   |
| In male, upperside of both wings violet blue. In female, upperside of both wings pale satiny brown   | ... | <i>knysna</i> (Trimen) |

104. **Zizeeria maha maha** (Kollar)  
(The Pale Grass Blue)

1848. *Lycaena maha* Kollar, In *Huegel's Kaschmir*, 4 : 422.

1962. *Zizeeria maha maha*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 64.

*Material examined* : Kameng District, Dirang Dzong, 1601 m., 1 ex., 19.vii.1961 (Coll. S. Biswas). Lohit District, Chowkham, 242 m., 1 ex., 25.xi.1969 ; Hayuliang, 1 ex., 16.i.1970 ; Tezu, 3 exs., 20.i.1970 (Coll. J. M. Julka and party). Assam, Sadiya, 100 m., 2 exs., 1.iii.1969, Tezu, 150 m., 1 ex., 10.iii.1969 (Coll. S. K. Tandon). *Fore wing length* : 10-12 mm.

*Distribution* : India (Central to North India, Sikkim), Nepal, Burma, Kurram and Pakistan (Baluchistan).

*Remarks* : This nominate subspecies previously known from Tirap (Namdhapa) is a new record for Districts of Kameng and Lohit.

105. **Zizeeria knysna karsandra** (Moore)  
(The Dark Grass Blue)

1865. *Polyommatus karsandra* Moore, *Proc. zool. Soc. Lond.* : 505, no. 106, pl. 31, fig. 7, ♀.

1962. *Zizeeria knysna karsandra*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 64.

*Material examined* : Lohit District, Wakro, 515 m., 1 ex., 2.xii.1969 (Coll. J. M. Julka and party). *Fore wing length* : 10 mm.

*Distribution* : India, Pakistan, Sri Lanka and Burma.

*Remarks* : The underside of fore and hind wing has small and well defined spots. This subspecies is a new record for Lohit District as well as for Arunachal Pradesh.

*Food plants* : *Amarantus viridis* Linnaeus and *Zornia diphylla* Pers.

LIV Genus **Anthene** Doubleday

1847. *Anthene* Doubleday, *List. Spec. Lep. Ins. Brit. Mus.*, 2 : 27.

*Type species* : *Papilio larydas* Cramer, 1780.

*Diagnostic characters* : Adults resemble species of *Nacaduba* in general appearance except being more robust. Antennal club longer and more gradual than in allied genera. Hind wing with very short tail and the latter hardly noticeable.

*Distribution* : From India through the Archipelago to New Guinea, Solomon Islands and Tropical Africa.

*Remarks* : The butterflies of this genus are commonly called 'The Ciliate Blues'. Two species, viz. *Anthene emolus* (Godart) and *A. lycaenoides* (Felder), occurring in India are dealt with here.

*Key to species*

|   |     |                             |
|---|-----|-----------------------------|
| Underside of hind wing with a large basal black spot in interspace 7; discal band almost continuous                           | ... | <i>emolus</i> (Godart)      |
| Underside of hind wing with a small basal black spot in interspace 7 or at vein Rs; discal band broken at vein M <sub>1</sub> | ... | <i>lycaenoides</i> (Felder) |

106. *Anthene emolus emolus* (Godart)  
(The Ciliate Blue)  
(Plate XXI, nos. 161-162)

1823. *Polyommatus emolus* Godart, *Ency. meth.* 9 : 656.

1912. *Lycaenesthes emolus*, Evans, *Rec. zool. Surv. India*, 8 : 64.

1962. *Anthene emolus emolus*, Cantlie, *The Lycaenidae portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 66-67.

*Material examined* : Siang District, 3 kms. North of Dali Village, 200 m., 2 exs., 10.x.1966; Rimi Bridge, 300 m., 2 exs., 11.x.1966 (Coll. S.K. Tandon and G. S. Arora). *Fore wing length*. 13-15 mm.

*Distribution* : India (Bihar, Bengal, Sikkim and South India), Nepal and Burma.

*Remarks* : This nominate subspecies previously reported from Assam (Sadiya) and Tirap District (Namdhapa) is a new record for the Siang District.

*Food plants* : *Cassia fistula* Linnaeus (Amaltas, Girimalah, Indian Laburnum), *Combretum extensum* Roxburgh, *Heynia trijuga* Roxburgh, *Litchi chinensis* Sonn. (Lichi), *Mangifera indica* Linnaeus (Mango), *Saraca indica* Linnaeus, *Shorea talura* Roxburgh and *Terminalia paniculata* Roth.

107. *Anthene lycaenoides lycambes* (Hewitson)  
(The Painted Ciliate Blue)  
(Plate XXI, nos. 163-164)

1878. *Lycaenesthes lycambes* Hewitson, *Ill. diurn. Lep.* : 220, pl. 90, figs. 11, 12, ♂.

1962. *Anthene lycaenoides lycambes*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 67.

*Material examined* : Lohit District, Gogoi Camp, 242 m, 1 ex., 25.xi.1969 (Coll. J. M. Julka and party). *Fore wing length* : 14 mm.

*Distribution* : India (Sikkim and Andaman Islands) to Burma.

*Remarks* : This subspecies is a new record for Lohit District as well as for Arunachal Pradesh.

*Food plants* : *Acacia pennata* Willd., *Buchanania lanzan* Spreng. and *Wagatea spicata* Dalzman.

#### LV. Genus *Lampides* Huebner

1889. *Lampides* Huebner, *Verz. bekannt. Schmett.* (5) : 70.

*Type species* : *Papilio boeticus* Linnaeus, 1767.

*Diagnostic characters* : In male, upperside of both wings covered with hair like scales, the latter giving them a frosted appearance. The underside of wings with a pattern of transverse fasciae in the distal halves.

*Distribution* : Southern Europe, throughout Africa and Indo-Australian Region as far east as Hawaii.

*Remarks* : The butterflies of this genus are known as 'The Pea Blues'. Only a single species i.e. *Lampides boeticus* (Linnaeus) occurring in India is dealt with here.

#### 108. *Lampides boeticus* (Linnaeus)

(The Pea Blue)

(Plate XXI, nos. 165-166)

1767. *Papilio boeticus* Linnaeus, *Syst. Nat.* (ed. 12) : 78.

1912. *Polyommatus boeticus*, Evans, *Rec. zool. Surv. India*, 8 : 65.

1962. *Lampides boeticus*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 69.

*Material examined* : Lohit District, Wakro, 515 m. 1 ex., 1.xii.1969 (Coll. J. M. Julka and party). Assam, Balipara, 1 ex., 26.xii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph); Chako road, 183 m. 2 exs., 17.iii.1973; Elephant Flat, 400 m., 3 exs., 22.iii.1973; Tenga Valley, 1680 m, 1 ex., iii.1973 (Coll. S. K. Bhattacharya and party). *Fore wing length* : 15-17 mm.

*Distribution* : India, Nepal, Sri Lanka and Pakistan.

*Remarks* : The upperside of fore wing has a fourth brownish band (beyond discocellulars) running from costa to vein  $M_3$  and this band

is broader in one specimen. Previously reported from Districts of Siang (Rotung) and Tirap (Namdhapa), this species is a new record for Lohit District.

*Food plants* : *Butea monosperma* (Lamarck) Kurze (Dhak, Palas, The Flame of the forest), *Cajanus cajan* Lamarck (Redgram, Pigeon Pea), *Crotolaria incana* Linnaeus, *C. juncea* Linnaeus, *C. pallida* Ait. *Dolichos lablab* Linnaeus, and *Melilotus* sp. and *Pisum sativum* Linnaeus.

#### LVI Genus *Jamides* Huebner

1819. *Jamides* Huebner, *Verz. bekannt. Schmett.* (5) : 71.

*Type species* : *Papilio bochus* Stoll, 1782.

*Diagnostic characters* : In male, the upperside of wings with a narrow black margin of fore wing ; in female (upperside) the apical black border being broad in fore wing and a submarginal spot in the hind wing. The underside of hind wing is traversed by narrow white stripes and the black tornal spot in hind wing being crowned with bright orange.

*Distribution* : From Sri Lanka and India to Taiwan and through the Archipelago to Australia, the New Hebrides, Fiji and Tonga Islands.

*Remarks* : The butterflies of this genus are popularly known as 'The Ceruleans'. Of the eight species occurring in India, only two are dealt with here.

#### *Key to species*

|  |     |                        |
|--|-----|------------------------|
| Underside of fore wing with third white line from base continuous from costa to inner margin     | ... | <i>bochus</i> (Cramer) |
| Underside of fore wing with third white line from base not continuous from costa to inner margin | ... | <i>elpis</i> (Godart)  |

#### 109. *Jamides bochus bochus* (Cramer)

(The Dark Cerulean)

(Plate XXI, nos. 167-168)

1782. *Papilio bochus* Cramer, *Pap. exot.* 4 : 210, pl. 391, figs. C, D.

1962. *Jamides bochus bochus*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 70.

*Material examined* : Siang District, Rimi Bridge, 300 m., 1 ex., 11.x.1966 ; Kambang, 200 m., 1 ex., 16.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 14-16 mm.

*Distribution* : India, Pakistan, Nepal, Burma and Sri Lanka.

*Remarks* : The underside of hind wing bears nine white lines from vein Sc+R<sub>1</sub> (*Vs.* nine white lines from costa *vide* Bingham, 1907). Previously reported from Assam (Sadiya), this nominate subspecies is a new record for the District of Siang.

*Food plants* : *Butea monosperma* Lamarck (Dhak, Palas, The Flame of the forest), *Citrus* sp., *Cajanus cajan* Lamarck (Redgram, Pigeon Pea, Congo Pea), *Crotolaria* sp., *Pongamia pinnata* (Linnaeus), Pierre (Karang), *Tephrosia candida* DC., *Vigna catjang* Endl. (Lobia, Rajmah) and *Xylia dolabriformis* Benth.

### 110. *Jamides elpis atina* (Fruhstorfer)

(The Glistening Cerulean)

1915A. *Lampides atina* Fruhstorfer, *Arch. Naturgesch. Berlin*, : 9.

1962. *Jamides elpis atina*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies, 1932*, : 72.

*Material examined* : Assam, Kaziranga, 100 m., 1 ex., 23.xi.1969 (Coll. S. K. Tandon). *Fore wing length* : 16 mm.

*Distribution* : India (Sikkim to Assam).

*Remarks* : The underside of hind wing has orange crown often obsolete and tornal spot is much reduced (*Vs.* orange crown of tornal spot on underside of hind wing always conspicuous and sometimes very wide). This subspecies was also previously reported from Assam (Kobo) and Siang District (Rotung).

*Food plants* : *Elettaria cardamomum* Salisb. and *Kaemferia pandurata* Roxburgh.

## LVII Genus *Nacaduba* Moore

1881. *Nacaduba* Moore, *Lep. Ceylon*, 1 (3) : 88.

*Type species* : *Lampides prominens* Moore, 1877.

*Diagnostic characters* : Antennal club flattened and spatulate or hollow beneath. Eyes densely hairy. Fore wing has vein R<sub>5</sub> from before end cell, veins R<sub>1</sub> and R<sub>2</sub> anastomosed. The underside of wings is without dark markings at their bases. The fore wing has a post discal spot in interspace 2 in line with the spots in interspaces 1 b and 3 and

hind wing bears a black tornal spot in interspace 2 and there may be a small spot in interspace 1b.

*Distribution* : From India and Sri Lanka throughout the Archipelago to Australia and as far east as Samoa.

*Remarks* : The butterflies of this genus are commonly known as 'The Line Blues'. Of the 14 species occurring in India, six are dealt with here.

### Key to species

- |   |     |                             |
|---|-----|-----------------------------|
| 1. Underside of fore wing without a pair of basal pale lines  | ... | 2                           |
| Underside of fore wing with a pair of basal pale lines  | ... | 4                           |
| 2. Underside of both wings with broad striae  | ... | <i>pactolus</i> (Felder)    |
| Underside of both wings with narrow striae  | ... | 3                           |
| 3. In male, upperside of both wings violet blue with a slightly frosted appearance. In female, upperside of both wings pale shining blue with a slight purple tinge; on fore wing black border not increasing towards tornus and on hind wing the blue colour covering more than half of wing | ... | <i>hermus</i> (Felder)      |
| In male, upperside of both wings matt dark purplish blue. In female, upperside of both wings deeper blue; on fore wing black border increasing markedly towards tornus and on hind wing the blue colour covering less than half the wing  | ... | <i>subperusia</i> (Snellan) |
| 4. Underside of both wings with space filling between discal lines darker than the ground colour  | ... | <i>nora</i> (Felder)        |
| Underside of both wings with the space filling between discal lines not distinctly darker than ground colour  | ... | 5                           |
| 5. Underside of both wings with markings pale yellowish and spaces between discal lines not broader than usual  | ... | <i>beroe</i> (Felder)       |
| Underside of both wings with the markings white and spaces between the discal lines broader than usual  | ... | <i>aluta</i> (Druce)        |

### 111. *Nacaduba pactolus continentalis* (Fruhstorfer)

(The Large Four Line Blue)

1911. *Loxura continentalis* Fruhstorfer, *Berl. Ent. Ztschr.*, 56 : 221.

1962. *Nacaduba pactolus continentalis*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 75.

*Material examined* : Siang District, Dali Camp, 300 m., 2 exs., 12.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 16 mm.

*Distribution* : India (S. India and Sikkim) to Burma and Nepal.

*Remarks* : This subspecies is a new record for Siang District as well as for Arunachal Pradesh. It is rare in status.

112. **Nacaduba hermus nabo** Fruhstorfer  
(The Pale Four Line Blue)

1916. *Nacaduba pavona nabo* Fruhstorfer, *Zool. Meded. Leiden*, 2 : 108.

1962. *Nacaduba hermus nabo*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 76.

*Material examined* : Tirap District, Pangsau Pass, 1265 m., 1 ex., 28.x.1971 (Coll. G. S. Arora). *Fore wing length* : 14 mm.

*Distribution* : India (Sikkim and Assam) and Burma.

*Remarks* : This subspecies constitutes a new locality record from Tirap District as well as for Arunachal Pradesh. It is rare in status.

113. **Nacaduba subperusia lysa** Fruhstorfer  
(The Violet Four Line Blue)  
(Plate XXI, nos. 169-170)

1916. *Nacaduba pavona lysa* Fruhstorfer, *Zool. Meded. Leiden*, 2 : 109.

1962. *Nacaduba subperusia lysa*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 76.

*Material examined* : Siang District, New Jining, 1 ex., 19.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 15 mm.

*Distribution* : India (Assam and Andaman Islands).

*Remarks* : This subspecies is a new locality record for Siang District as well as for Arunachal Pradesh. It is rare in status.

114. **Nacaduba beroe gythion** Fruhstorfer  
(The Opaque Six Line Blue)  
(Plate XXII, nos. 171-172)

1916. *Nacaduba atrata gythion* Fruhstorfer, *Zool. Meded. Leiden*, 2 : 131.

1962. *Nacaduba beroe gythion*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 79.

*Material examined* : Siang District, 3 kms. North of Dali village, 200 m., 3 exs., 10.x.1966 ; Pading village, 300 m., 1 ex., 11.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 13-15 mm.

*Distribution* : India (South India and Sikkim) and Burma.

*Remarks* : The discal portion of the upperside of fore wing is covered with white hairs. This subspecies is a new record for Siang District as well as Arunachal Pradesh.

*Flood plant* : *Wagate spicata* Dalzman.

### 115. *Nacaduba aluta coelestis* de Nicèville

(The Banded Line Blue)

1886. *Nacaduba coelestis* de Nicèville, *J. Asiat. Soc. Beng.*, 4(2) : 366, no. 122, pl. 17, fig. 11, ♂.  
 1962. *Nacaduba aluta coelestis*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 80.

*Material examined* : Siang District, Kambang, 200 m., 1 ex., 16.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 12 mm.

*Distribution* : India (Uttar Pradesh—Kumaon) to Burma.

*Remarks* : This subspecies is a new locality record for Siang District as well as for Arunachal Pradesh. It is rare in status.

### 116. *Nacaduba nora nora* (Felder)

(The Common Line Blue)

(Plate XXII, nos. 173-174)

1860. *Lycaena nora* Felder, *Sitz. Ak. Wiss. Wien, Math. Nat. cl.*, 40 : 458, no. 37.  
 1962. *Nacaduba nora nora*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 80.

*Material examined* : Siang District, Dali Village, 200 m., 1 ex., 10.x.1966 (Coll. S. K. Tandon and G. S. Arora). Lohit District, Wakro, 515 m., 1 ex., 3.xii.1969 ; Geohowel, 1170 m., 1 ex., 9.xii.1969 ; Gogoi Camp, 242 m., 1 ex., 29.xi.1969 (Coll. J. M. Julka and party). *Fore wing length* : 10-12 mm.

*Distribution* : Pakistan, India, Sri Lanka and Burma.

*Remarks* : The nominate subspecies earlier reported from Siang District (Rotung), is a new record for Lohit District.

*Food plants* : *Acacia caesia* Willd., *Mallotus philippensis* Muell. Arg. and representatives of the families Combretaceae, Myrtaceae and Sapindaceae.

LVIII Genus **Petrelaea** Toxopeus

1929. *Petrelaea* Toxopeus, *Tijdschr. Ent.*, 72 : 242.

*Type species* : *Petrelaea dana varia* Toxopeus, 1929.

*Diagnostic characters* : Underside of fore wing with a post discal spot in interspace 2 moved inwards out of line with those in interspaces 1b and 3 ; underside of hind wing with two black small and equal tornal spots.

*Distribution* : Indo-Australia and Africa.

*Remarks* : This genus is represented by only a single species i.e. *Petrelaea dana* (de Nicéville).

117. **Petrelaea dana** (de Nicéville)

(The Dingy Line Blue)

(Plate XXII, nos. 175-176)

1883. *Nacaduba ? dana* de Nicéville, *J. Asiat. Soc. Bengal*, 52 : 73, pl. 1, fig. 15, ♂.

1962. *Petrelaea dana*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 82.

*Material examined* : Siang District, Rimi Bridge, 300 m., 1 ex.. 11.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 11 mm.

*Distribution* : India (Uttar Pradesh-Kumaon, South India and Andaman islands), Burma and Sri Lanka.

*Remarks* : This species constitutes a new locality record from Siang District as well as for Arunachal Pradesh.

LIX **Heliophorus** Geyer

1832. *Heliophorus* Geyer, in Huebner's, *Zutr. z. Samml. exot. Schmett.* 4 : 40.

*Type species* : *Heliophorus belenus* Geyer, 1832.

*Diagnostic characters* : Upperside of fore and hind wing dark brown with the basal area shining purple whereas upperside of wings (fore- and hind wing) dark brown with orange areas.

*Distribution* : India (Himalaya), Malaysia and Malya.

*Remarks* : The butterflies of this genus are commonly known as 'The Sapphires'. Of the ten species occurring in India, three are dealt with here.

*Key to species*

1. Underside of both wings without discal marking (except sometimes a few dots between base and the red marginal area); the red marginal area on hind wing very dark and continued on to apex of fore wing ... *epicles* (Godart)
- Underside of both wings with a dark discal line and a line at end cell which may be obsolete on hind wing; red marginal area on hind wing not continued on to fore wing ... 2
2. In male, upperside of both wings golden copper, In female, upperside of hind wing with marginal band widest at vein  $M_1$  and continuing at least to  $R_2$  ... *brahma* (Moore)
- In male, upperside of both wings brilliant metallic green or blue. Female like *H. brahma*, but upperside of hind wing with marginal band ending at  $M_1$  not wider ... *androcles*  
(Doubleday & Hewitson)

118. *Heliophorus epicles indicus* (Fruhstorfer)

(The Purple Sapphire)

(Plate XXII, nos. 177-178)

1908. *Ilerda indicus* Fruhstorfer, *Ent. Z.* 22 : 46.1912. *Ilerda epicles*, Evans, *Rec. Zool. Surv. India*, 8 : 65.1962. *Heliophorus epicles indicus*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 85.

*Material examined* : Kameng District, Bhalukpong, 150 m., 1 ex., 23.iii.1973 (Coll. S. K. Tandon). Siang District, Pading village, 260 m., 3 exs., 2.x.1966; Siji, Lekhabali, 165 m., 2 exs., 8.x.1966, Lekhabali, 1 ex., 8.x.1966, Meghabasti, 2 exs., 8.x.1966; 3 kms. North of Dali village, 300 m., 2 exs., 10.x.1966, 1 ex., 11.x.1966; New Jining, 200 m., 1 ex., 14.x. 1966, 3 exs., 15.x.1966, 2 exs., 16.x.1966 2 exs., 19.x.1966; Tachidoni, 400 m., 2 exs., 24.x.1966; Bame, 600 m., 1 ex., 30.x.1966 (Coll. S. K. Tandon and G. S. Arora). Tirap District, Changlang, 225 m., 1 ex., 26.x.1971, 1 ex., 1.xi.1971; Jairampur, 1 ex., 27.x.1971 (Coll. G. S. Arora). Lohit District, Santipur, 100 m., 1 ex., 2.iii.1969; Sunpura, 100 m., 2 exs., 3.iii.1969; Dambuk, 1 ex., 5.iii. 1969; Hayuliang Road, 700 m., 1 ex., 12.iii.1969 (Coll. S. K. Tandon). Assam, Dibrugarh, 200 m., 1 ex., 27.iii.1969; Sadiya Road, 100 m., 9 exs., 8.iii.1969; Foot Hills, 1 ex., 2.iii.1973, (Coll. S. K. Tandon).  
*Fore wing length* : 12-15 mm.

**Distribution :** India (Uttar Pradesh—Kumaon and Middle Andamans), Nepal and Burma (Dawnas).

**Remarks :** The subspecies exhibits variation in its colouration and markings on wings. The upperside of fore wing has a oblique orange spot which varies greatly in size with colouration light to bright. On the upperside of hind wing there is an orange red marginal band running half way to apex. This band is toothed outwardly. The underside of fore and hind wing has an antemedial line having variable number of black dots. This subspecies previously known from Districts of Siang (Rotung) and Tirap (Namdhapa) is a new record for Kameng Districts and localities of Chanlang and Jairampur in Tirap.

### 119. *Heliophorus brahma brahma* (Moore)

(The Golden Sapphire)

(Plate XXII, nos. 179-180)

1857. *Ilerda brahma* Moore, In Horsfield and Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 29, no. 33, pl. 1a, fig. 4, ♂.

1962. *Heliophorus brahma brahma*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932 : 86.

**Material examined :** Kameng District, Bomdila, 2621 m., 1 ex., 4.xii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph). Subansiri District, Tihung, 1286 m., 1 ex., 10.xii.1969, Gho village, 1220 m., 1 ex., 11.xii.1969 (Coll. J. M. Julka and party). *Fore wing length* : 17-19 mm.

**Distribution :** India (Uttar Pradesh—Kumaon to Sikkim).

**Remarks :** This nominate subspecies is a new locality record for the Districts of Kameng and Subansiri as well as for Arunachal Pradesh.

### 120. *Heliophorus androcles androcles* (Doubleday & Hewitson)

(The Green Sapphire)

1852. *Ilerda androcles* Doubleday and Hewitson, In Doubleday's, *Gen. diurn. Lep.* 2 : pl. 75, fig. 2, ♂.

1962. *Heliophorus androcles androcles*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 86.

**Material examined :** Lohit District, Kamlang River, 640 m., 1 ex., 17.xii.1969 (Coll. J. M. Julka and party). *Fore wing length* : 14 mm.

**Distribution :** India (Assam) to North Burma.

**Remarks :** This nominate subspecies is a new record for Lohit District as well as for Arunachal Pradesh.

LX. Genus *Curetis* Huebner

1816. *Curetis* Huebner, *Verz. bekkant. Schmett.* (7) : 102.

*Type species* : *Papilio aesopus* Fabricius, 1781.

*Diagnostic characters* : Upperside of fore and hind wing golden red in male and red or white discal areas in female. Underside of fore and hind wing silvery white with obscure dark bands.

*Distribution* : The butterflies of this genus are popularly known as 'The Sun beams'. Four species of this genus occur in India of which *Curetis dentata* Moore is dealt with here.

121. *Curetis dentata dentata* Moore

(The Toothed Sunbeam)

(Plate XXIII, nos. 181-182)

1879. *Curetis dentata* Moore, *Proc. zool. Soc. Lond.*, : 137-139.

1962. *Curetis dentata dentata* Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 104.

*Material examined* : Siang District, Dali camp, 300 m., 2 exs., 12.x.1966 ; Tappi Dulla, 500 m., 2xs., 22.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Tirap District, Jairampur, Checkpost, 225 m., 1 ex., 26.x.1971 ; Deomali Forest, Namsangmukh Road, 250 m., 1 ex., 9.x.1971 (*Coll. G. S. Arora and party*). Assam, Charduar Forest, 125 m., 2 exs., 24.iii.1973 (*Coll. S. K. Tandon and party*). *Fore wing length* : 18-22.

*Ditribution* : India (Himachal Pradesh—Kulu to Uttar Pradesh—Kumaon, Madhya Pradesh, Sikkim, Assam and South India), Nepal and Burma.

*Remarks* : The black border on upperside of fore wing extends along the costal and outer margin and from middle to tornus on the inner margin. The orange red spot on the tornus varies in size. The black dent may or may not extend the length of discocellular. The upperside of hind wing bears a black streak above the cell and this streak varies in width and length. This nominate subspecies earlier known from Tirap District (Namdhapa), is a new locality record for Siang District.

LXI. Genus *Surendra* Moore

1878-1879. *Surendra* Moore, *Proc. zool. Soc. Lond.* (4) : 835.

*Type species* : *Amblypodia quercetorum* Moore, 1857.

*Diagnostic characters* : Eyes smooth. Fore wing with veins  $M_1$  and  $R_5$  separate and the latter ending on costa, vein  $R_4$  absent. Hind wing not produced at  $Cu_{1b}$  or tornus and tail comparatively short.

*Distribution* : From India and Sri Lanka through Malaysia to Sulawesi.

*Remarks* : The butterflies of this genus are popularly known as 'The Acacia Blues'. Of the two species viz., *Surendra vivarna* Horsfield and *S. todara* Moore occurring in India, the former is dealt with here.

## 122. *Surendra vivarna quercetorum* (Moore) (The Common Acacia Blue)

1857. *Amblypodia quercetorum* Moore, In Horsfield and Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 42, no. 63, pl. 1a, fig. 7, ♂.

1962. *Surendra vivarna quercetorum*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, : 109.

*Material examined* : Subansiri District, Pamir Bridge, 564 m., 1 ex., 17.v.1966 (Coll. A. N. T. Joseph). Lohit District, Sunpura, 100 m., 1 ex., 3.iii.1969 (Coll. S. K. Tandon and party). Assam, Sonai Rupai Forest, 343 m., 1 ex., 2.xii.1965 (Coll. S. K. Bhattacharya and A. N. T. Joseph). *Fore wing length* : 17-19 mm.

*Distribution* : India (Uttar Pradesh—Dehra Dun) to Burma.

*Remarks* : This subspecies constitutes a new locality record for Subansiri and Lohit Districts as well as for Arunachal Pradesh.

*Food plants* : *Acacia caesia* Willd., *A. pinnata* Willd., *Albizia lebbek* (Linnaeus) Benth (Kokho), *A. odoratissima* Benth (Kalasiris) and *A. procera* Benth (Safed siris).

## LXII Genus *Loxura* Horsfield

1829. *Loxura* Horsfield, *Descr. Cat. Lep. Ins. Mus. East India Coy*, (2) : 119.

*Type species* : *Papilio atymnus* Stoll, 1780.

*Diagnostic characters* : Hind wing with the white tipped tail at vein  $Cu_{1b}$ . Upperside of fore and hind wing more heavily dark in female.

*Distribution* : From India to Malaysia, Sri Lanka, the Philippines and Sumbawa.

*Remarks* : The butterflies of this genus are popularly known as 'The Yamflies'. *Loxura atymnus* Stoll occurring in India, is dealt with here.

123. *Loxura atymnus continentalis* Frhustorfer

(The Yamfly)

1911. *Loxura atymnus continentalis* Fruhstorfer, *Berl. Ent. Ztschr*, 56 : 221.

*Material examined* : Lohit District, Wakro, 515 m., 1 ex., 1.vii. 1969 (Coll. J. M. Julka). *Fore wing length* : 17 mm.

*Distribution* : India (Uttar Pradesh—Mussoorie and Himalayas to Assam), Nepal and Burma.

*Remarks* : This subspecies is a new locality record for Lohit District as well as for Arunachal Pradesh.

*Food plants* : *Dioscorea pentaphylla* Wall. and *Smilax* sp.

LXIII Genus *Spindasis* Wallengren1857. *Spindasis* Wallengren. *K. svenska Vetensk-Akad. Handl.*, Stockholm (n. f.), 1(1) (no. 4) : 45.

*Type species* : *Spindasis masilikazi* Wallengren, 1857.

*Diagnostic characters* : Upperside of fore and hind wings dark brown, underside pale yellow and marked with transverse silvery lines bordered with black or red.

*Distribution* : India to China, Japan, Malaysia, the Philippines and Africa.

*Remarks* : The butterflies of this genus are commonly known as 'The Silverlines'. There are eight species occurring in India of which *Spindasis lohita* (Horsfield) is dealt with here.

124. *Spindasis lohita himalayanus* (Moore)

(The Long-banded Silverline)

(Plate XXIII, nos. 183-184)

1884. *Aphnaeus himalayanus* Moore, *J. Asiat. Soc. Beng.*, 53(2) : 26.1962. *Spindasis lohita himalayanus*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 117.

*Material examined* : Siang District, Dali village, 300 m., 1 ex., 10.x.1966 (Coll. S. K. Tandon and G. S. Arora). *Fore wing length* : 17 mm.

*Distribution* : India (Sikkim) to North Burma and Nepal.

*Remarks* : The violet colouration on upperside of fore wing extends from base to beyond the middle. The underside of fore and

hind wing bears red fasciae, each of which (except the basal and sub-marginal) is traversed by a silvery line. This subspecies is a new record for Siang District as well as for Arunachal Pradesh.

*Food plants* : *Dioscorea pentaphylla* Wall., *Psidium guajava* Linnaeus, *Terminalia paniculata* Roth. and *Xylia* sp.

#### LXIV Genus *Cheritra* Moore

1881. *Cheritra* Moore, *Lep. Ceylon* 1(3) : 109.

*Type species* : *Myrina jafra* Godrat, 1824.

*Diagnostic characters* : Upperside of fore and hind wing dark brown ; white tornal area of hind wing bearing black spots. Underside of fore and hind wing with very faint bars at end of cells ; a narrow discal line on fore wing ; hind wing with a discal and sub-marginal line and the tornal black spot crowned with metallic scales.

*Distribution* : India to Malaysia and Sri Lanka.

*Remarks* : The butterflies of this genus are commonly called 'The Imperials', with a single representative i.e. *Cheritra freja* (Fabricius) from India and it is dealt with here.

#### 125. *Cheritra freja freja* (Fabricius)

(The Common Imperial)

1793. *Hesperia freja* Fabricius, *Ent. Syst.*, 3(1) : 273, no. 9.

1962. *Cheritra freja freja*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 133.

*Material examined* : Lohit District, Kamlang, 640 m., 1 ex., 17.xii.1969 (Coll. J. M. Julka). *Fore wing length* : 18 mm.

*Distribution* : This nominate subspecies, previously reported from Siang District (Abor), is a new record for Lohit District.

*Food plants* : *Cinnamomum zeylanicum* Breyn, *Ixora* sp., *Saraca indica* Linnaeus and *Xylia xylocarpa* (Roxburgh) Taub.

#### LXV. Genus *Chliaria* Moore

1884. *Chliaria* Moore, *J. Asiat. Soc. Beng.* (Part 2), 53(1) : 32.

*Type species* : *Hypolycaena othona* Hewitson, 1865.

*Diagnostic characters* : Antennal club flattened and somewhat spatulate at origin, veins R<sub>3</sub> and R<sub>4</sub> absent ; R<sub>5</sub>, M<sub>1</sub> and M<sub>2</sub> separate.

Hind wing with a tail at vein 2A and also at  $Cu_{1b}$ , the former being longer and lobed.

*Distribution* : From North India to Taiwan, Indo-China and Malaysia.

*Remarks* : The butterflies of this genus are commonly known as 'The Tits' Of the two species viz., *Chliaria othona* Hewitson and *C. kina* Hewitson known from India, the latter is dealt with here.

126. *Chliaria kina* (Hewitson)  
(The Blue Tit)

1819. *Hypolycaena kina* Hewitson, *Ill. diurn. Lep. Suppl.*, 13 : no. 19, pl. 5, figs. 32, ♂, 33-34, ♀.

1962. *Chliaria kina*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 140.

*Material examined* : Kameng District, 2 miles North of Chug, 2135 m., 1 ex., 16.iv.1961 (Coll. K. C. Jairam). *Fore wing length* : 13 mm.

*Distribution* : India (Uttar Pradesh—Dehara Dun) to Burma (Dawnas) and Nepal.

*Remarks* : This species constitutes a new locality record for Kameng District as well as for Arunachal Pradesh.

*Food plant* : *Rhynchostylis* sp.

LXVI. Genus *Zeltus* de Nicéville

1890. *Zeltus* de Nicéville, *Butts. India, Burmah and Ceylon*, 3 : 19, 399.

*Type species* : *Papilio etolus* Fabricius, 1787.

*Diagnostic characters* : The genus resembles *Chliaria* but differs in having cylindrical antennae.

*Distribution* : India to Hainan, Malaysia and the Philippines.

*Remarks* : This genus is represented in India by a single species i.e. *Zeltus amasa* Hewitson which is dealt with here.

127. *Zeltus amasa* (Hewitson)  
(The Fluffy Tit)  
(Plate XXIII, nos. 185-186)

1865. *Hypolycaena amasa* Hewitson, *Ill. diurn. Lep.*, : pl. 22, figs. 19, 20, ♂.

1912. *Zeltus etolus*, Evans, *Rec. Zool. Surv. India*, 8 : 65.

1962. *Zeltus amasa*, Cantlie, *The Lycaenidae Portion of the Brigadier Evans' The Identification of the Indian Butterflies*, 1932, : 142.

*Material examined* : Kameng District, Bhalukpong, 213 m., 1 ex., 6.v.1966 ; Tipi, 213 m., 1 ex., 3.v.1966 (*Coll. A. N. T. Joseph*). Siang District, Lekhabali, Siji, 200 m., 1 ex., 8.x.1966 ; Dali Camp, 300 m., 2 exs., 12.x.1966 ; 3 kms. North of Dali village, 1 ex., 12.x.1966 ; Daporijo Bela, 150 m., 1 ex., 27.x.1966 ; Bame, 600 m., 1 ex., 30.x.1966 (*Coll. S. K. Tandon and G. S. Arora*). Lohit District, Chowkham, 242 m. 1 ex., 24.xi.1969 (*Coll. J. M. Julka and party*). Tirap District, Deomali Road, 500 m., 1 ex., 8.xi.1971 (*Coll. G. S. Arora*). *Fore wing length* : 13-15 mm.

*Distribution* : India (South India and Sikkim) to Burma.

*Remarks* : The two-thirds of the outer portion of upperside of fore wing is dark brownish. The underside of the fore wing is marked with a medial pale brownish band running from costa to a little below vein Cu<sub>1b</sub> and this band is lined on both sides by a white line. This species is a new locality record for Siang, Kameng, Lohit and Tirap Districts as well as for Arunachal Pradesh.

#### LXVII Genus *Rapala* Moore

1881. *Rapala* Moore, *Lep. Ceylon*, 1(3) : 105.

*Type species* : *Thecla varuna* Horsfield, 1829.

*Diagnostic characters* : Antennal club gradual and slender. Eyes hairy. Upperside of fore and hind wing red, reddish or deep blue in male but dark brown or pale blue in female. Fore wing with vein R<sub>4</sub> absent, R<sub>5</sub> ending on costa. Hind wing with a prominent and pendulous lobe at vein 2A.

*Distribution* : India to Malaysia, Sri Lanka, the Philippines, Sulawesi, New Guinea and Australia.

*Remarks* : The butterflies of this genus are popularly known as 'The Flashes'. Of the 17 species occurring in India, only a single species i.e. *Rapala varuna* Horsfield is dealt with here.

#### 128. *Rapala varuna orseis* (Hewitson)

(The Indigo Flash)

(Plate XXIII, nos. 187-188)

1862-78. *Deudorix orseis* Hewitson, *Ill. diurn. Lep.*, 1 : 23.

1962. *Rapala varuna orseis*, Cantlie, *The Lycaenidae Portion of Brigadier Evans' The Identification of Indian Butterflies*, 1932, : 149.

*Material examined* : Siang District, New Jining, 200 m., 3 exs., 19.x.1966 (Coll. S. K. Tandon and G. S. Arora). Tirap District, Jairampur, Check Post, 225 m., 1 ex., 26.x.1971 ; Deomali Forest, 250 m., 2 exs., 9.xi.1971 (Coll. G. S. Arora and party). *Fore wing length* : 15-17 mm.

*Distribution* : India (Sikkim and Andamans) to Burma (Arakan) and Nepal.

*Remarks* : This subspecies is a new locality record for Siang and Tirap Districts as well as for Arunachal Pradesh.

*Food plants* : *Hiptage benghalensis* (Linnaeus) Kurze, *Quisqualis indica* Linnaeus, *Sapindus emarginatus* Vahl., *Ziziphus rugosa* Lamark (Wild Ber) and *Z. xylopyra* Willd.

#### SUMMARY

Altogether 128 species and subspecies of butterflies in 67 genera and five families, viz., Acraeidae, Satyridae, Nymphalidae, Riodinidae and Lycaenidae from Arunachal Pradesh and adjoining areas have been dealt with. Keys to genera and species have been given. The remarks on each species and subspecies include common name, variations in the size and shape of colour markings, fore wing length, geographical distribution along with the known information on food plants. Of these, 114 species and subspecies constitute new locality records for the Districts of Kameng, Subansiri, Siang, Lohit and Tirap, and among these 37 are new records for the entire Arunachal Pradesh. Besides, 17 species and subspecies are rare and one i.e. *Euthalia telchinia* (Ménétrières) is very rare in status.

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## APPENDIX—I

A LIST OF SPECIES AND SUBSPECIES OF BUTTERFLIES OF FAMILIES ACRAEIDAE, SATYRIDAE, NYMPHALIDAE, RIODINIDAE AND LYCAENIDAE FROM ARUNACHAL PRADESH AND ADJOINING AREAS, INDIA.

### Family ACRAEIDAE

- |                                     |                  |
|-------------------------------------|------------------|
| 1. <i>Acraea violae</i> (Fabricius) | The Tawny Coster |
|-------------------------------------|------------------|

### Family SATYRIDAE

- |  |                                  |
|--|----------------------------------|
| 2. <i>Ethope himachala</i> (Moore)                   | The Dusky Diadem                 |
| 3. <i>Aulocera brahminus dokwana</i> Evans           | The Narrow Banded Satyr          |
| 4. <i>A. padma loha</i> Doherty                      | The Great Satyr                  |
| 5. <i>A. saraswati</i> (Kollar)                      | The Striated Satyr               |
| 6. <i>A. swaha swaha</i> (Kollar)                    | The Common Satyr                 |
| 7. <i>Cyllogenes suradeva</i> (Moore)                | The Branded Evening Brown.       |
| 8. <i>Elymnias hypermnestra undularis</i><br>(Drury) | The Common Palmfly.              |
| 9. <i>E. malelas malelas</i> (Hewitson)              | The Spotted Palmfly.             |
| 10. <i>E. patna patna</i> (Westwood)                 | The Blue-Striped Palmfly.        |
| 11. <i>Erebia annada orixa</i> (Moore)               | The Ringed Argus                 |
| 12. <i>Lethe bhadra</i> (Moore)                      | The Tailed Labyrinth             |
| 13. <i>L. bhairava</i> (Moore)                       | The Rusty Forester               |
| 14. <i>L. chandica chandica</i> (Moore)              | The Angled Red Forester          |
| 15. <i>L. confusa confusa</i> Aurivillius            | The Banded Tree Brown.           |
| 16. <i>L. distans</i> Butler                         | The Scarce Red Forester.         |
| 17. <i>L. goalpara goalpara</i> (Moore)              | The Large Golden fork.           |
| 18. <i>Lethe kansa</i> (Moore)                       | The Bamboo Forester              |
| 19. <i>L. latiaris</i> (Hewitson)                    | The Pale Forester                |
| 20. <i>L. mekara zuchra</i> Fruhstorfer              | The Common Red Forester          |
| 21. <i>L. pulaha pulahoides</i> (Moore)              | The Veined Labyrinth             |
| 22. <i>L. rohria rohria</i> (Fabricius)              | The Common Tree Brown            |
| 23. <i>L. serbonis serbonis</i> (Hewitson)           | The Brown Forester               |
| 24. <i>L. sidonis</i> (Hewitson)                     | The Common Woodbrown             |
| 25. <i>L. sinorix</i> (Hewitson)                     | The Tailed Red Forester          |
| 26. <i>L. sura</i> (Doubleday)                       | The Lilacfork                    |
| 27. <i>L. verma sintica</i> Fruhstorfer              | The Straight-Banded<br>Bushbrown |
| 28. <i>L. verma stenopa</i> Fruhstorfer              | The Straight-Banded<br>Bushbrown |

- |                    |  |                                 |
|--------------------|--|---------------------------------|
| 29.                | <i>L. vindhya</i> (Felder)                     | The Black Forester              |
| 30.                | <i>L. visrava</i> (Moore)                      | The White-edged<br>Woodbrown    |
| 31.                | <i>L. yama yama</i> (Moore)                    | The Dusky Labyrinth             |
| 32.                | <i>Melanitis leda ismene</i> (Cramer)          | The Common Evening Brown        |
| 33.                | <i>M. phedima bela</i> Moore                   | The Dark Evening Brown          |
| 34.                | <i>M. zitenius zitenius</i> (Herbst)           | The Great Evening Brown         |
| 35.                | <i>Mycalesis francisca sanatana</i><br>Moore   | The Lilacine Bushbrown          |
| 36.                | <i>M. malsara</i> Moore                        | The White-line Bushbrown        |
| 37.                | <i>M. malsarida</i> Butler                     | The Plain Bushbrown             |
| 38.                | <i>M. mestra vetus</i> Fruhstorfer             | The White-edged Bushbrown       |
| 39.                | <i>M. mineus mineus</i> (Linnaeus)             | The Dark-Brand Bushbrown        |
| 40.                | <i>M. misenus</i> de Nicéville                 | The Salmon-Branded<br>Bushbrown |
| 41.                | <i>M. intermedia</i> (Moore)                   | The Pale-Brand Bushbrown        |
| 42.                | <i>M. visala visala</i> Moore                  | The Long-Brand Bushbrown        |
| 43.                | <i>Neorina hilda</i> Westwood                  | The Yellow Owl                  |
| 44.                | <i>Orinoma damaris</i> Gray                    | The Tiger Brown.                |
| 45.                | <i>Orsotrioena medus medus</i><br>(Fabricius)  | The Nigger                      |
| 46.                | <i>Ragadia crisilda crito</i> de Nicéville     | The Striped Ringlet             |
| 47.                | <i>Ypthima baldus baldus</i> (Fabricius)       | The Common Five ring            |
| 48.                | <i>Y. indecora</i> Moore                       | The Western Five ring           |
| 49.                | <i>Y. methora methora</i> Hewitson             | The Variegated Five ring        |
| 50.                | <i>Y. methora sobrina</i> Elwes &<br>Edwards   | The Variegated Five ring        |
| 51.                | <i>Y. nareda newara</i> Moore                  | The Large Three ring            |
| 52.                | <i>Y. sakra sakra</i> Moore                    | The Himalayan Five ring         |
| 53.                | <i>Y. sakra austeni</i> (Moore)                | The Himalayan Five ring         |
| 54.                | <i>Y. similis affectata</i> Elwes &<br>Edwards | The Eastern Five ring           |
| 55.                | <i>Zipoetis scylax</i> Hewitson                | The Dark Cats Eye               |
| Family NYMPHALIDAE |  |                                 |
| 56.                | <i>Abrota ganga</i> Moore                      | The Sergeant-Major              |
| 57.                | <i>Aconthea cyanipardus</i> (Butler)           | The Great Archduke              |
| 58.                | <i>A. khasiana khasiana</i> (Swinhoe)          | The Dark Archduke               |
| 59.                | <i>Apatura ambica ambica</i> Kollar            | The Indian Purple Emperor       |
| 60.                | <i>A. chevana</i> (Moore)                      | The Sergeant Emperor            |
| 61.                | <i>A. parisatis parisatis</i> Westwood         | The Black Prince                |
| 62.                | <i>A. parvata</i> Moore                        | The Brown Prince                |

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|-----|--|----------------------------------|
| 63. | <i>Argynnis childreni childreni</i> Gray         | The Large Silver Stripe          |
| 64. | <i>A. hyperbius hyperbius</i> (Johanssen)        | The Indian Fritillary            |
| 65. | <i>A. lathonia issoea</i> Doubleday              | The Queen of Spain<br>Fritillary |
| 66. | <i>Ariadne merione assama</i> (Evans)            | The Common Castor                |
| 67. | <i>A. merione merione</i> (Cramer)               | The Common Castor                |
| 68. | <i>Calinaga budha brahma</i> Butler              | The Freak                        |
| 69. | <i>C. budha budha</i> Moore                      | The Freak                        |
| 70. | <i>Cethosia biblis tisamena</i><br>Fruhstorfer   | The Red Lacewing                 |
| 71. | <i>C. cyane</i> (Drury)                          | The Leopard Lacewing             |
| 72. | <i>Charaxes marmax</i> Westwood                  | The Yellow Rajah                 |
| 73. | <i>C. polyxena hierax</i> Felder                 | The Tawny Rajah                  |
| 74. | <i>C. polyxena psaphon</i> Westwood              | The Tawany Rajah                 |
| 75. | <i>Chersonesia risa risa</i> (Doubleday)         | The Common Maplet                |
| 76. | <i>Cirrochroa aoris aoris</i> Doubleday          | The Large Yeoman                 |
| 77. | <i>C. tyche mithila</i> Moore                    | The Common Yeoman                |
| 78. | <i>Cynthia cardui</i> (Linnaeus)                 | The Painted Lady                 |
| 79. | <i>Cyrestis thyodamas thyodamas</i><br>Boisduval | The Common Map                   |
| 80. | <i>Diagora persimilis</i> (Westood)              | The Siren                        |
| 81. | <i>Dichorragia nesimachus</i> (Boisduval)        | The Constable                    |
| 82. | <i>Dilipa morgiana</i> (Westwood)                | The Golden Emperor               |
| 83. | <i>Doleschallia bisaltide indica</i> Moore       | The Autumn Leaf                  |
| 84. | <i>Euripus halitherses</i> Doubleday             | The Courtesan                    |
| 85. | <i>Euthalia duda</i> Staudinger                  | The Blue Duchess                 |
| 86. | <i>E. franciae franciae</i> (Gray)               | The French Duke                  |
| 87. | <i>E. franciae raja</i> (Felder)                 | The French Duke                  |
| 88. | <i>E. garuda garuda</i> (Moore)                  | The Baron                        |
| 89. | <i>E. jahna jahnu</i> (Moore)                    | The Plain Earl                   |
| 90. | <i>E. kesava kesava</i> (Moore)                  | The Powdered Baron               |
| 91. | <i>E. lepidea lepidea</i> (Butler)               | The Grey Count                   |
| 92. | <i>E. lubentina indica</i> Fruhstorfer           | The Gaudy Baron                  |
| 93. | <i>E. phemius</i> Doubleday                      | The White-edged Blue Baron       |
| 94. | <i>E. sahadeva sahadeva</i> (Moore)              | The Green Duke                   |
| 95. | <i>E. telchinia</i> Ménétriés                    | The Blue Baron                   |
| 96. | <i>Herona marathus marathus</i><br>Doubleday     | The Pasha                        |
| 97. | <i>Hestina nama</i> (Doubleday)                  | The Circe                        |
| 98. | <i>Hypolimnas bolina</i> (Linnaeus)              | The Great Eggfly                 |
| 99. | <i>Kallima alompora</i> Moore                    | The Scarce Blue Oakleaf          |

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|------|---|-------------------------------|
| 100. | <i>K. inachus inachus</i> (Boisduval)             | The Orange Oakleaf            |
| 101. | <i>Kaniska canace</i> (Linnaeus)                  | The Blue Admiral              |
| 102. | <i>Limenitis austenia austenia</i><br>(Moore)     | The Grey Commodore            |
| 103. | <i>L. danava</i> Moore                            | The Commodore                 |
| 104. | <i>L. daraxa</i> Doubleday                        | The Green Commodore           |
| 105. | <i>L. zayla</i> Doubleday                         | The Bi-colour Commodore       |
| 106. | <i>L. zulema</i> Doubleday                        | The Scarce White<br>Commodore |
| 107. | <i>Moduza procris procris</i> (Cramer)            | The Commander                 |
| 108. | <i>Neptis ananta ochracea</i> Evans               | The Yellow Sailer             |
| 109. | <i>N. cartica cartica</i> Moore                   | The Plain Sailer              |
| 110. | <i>N. columella ophiana</i> Moore                 | The Short Banded Sailer       |
| 111. | <i>N. hordonia hordonia</i> (Stoll)               | The Common Lascar             |
| 112. | <i>N. hylas astola</i> Moore                      | The Common Sailer             |
| 113. | <i>N. hylas varmona</i> Moore                     | The Common Sailer             |
| 114. | <i>N. magdha khasiana</i> Moore                   | The Spotted Sailer            |
| 115. | <i>N. mahendra</i> Moore                          | The Himalayan Sailer          |
| 116. | <i>N. miah miah</i> Moore                         | The Small Yellow Sailer       |
| 117. | <i>N. nandina susruta</i> Moore                   | The Clear Sailer              |
| 118. | <i>N. radha radha</i> Moore                       | The Great Yellow Sailer       |
| 119. | <i>N. sankra quilta</i> Swinhoe                   | The Broad-Banded Sailer       |
| 120. | <i>N. soma soma</i> Moore                         | The Sullied Sailer            |
| 121. | <i>N. vikasi pseudovikasi</i> (Moore)             | The Dingy Sailer              |
| 122. | <i>N. yerburyi sikkima</i> Evans                  | The Yerbury's Sailer          |
| 123. | <i>Neurosigma siva</i> (Westwood)                 | The Leopard                   |
| 124. | <i>Parathyma asura asura</i> (Moore)              | The Studded Sergeant          |
| 125. | <i>P. cama</i> (Moore)                            | The Orange Staff Sergeant     |
| 126. | <i>P. kanwa phorkys</i> (Fruhstorfer)             | The Dot-Dash Sergeant         |
| 127. | <i>Parathyma opalina orientalis</i><br>(Elwes)    | The Himalayan Sergeant        |
| 128. | <i>P. perius</i> (Linnaeus)                       | The Common Sergeant           |
| 129. | <i>P. pravara acutipennis</i><br>(Fruhstorfer)    | The Unbroken Sergeant         |
| 130. | <i>P. ranga ranga</i> (Moore)                     | The Black-vein Sergeant       |
| 131. | <i>P. selenophora selenophora</i><br>(Kollar)     | The Staff Sergeant            |
| 132. | <i>P. zeroca</i> (Moore)                          | The Small Staff Sergeant      |
| 133. | <i>Parthenos sylvia gambrisius</i><br>(Fabricius) | The Clipper                   |

134. *Penthema lisarda lisarda* (Doubleday) The Yellow Kaiser
135. *Phalanta phalantha phalantha* (Drury) The Common Leopard
136. *Polyura arja* (Felder) The Pallid Nawab
137. *P. athamas athamas* (Drury) The Common Nawab
138. *P. delphis* (Doubleday) The Jewelled Nawab
139. *P. dolon* (Westwood) The Stately Nawab
140. *Precis almana almana* (Linnaeus) The Peacock Pansy
141. *P. atlites* (Linnaeus) The Grey Pansy
142. *P. hierta magna* Evans The Yellow Pansy
143. *P. iphita* (Cramer) The Chocolate Pansy
144. *P. lemonias lemonias* (Linnaeus) The Lemon Pansy
145. *P. orithya ocyale* Huebner The Blue Pansy
146. *Pseudergolis wedah* (Kollar) The Tabby
147. *Rhinopalpa polynice birmana* Fruhstorfer The Wizard
148. *Sephisa chandra* (Moore) The Eastern Courtier
149. *Stibochiona nicea nicea* (Gray) The Popinjay
150. *Symbrenthia hippoclus khasiana* Moore The Common Jester
151. *S. hypselis cotanda* Moore The Himalayan Jester
152. *S. niphanda niphanda* Moore The Blue-tail Jester
153. *Tanaecia julii* (Bougainville) The Common Earl
154. *T. julii appiades* (Ménétrieùs) The Common Earl
155. *Vagrans sinha sinha* (Kollar) The Vagrant
156. *Vanessa cashmiriensis aesis* Fruhstorfer The Indian Dortoiseshell
157. *V. indica indica* (Herbst) The Indian Red Admiral
158. *Vindula erota erota* (Fabricius) The Cruiser

## Family RIODINIDAE

159. *Abisara fylla* (Doubleday) The Dark Judy
160. *A. neophron neophron* (Hewitson) The Tailed Judy
161. *Dodona adonira adonira* Hewitson The Striped Punch
162. *D. egeon* (Doubleday) The Orange Punch
163. *D. ouida ouida* Moore The Mixed Punch
164. *Libythea lepita lepita* Moore The Common Beak
165. *L. myrrha sanguinalis* Fruhstorfer The Club Beak
166. *Zemeros flegyas indicus* Fruhstorfer The Punchinello

## Family LYCAENIDAE

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|------|--|--------------------------------|
| 167. | <i>Anthene emolus emolus</i> (Godart)              | The Ciliate Blue               |
| 168. | <i>A. lycaenoides lycambes</i> (Hewitson)          | The Pointed Ciliate Blue       |
| 169. | <i>Narathura silhetensis</i> (Hewitson)            | The Sylhet Oak Blue            |
| 170. | <i>Castalius elna noliteia</i> Fruhstorfer         | The Elbowed Pierrot            |
| 171. | <i>C. rosimon rosimon</i> (Fabricius)              | The Common Pierrot             |
| 172. | <i>Catochryseps strabo</i> (Fabricius)             | The Forget-Me-not              |
| 173. | <i>Celastrina dilectus</i> (Moore)                 | The Pale Hedge Blue            |
| 174. | <i>C. limbata placida</i> (de Nice'ville)          | The Plain Hedge Blue           |
| 175. | <i>C. puspa gisca</i> (Fruhstorfer)                | The Common Hedge Blue          |
| 176. | <i>C. transpecta</i> (Moore)                       | The White-Banded<br>Hedge Blue |
| 177. | <i>Cheritra freja freja</i> (Fabricius)            | The Common Imperial            |
| 178. | <i>Chliaria kina</i> (Hewitson)                    | The Blue Tit                   |
| 179. | <i>C. othona</i> (Hewitson)                        | The Orchid Tit                 |
| 180. | <i>Curetis dentata dentata</i> Moore               | The Toothed Sun-beam           |
| 181. | <i>Freyeria trochilus putli</i> (Kollar)           | The Grass Jewel                |
| 182. | <i>Heliophorus andocles andocles</i><br>(Hewitson) | The Green Sapphire             |
| 183. | <i>H. brahma brahma</i> (Moore)                    | The Golden Sapphire            |
| 184. | <i>H. epicles indicus</i> (Fruhstorfer)            | The Purple Sapphire            |
| 185. | <i>Hypolycaena erylus</i> (Godart)                 | The Common Tit                 |
| 186. | <i>Jamides bochus bochus</i> (Cramer)              | The Dark Cerulean              |
| 187. | <i>J. elpis atina</i> Fruhstorfer                  | The Glistening Caerulean       |
| 188. | <i>Lampides boeticus</i> (Linnaeus)                | The Pea Blue                   |
| 189. | <i>Loxura atymnus continentalis</i><br>Fruhstorfer | The Yamfly                     |
| 190. | <i>Nacaduba aluta coelestis</i><br>de Nice'ville   | The Banded Line Blue           |
| 191. | <i>N. beroe gythion</i> Fruhstorfer                | The Opaque Six Line Blue       |
| 192. | <i>N. bhutea</i> de Nice'ville                     | The Bhutya Line Blue           |
| 193. | <i>N. hermus nabo</i> Fruhstorfer                  | The Pale Four Line Blue        |
| 194. | <i>N. nora nora</i> (Felder)                       | The Common Line Blue           |
| 195. | <i>N. noreia</i> (Felder)                          | The White-tipped Line Blue     |
| 196. | <i>N. pactolus continentalis</i><br>(Fruhstorfer)  | The Large Four Line Blue       |
| 197. | <i>N. subperusia lysa</i> Fruhstorfer              | The Violet Four Line Blue      |
| 198. | <i>Neopithecops zalmara</i> (Butler)               | The Quaker                     |
| 199. | <i>Petrelaea dana</i> (de Nice'ville)              | The Dingy Line Blue            |
| 200. | <i>Pithecops fulgens</i> Doherty                   | The Blue Quaker                |

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|------|--|----------------------------|
| 201. | <i>Poritia hewitsoni tavoyana</i><br>Doherty   | The Common Gem             |
| 202. | <i>Rapala scintilla</i> de Nice'ville          | The Scarce Slate Flash     |
| 203. | <i>R. varuna orseis</i> (Hewitson)             | The Indigo Flash           |
| 204. | <i>Spindasis lohita himalayanus</i><br>(Moore) | The Long-Banded Silverline |
| 205. | <i>S. schistacea</i> (Moore)                   | The Plumbeous Silverline   |
| 206. | <i>Surendra vivarna quercetorum</i><br>(Moore) | The Common Acacia Blue     |
| 207. | <i>Syntarucus plinius</i> (Fabricius)          | The Zebra Blue             |
| 208. | <i>Zeltus amasa</i> (Hewitson)                 | The Fluffy Tit             |
| 209. | <i>Zizeeria knysna karsandra</i> (Moore)       | The Dark Grass Blue        |
| 210. | <i>Z. maha maha</i> (Kollar)                   | The Pale Grass Blue        |
| 211. | <i>Zizina otis sangra</i> (Moore)              | The Lesser Grass Blue      |

## APPENDIX—II

### LIST OF SPECIES OF FOOD PLANTS OF BUTTERFLIES

- I Family ANNONACEAE
  - 1. *Saccopetalum tomentosum* Hook. f. & Th.
- II Family BERBERIDACEAE
  - 2. *Berberis aristata* DC.
  - 3. *B. lycium* Royle
  - 4. *Mahonia nepaulensis* DC.
- III Family PAPAVERACEAE
  - 5. *Argemone maxicana* Linn.
- IV Family VIOLACEAE
  - 6. *Viola* spp.
- V Family BIXACEAE
  - 7. *Aberia gardneri* Clos.
- VI Family FLACOURTIACEAE
  - 8. *Flacourtia montana* Grah.
  - 9. *F. ramontchi* L'Her.
- VII Family PORTULACACEAE
  - 10. *Portulaca oleracea* Linn.
- VIII Family DIPTEROCARPACEAE
  - 11. *Shorea talura* Roxb.
- IX Family MALVACEAE
  - 12. *Hibiscus cannabinus* Linn.
  - 13. *Sida rhombifolia* Linn.
- X Family TILIACEAE
  - 14. *Grewia* sp.
- XI Family MALPHIGIACEAE
  - 15. *Hiptage benghalensis* (Linn.) Kurz
- XII Family RUTACEAE
  - 16. *Citrus* sp.
- XIII Family MELIACEAE
  - 17. *Aglaiia roxburghiana* Miq.
  - 18. *Heynea trijuga* Roxb.
- XIV Family RHAMNACEAE
  - 19. *Ziziphus mauritiana* Lamk.
  - 20. *Z. rugosa* Lamk.
  - 21. *Z. xylopyra* Willd.

## XV Family SAPINDACEAE

22. *Litchi chinensis* Sonn.
23. *Sapindus emarginatus* Vahl.
24. *Schleichera oleosa* (Lour.) Oken

## XVI Family ANACARDIACEAE

25. *Anacardium occidentale* Linn.
26. *Buchanania angustifolia* Roxb.
27. *B. lanzan* Spreng.
28. *Mangifera indica* Linn.

## XVII Family LEGUMINOSAE

29. *Acacia caesia* Willd.
30. *A. catechu* Willd.
31. *A. odoratissima* Benth.
32. *A. pennata* Willd.
33. *A. procera* Benth
34. *Adenantha pavonia* Boivin
35. *Albizia julibrissin* Boivin
36. *A. lebbek* (Linn.) Benth.
37. *A. moluccana* Miq.
38. *A. odoratissima* Benth.
39. *A. stipulata* Boivin
40. *Alysicarpus vaginalis* DC.
41. *Butea monosperma* (Lamk.) Kurz
42. *Caesalpinia crista* Linn.
43. *C. ruga* (Linn.) Ait.
44. *C. sappan* Linn.
45. *Cajanus cajan* (Linn.) Millsp.
46. *Cassia fistula* Linn.
47. *Crotolaria incana* Linn.
48. *C. juncea* Linn.
49. *C. pallida* Ait.
50. *Crotolaria* sp.
51. *Cylista scariosa* Roxb.
52. *Dalbegia latifolia* Roxb.
53. *D. sisoo* Roxb.
54. *Dalbergia* sp.
55. *Dolichos lablab* Linn.
56. *Indigo* sp.
57. *Indigofera* sp.

58. *Lotus corniculatus* Linn.
59. *Melilotus* sp.
60. *Pisum sativum* Linn.
61. *Poinciana regia* Bojer ex Hook.
62. *Pongamia pinnata* (Linn.) Pierre
63. *Rhynchosia minima* DC.
64. *Saraca indica* Linn.
65. *Sesbania aculeata* Pers.
66. *Spatholobus roxburghii* Benth.
67. *Tephrosia candida* DC.
68. Vetches
69. *Vigna catjang* Endl.
70. *Wagatea spicata* Dalz.
71. *Xylia dolabriformis* Benth.
72. *X. xylocarpa* Taub.
73. *Xylia* sp.
74. *Zornia diphylla* Pers.

## XVIII Family ROSACEAE

75. *Prunus persica* Benth. & Hook. f.

## XIX Family COMBRETACEAE

76. *Combretum extensum* Roxb.
77. *Quisqualis indica* Linn.
78. *Terminalia paniculata* Roth.

## XX Family MYRTACEAE

79. *Psidium guajava* Linn.

## XXI Family LECYTHIDACEAE

80. *Careya arborea* Roxb.

## XXII Family MELASTOMACEAE

81. *Melastoma malabathricum* Linn.
82. *Osbeckia* sp.

## XXIII Family PASSIFLORACEAE

83. *Adenia palmata* Engl.
84. *Adenia* spp.
85. *Passiflora edulis* Sims.
86. *P. foetida* Linn.
87. *Passiflora* spp.

## XXIV Family CUCURBITACEAE

88. *Bryonia* sp.

## XXV Family RUBIACEAE

89. *Adina cordifolia* Hook. f.90. *Anthocephalus cadamba* Linn.91. *Cinchona* sp.92. *Ixora* sp.93. *Pavetta indica* Linn.94. *Stephegyne parviflora* Korth.95. *W. exserta* DC.96. *Wendlandia notoniana* Wall.

## XXVI Family COMPOSITAE

97. *Artemisia vulgaris* Linn.98. *Blumea* sp.

## XXVII Family MYRSINACEAE

99. *Maesa chisia* Don.100. *M. indica* Wall.

## XXVIII Family OLEACEAE

101. *Linociera malabarica* Wall. ex G. Don.102. *Olea dioica* Roxb.

## XXIX Family BORAGINACEAE

103. *Heliotropium strigosum* Willd.

## XXX Family SCROPHULARIACEAE

104. *Antirrhinum majus* Linn.

## XXXI Family ACANTHACEAE

105. *Asteracantha longifolia* Nees106. *Barleria alata* S. Moore107. *B. rubra* Ham.108. *Barleria* sp.109. *Hygrophila* sp.110. *Justicia micrantha* Heyne ex Wall.111. *J. procumbens* Linn.112. *Lepidagathus prostrata* Dalz.113. *Nelsonia campestris* Br.114. *Strobilanthus callosus* Nees115. *Strobilanthus* sp.

## XXXII Family VERBENACEAE

116. *Tectona grandis* Linn. f.

## XXXIII Family AMARANTHACEAE

117. *Amarantus viridus* Linn.

## XXXIV Family LAURACEAE

118. *Cinnamomum zeylanicum* Breyn.

## XXXV Family EUPHORBIACEAE

119. *Aporosa lindleyana* Baill.120. *Glochidion arboreum* Wight121. *G. lanceolarium* Dalz.122. *G. velutinum* Wight123. *Mallotus philippensis* (Lamk.) Muell.-Arg.124. *Ricinus communis* Linn.125. *Tragia cannabina* Linn.126. *T. involucrata* Linn.

## XXXVI Family URTICACEAE

127. *Boehmeria platyphylla* D. Don128. *D. hypoleuca* Wedd.129. *Elastostemma cuneatum* Wight130. *Fleurya interrupta* Gaud.131. *Girardinia heterophylla* Decne132. *Urtica dioica* Linn.133. *U. parviflora* Roxb.

## XXXVII Family ULMACEAE

134. *Celtis australis* Linn.135. *C. cinnamoea* Planch136. *C. tetrandra* Roxb.137. *Ulmus wallichiana* Planch.

## XXXVIII Family MORACEAE

138. *Ficus benghalensis* Linn.139. *F. indica* Linn.140. *F. memoralis* Wall.141. *F. palmata* Forsk.142. *F. racemosa* Linn.143. *F. religiosa* Linn.144. *Streblus asper* Lour.

- XXXIX Family SALICACEAE  
145. *Salix tetrasperma* Roxb.
- XL Family CYCADACEAE  
146. *Cycas circinalis* Linn.  
147. *C. rumphii* Miq.
- XLI Family ORCHIDACEAE  
148. *Rhynchosstylis* sp.
- XLII Family SCITAMINACEAE  
149. *Elettaria cardamomum* Salisb.  
150. *Kaemferia pandurata* Roxb.  
151. *Musa* sp.
- XLIII Family DIOSCOREACEAE  
152. *Dioscorea pentaphylla* Wall.
- XLIV Family LILIACEAE  
153. *Smilax* sp.
- XLV Family ARECACEAE  
154. Palm trees
- XLVI Family POACEAE  
155. Bamboos  
156. Grasses  
157. *Panicum maximum* Nees.



## ERRATA

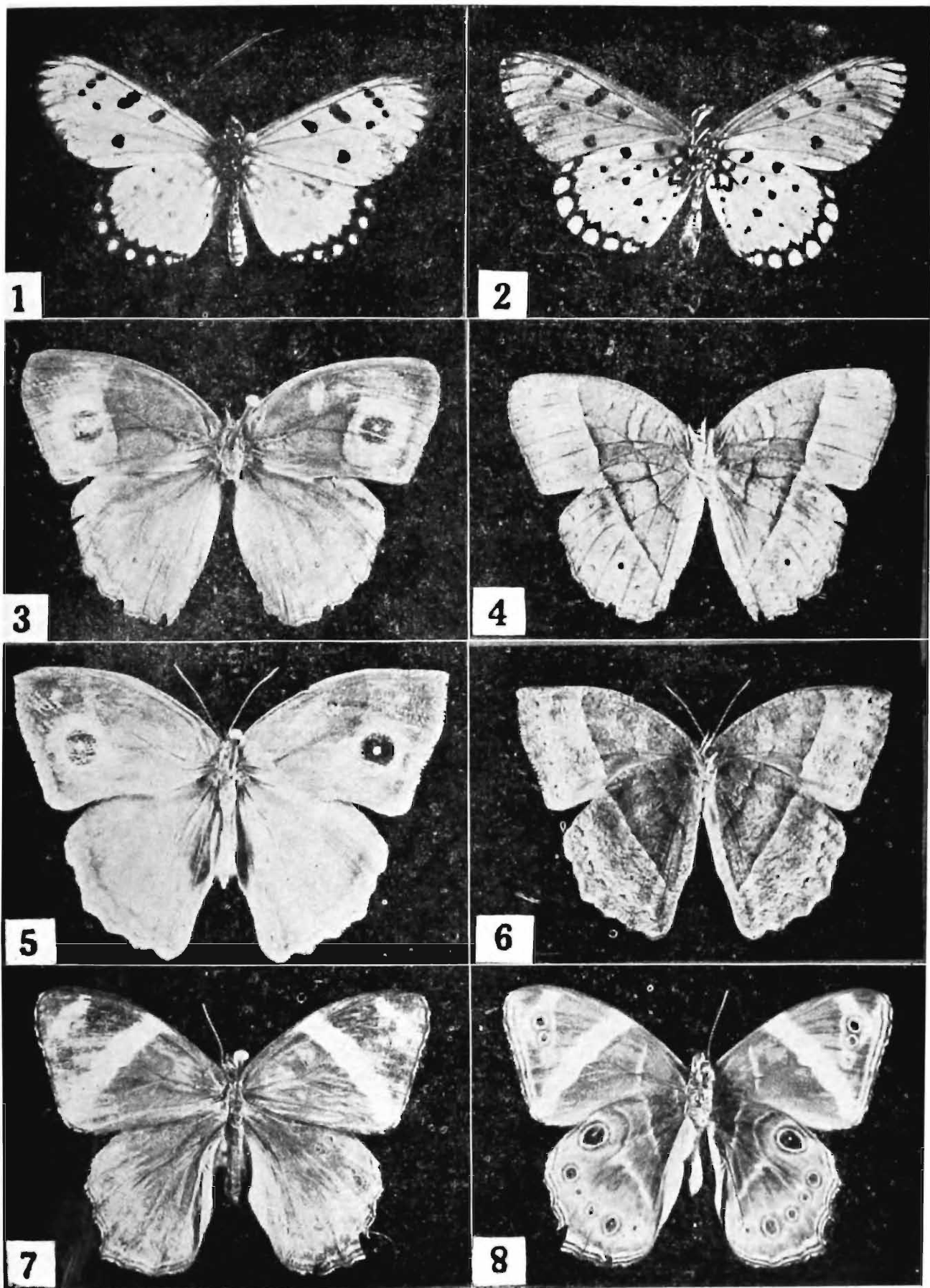
| <i>Page</i> | <i>Line from<br/>Top</i> | <i>Printed</i>         | <i>Read</i>                              |
|-------------|--------------------------|------------------------|--|
| 1           | 10                       | 2000-5000 m.           | 100-5000 m.                              |
|             | 17, 18                   | „ five metres          | „ 500 cms.                               |
|             | 22, 32                   | „ 129                  | „ 128                                    |
| 3           | 20                       | „ <i>Orsotriaena</i>   | „ <i>Orsotrioena</i>                     |
| 4           | 20 21                    | „ (Abor and<br>Rahung) | „ (Abor) and Kameng<br>District (Rahung) |
|             | 24                       | „ Salman               | „ Salmon                                 |
|             | 28                       | „ Aroaa                | „ Arora                                  |
| 8           | 18                       | „ Forster              | „ Forester                               |
| 9           | 15                       | „ (Plate 11, 13-14)    | „ (Plate II, nos. 13-14)                 |
| 13          | 1                        | „ 2800 feet            | „ 840 m.                                 |
| 14          | 30                       | „ <i>Zipaeti</i>       | „ <i>Zipaetis</i>                        |
| 15          | 3, 12                    | „ <i>Orsotriaena</i>   | „ <i>Orsotioena</i>                      |
|             | 4                        | „ 15 79                | „ 15 : 79                                |
|             | 24                       | „ Chowkhana            | „ Chowkham                               |
|             | 33                       | „ Dalmara              | „ Doimara                                |
| 16          | 20                       | „ 1700 feet            | „ 515 m.                                 |
| 17          | 5                        | „ Gf                   | „ Of                                     |
|             | 17                       | „ 6000 feet            | „ 1800 m.                                |
|             | 28                       | „ 29-30                | „ 29-32                                  |
| 24          | 10                       | „ Lohit                | „ Tirap                                  |
| 39          | 20                       | „ amall                | „ small                                  |
| 49          | 18                       | „ Astrolae             | „ Astrolabe                              |
| 53          | 8                        | „ <i>G. T. Arora</i>   | „ <i>G. S. Arora</i>                     |
|             | 9                        | „ 1961                 | „ 1969                                   |
| 62          | 8                        | „ 515 feet             | „ 515 m.                                 |
| 67          | 22                       | „ 300 m., 1 ex.        | „ 300 m., 2 exs.,                        |
|             | 23                       | „ 1ex., 6.x.1966       | <i>Delete</i>                            |
|             |                          | „ 1ex., 31.x.1966      |  |
| 71          | 6                        | „ legsi mperfect       | <i>Read</i> legs imperfect               |

| <i>Page</i> | <i>Line from</i> | <i>Printed</i>  | <i>Read</i>   |
|-------------|------------------|---|---|
|             | <i>Top</i>       |   |   |
| 72          | 23, 24           | „ 10.iii.1966 ( <i>Coll.</i><br><i>S. K. Tandon</i> and<br><i>G. S. Arora</i> ) | „ 10.iii.1969 ( <i>Coll.</i><br><i>S. K. Tandon</i> ) |
| 78          | 3                | „ <i>Syntarus</i>   | „ <i>Syntarucus</i>                                   |
|             | 8                | „ <i>extrems</i>  | „ <i>extreme</i>                                      |
| 82          | 24               | „ <i>Souhern</i>  | „ <i>Southern</i>                                     |
| 85          | 31               | „ <i>iii.1973</i>   | „ <i>— .iii.1973</i>                                  |
|             | 32               | „ <i>Bhattacharya</i>   | „ <i>Tandon</i>                                       |
| 91          | 30               | „ <i>Malya</i>  | „ <i>Malaya</i>                                       |
| 93          | 11               | „ <i>Chanlang</i>   | „ <i>Changlong</i>                                    |
| 96          | 1                | „ <i>Frhustorfer</i>  | „ <i>Fruhstorfer</i>                                  |
| 97          | before 24        | Insert <i>Distribution : India</i><br><i>Burma.</i>                             |   |
|             | 24               | Printed <i>Distribution</i>   | „ <i>Remarks</i>                                      |

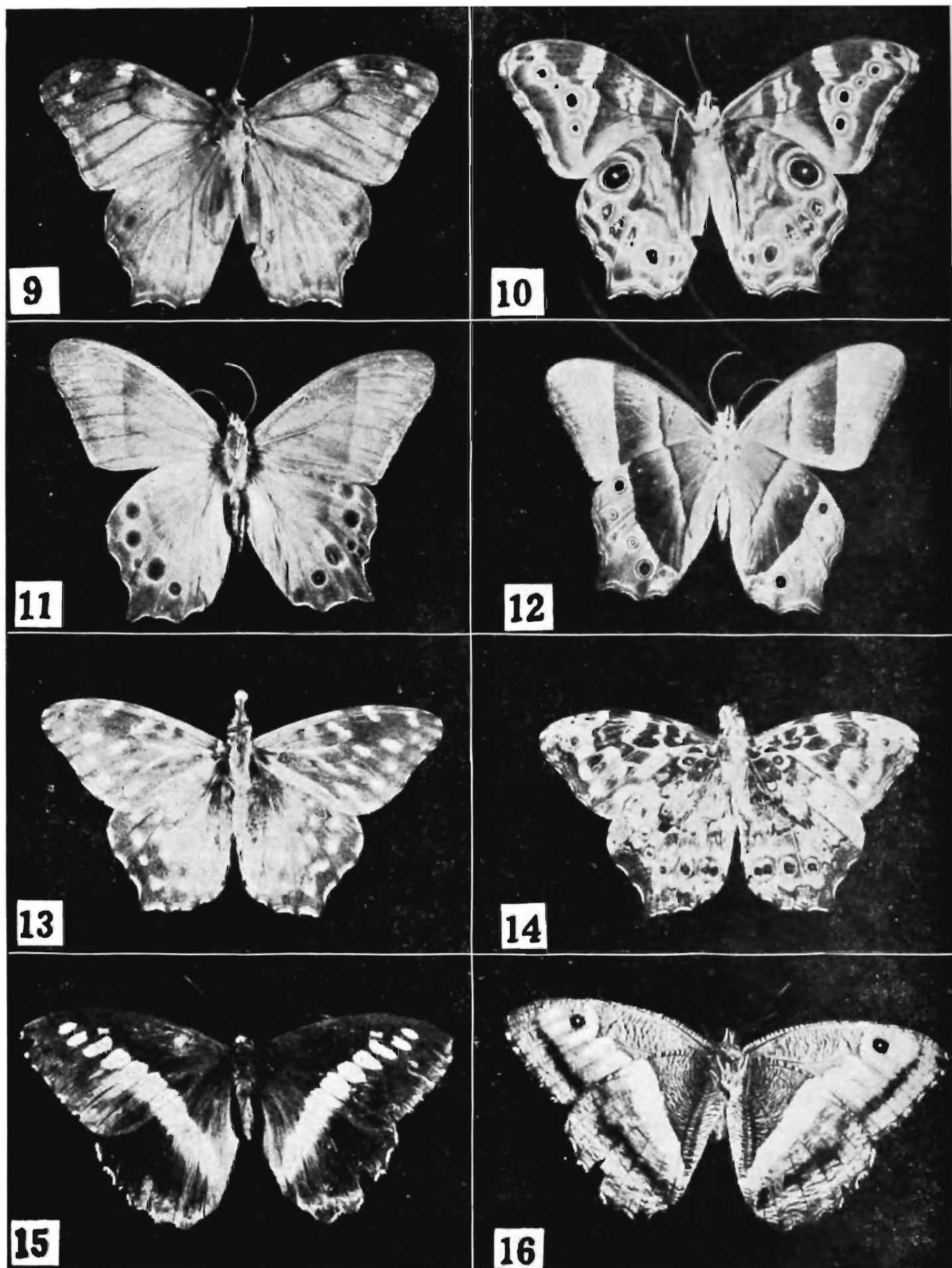
# PLATES



PLATE I

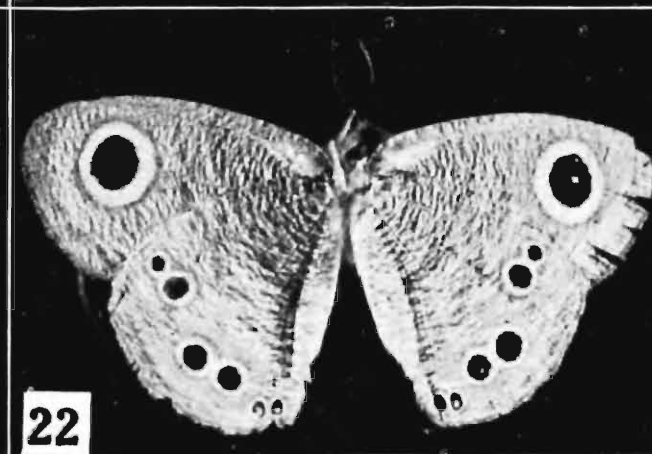
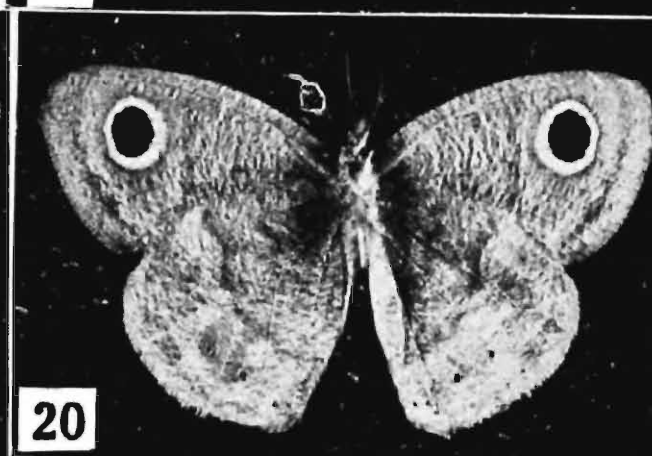
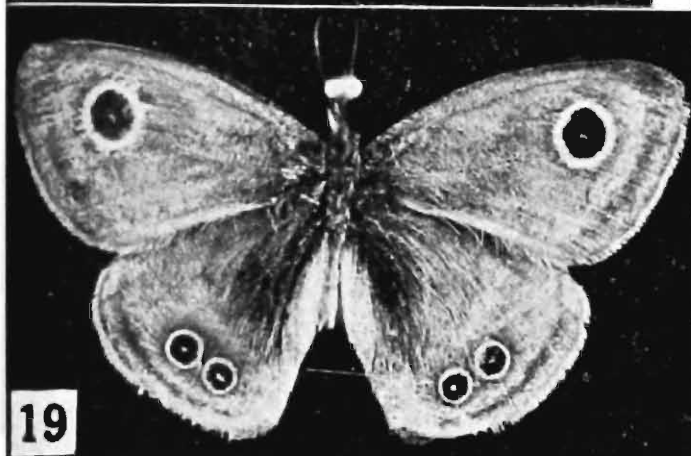
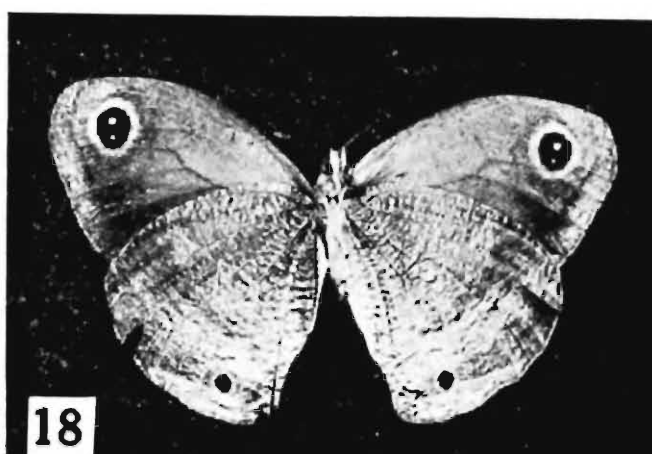
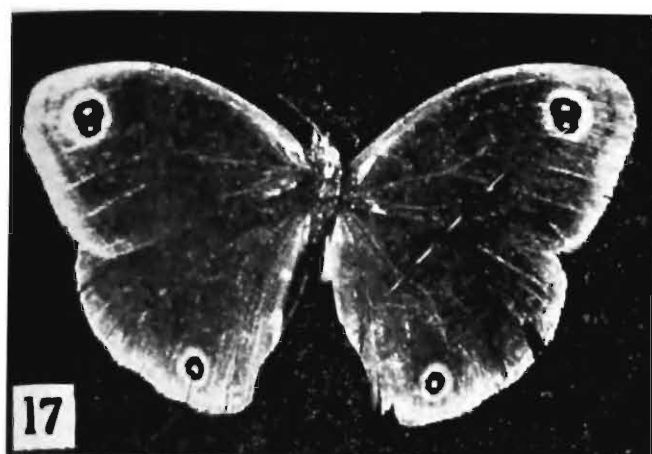


- |              |   |
|--------------|---|
| 1. Upperside | 2. Underside of <i>Acraea violae</i> (Fabricius)          |
| 3. Upperside | 4. Underside of <i>Mycalesis mineus mineus</i> (Linnaeus) |
| 5. Upperside | 6. Underside of <i>Mycalesis visala visala</i> Moore      |
| 7. Upperside | 8. Underside of <i>Lethe confusa</i> Aurivillius          |



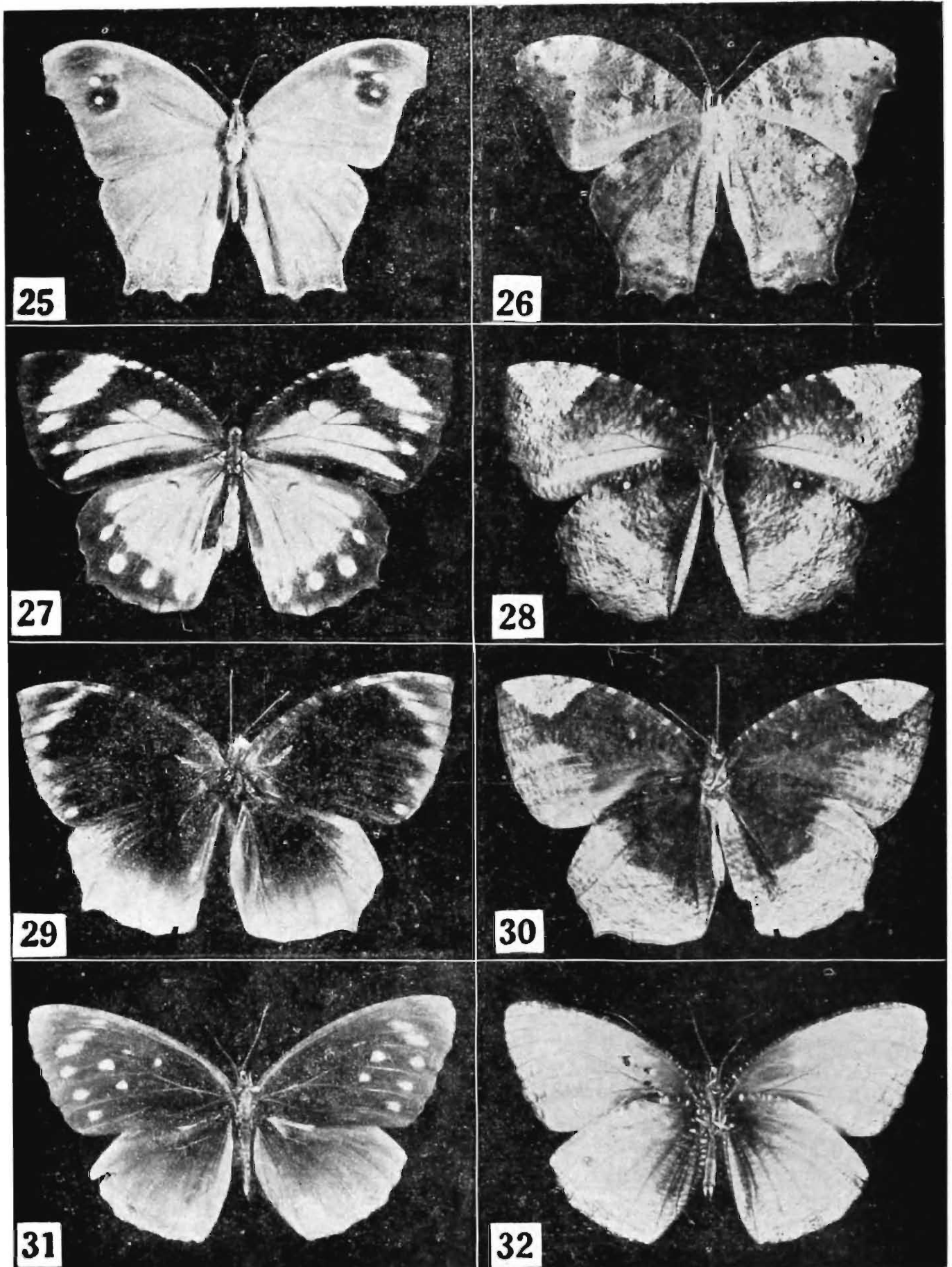
9. Upperside  
11. Upperside  
13. Upperside  
15. Upperside

10. Underside of *Lethe chandica chandica* (Moore)  
12. Underside of *Lethe vindhya* (Felder)  
14. Underside of *Lethe pulaha pulahoides* (Moore)  
16. Underside of *Aulocera saraswati* (Kollar)



- |               |   |
|---------------|---|
| 17. Upperside | 18. Underside of <i>Erebia annada orixa</i> (Moore)         |
| 19. Upperside | 20. Underside of <i>Ypthima nareda newara</i> Moore         |
| 21. Upperside | 22. Underside of <i>Ypthima indecora</i> Moore              |
| 23. Upperside | 24. Underside of <i>Orsotrioena medus medus</i> (Fabricius) |

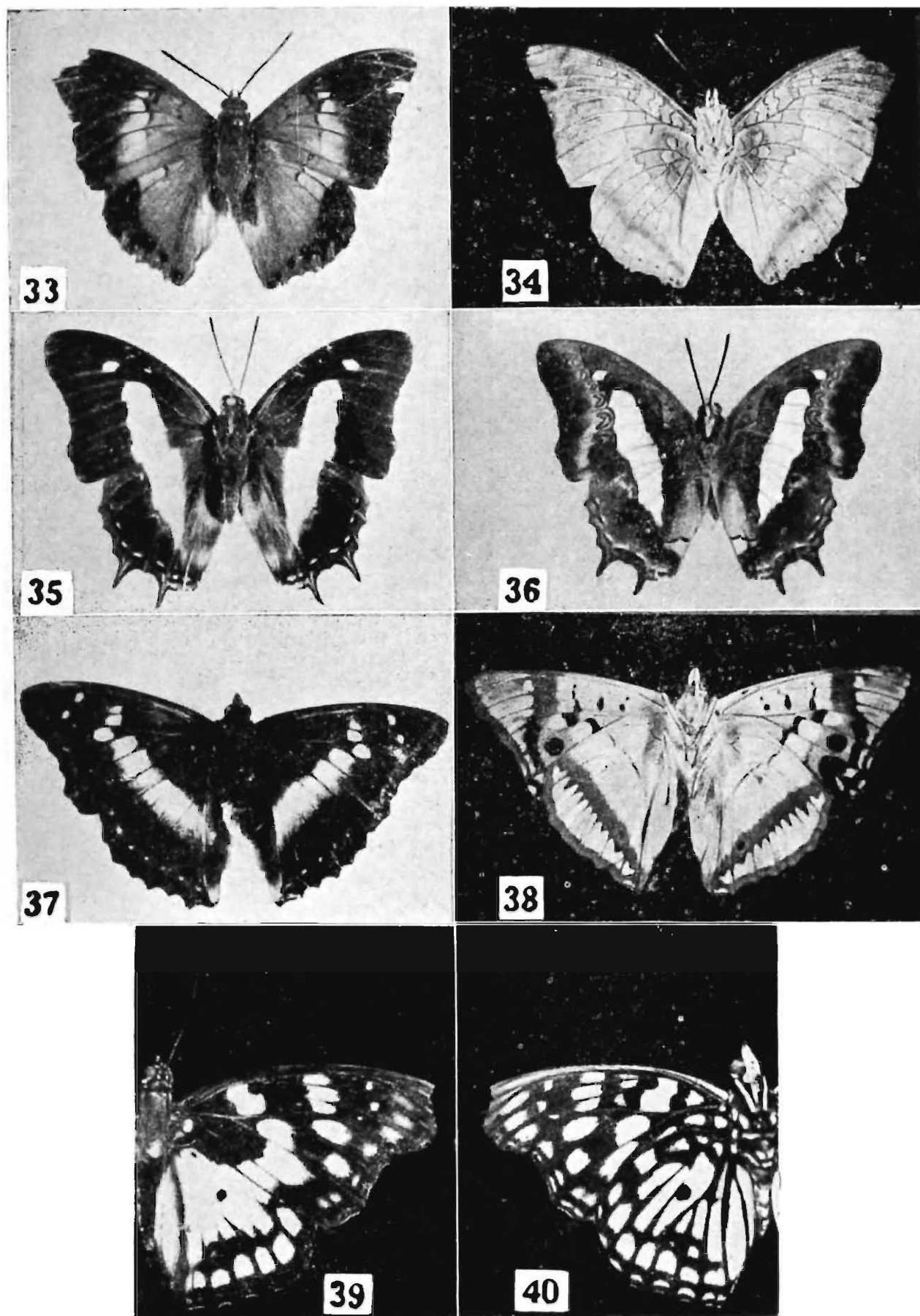
PLATE IV



- 25. Upperside
- 27. Upperside
- 29. Upperside
- 31. Upperside

- 26. Underside of *Melanitis leda ismene* (Cramer)
- 28. Underside of *Elymnias hypermnestra undularis* (Drury)
- 30. Underside of male of *Elymnias malelas malelas* (Hewitson)
- 32. Underside of female of *Elymnias malelas malelas*

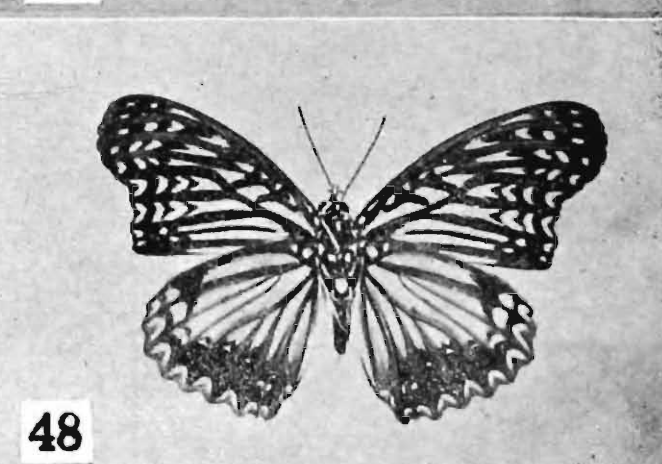
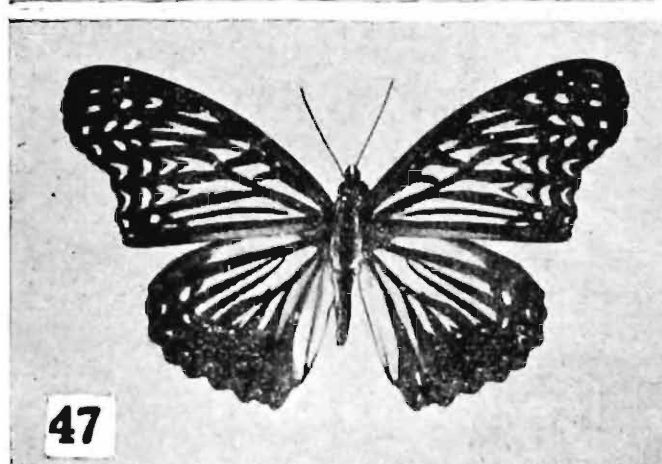
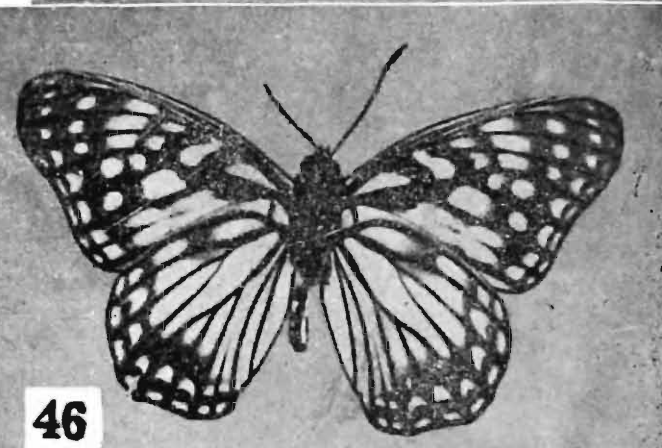
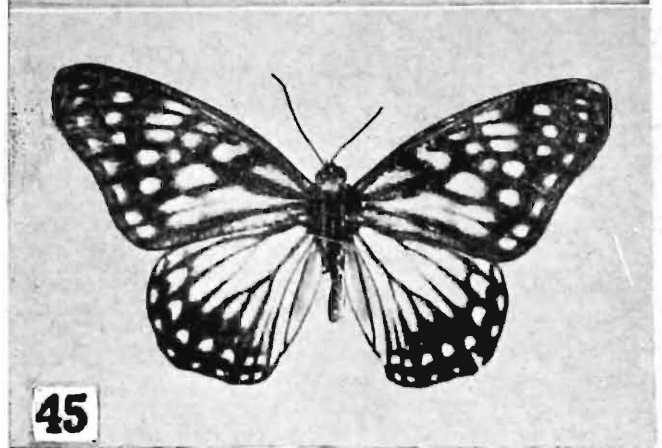
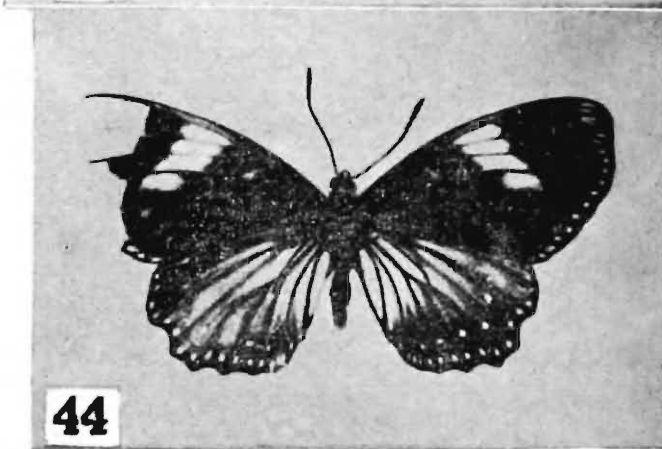
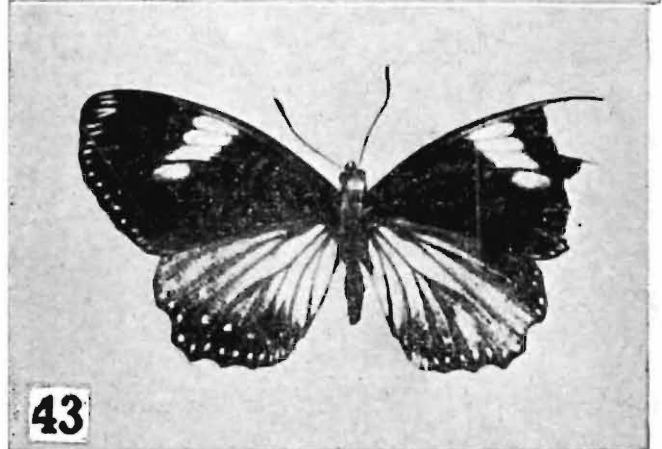
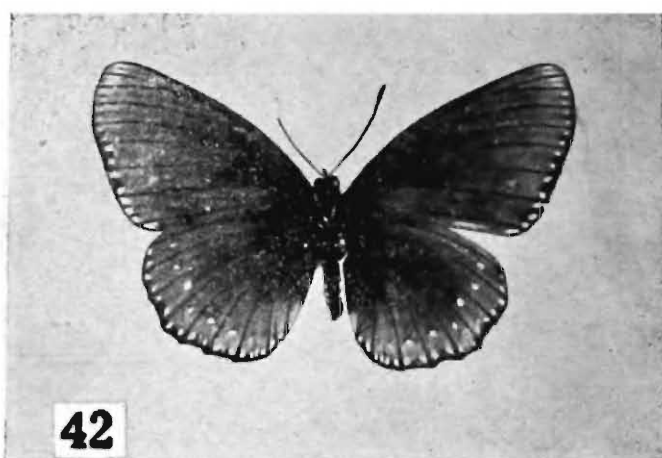
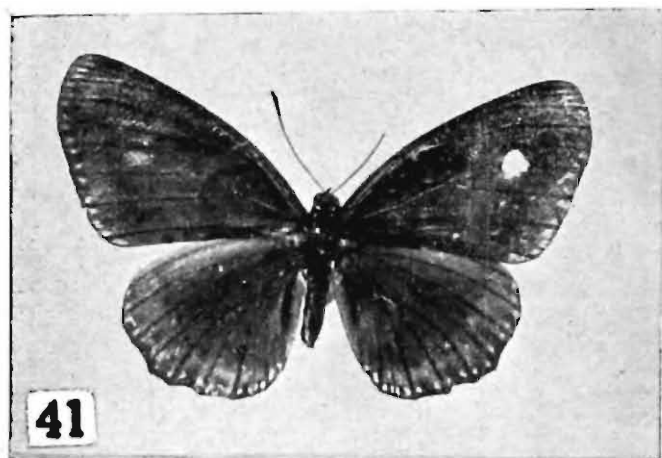
(Hewitson)



33. Upperside  
35. Upperside  
37. Upperside  
39. Upperside

34. Underside of *Charaxes polyxena hierax* Felder  
36. Underside of *Polyura arja* (Felder)  
38. Underside of *Apatura ambica ambica* Kollar  
40. Underside of *Sephisia chandra* (Moore)

PLATE VI



41. Upperside  
43. Upperside  
45. Upperside  
47. Upperside

42. Underside of male of *Euripus halitherses* Doubleday  
44. Underside of female of *Euripus halitherses* Doubleday  
46. Underside of *Diagora persimilis* (Westwood)  
48. Underside of *Hestina nama* (Doubleday)

PLATE VII



49



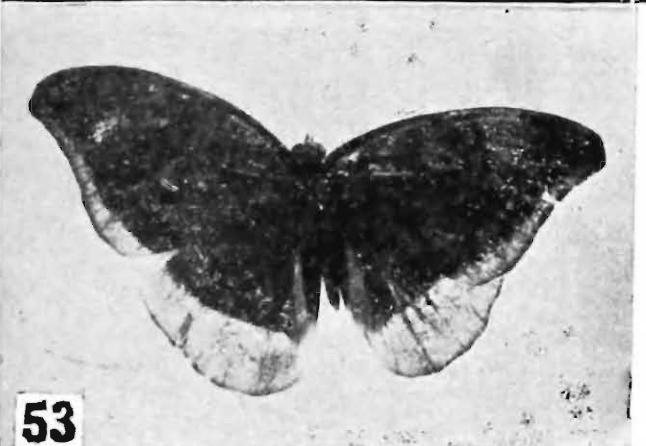
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51



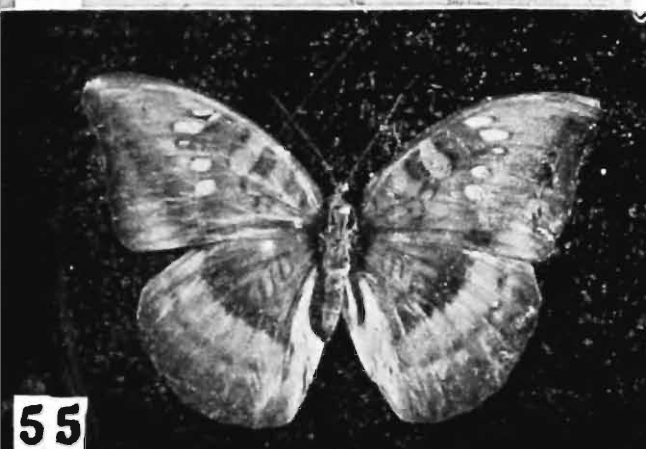
52



53



54



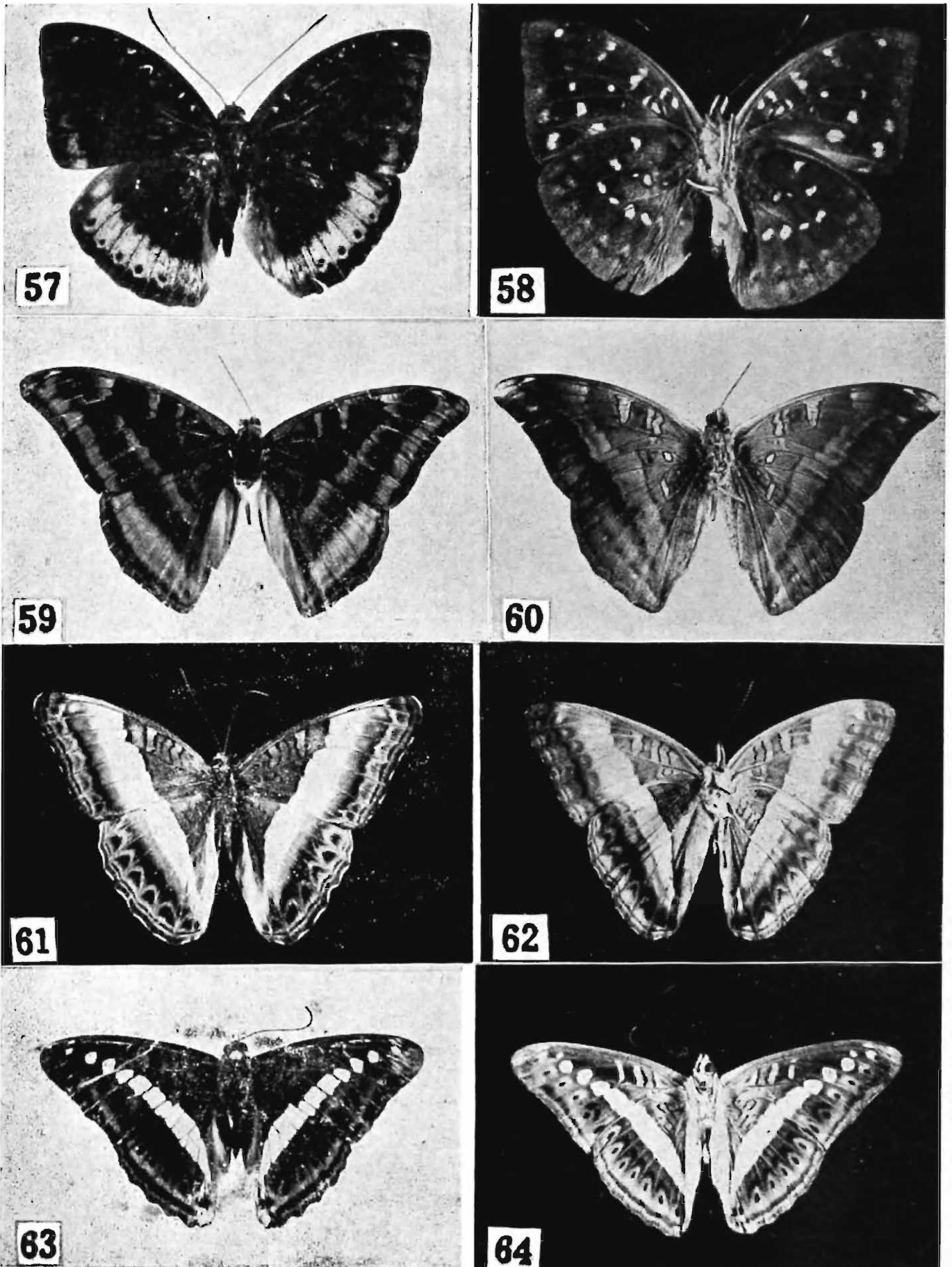
55



56

- |               |  |
|---------------|--|
| 49. Upperside | 50. Underside of <i>Dichorragia nesimachus</i> (Boisduval) |
| 51. Upperside | 52. Underside of <i>Stibochiona nicea nicea</i> (Gray)     |
| 53. Upperside | 54. Underside of <i>Euthalia lepidea lepidea</i> (Butler)  |
| 55. Upperside | 56. Underside of <i>Euthalia telchinia</i> (Ménétrières)   |

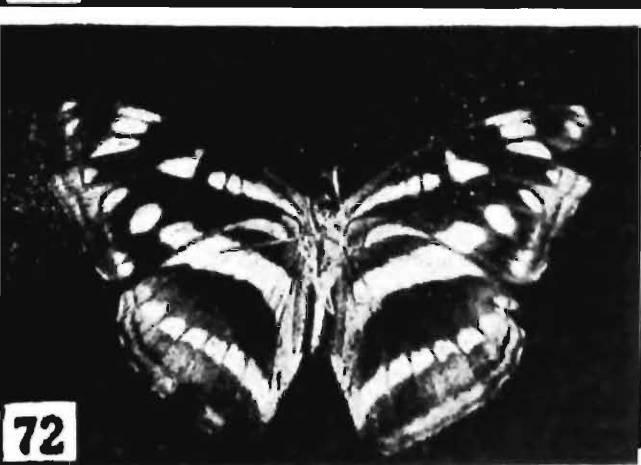
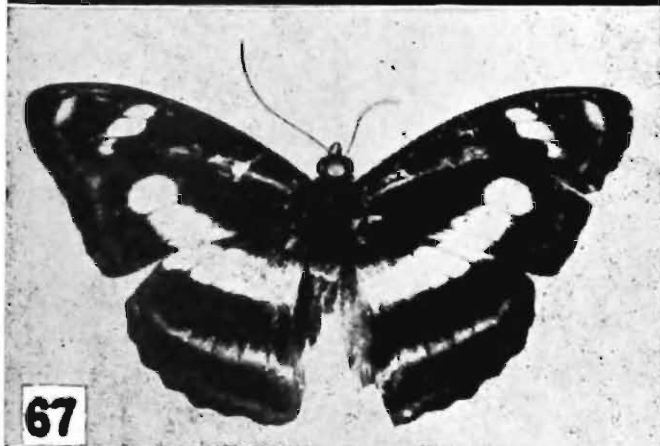
PLATE VIII



57. Upperside  
59. Upperside  
61. Upperside  
63. Upperside

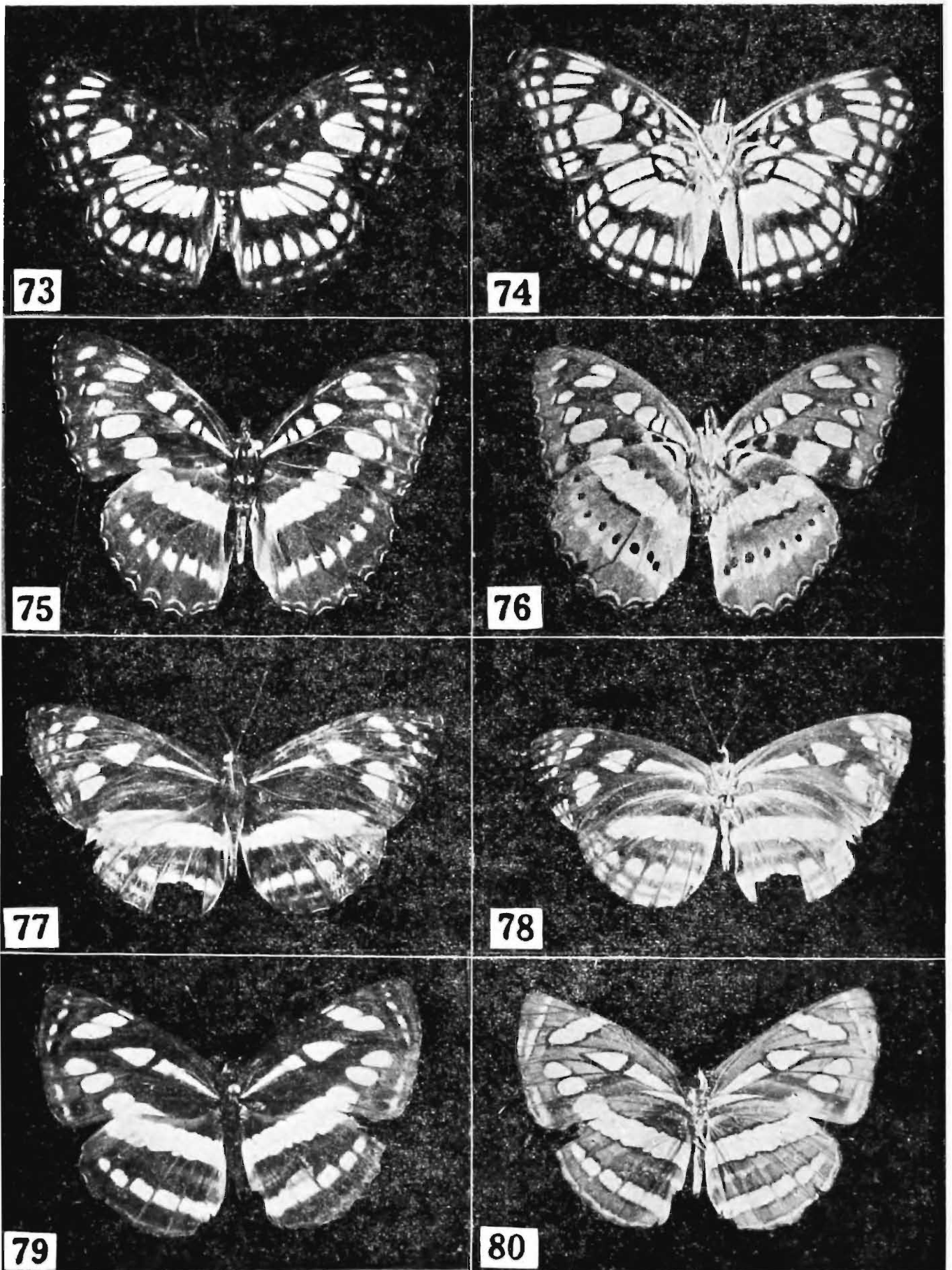
58. Underside of *Aconthea khasiana khasiana* (Swinhoe)  
60. Underside of *Limenitis danava* Moore  
62. Underside of *Limenitis zayla* Doubleday  
64. Underside of *Limenitis daraxa* Doubleday

PLATE IX



65. Upperside      66. Underside of *Moduza procris procris* (Cramer)  
67. Upperside      68. Underside of *Parathyma cama* (Moore)  
69. Upperside      70. Underside of *Parathyma zeroa* (Moore)  
71. Upperside      72. Underside of *Parathyma opalina orientalis* (Elwes)

PLATE X

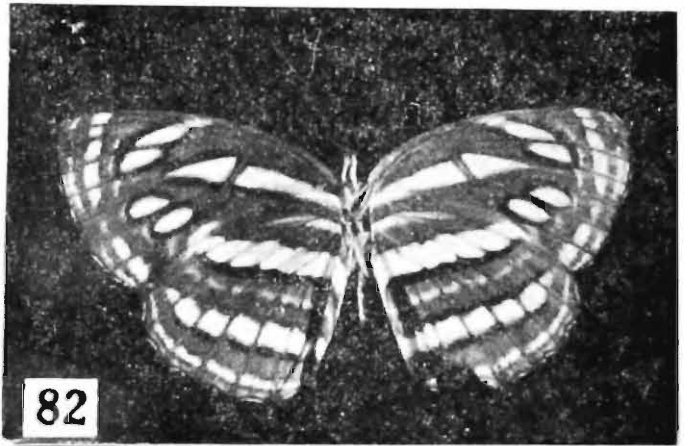


73. Upperside  
75. Upperside  
77. Upperside  
79. Upperside

74. Underside of *Parathyma ranga ranga* (Moore)  
76. Underside of *Parathyma perius* (Linnaeus)  
78. Underside of *Neptis columella ophiana* Moore  
80. Underside of *Neptis mahendra* Moore



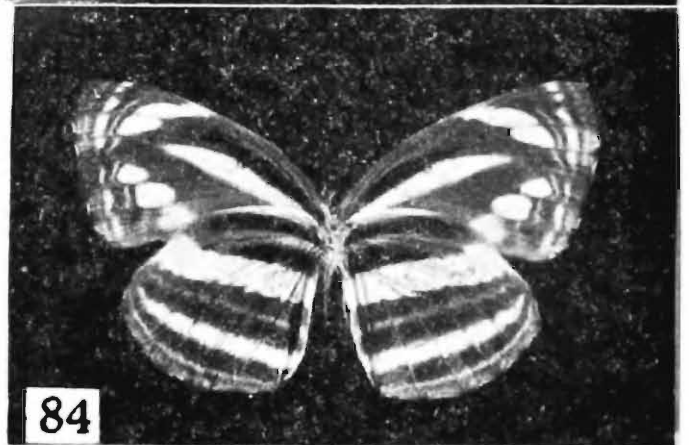
81



82



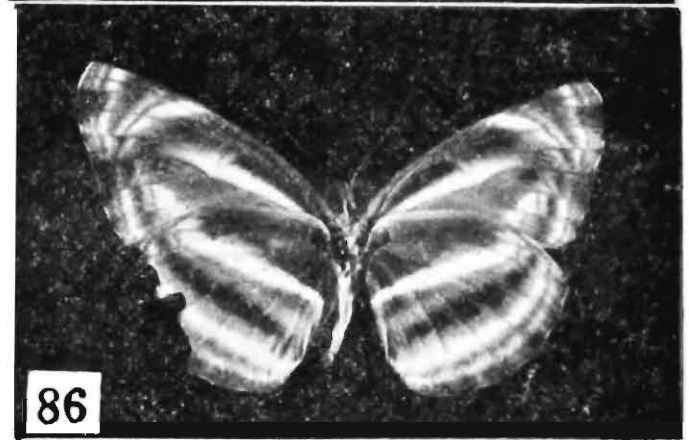
83



84



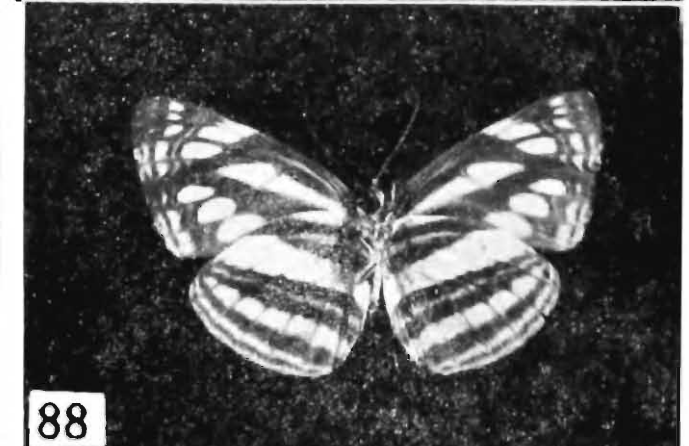
85



86



87

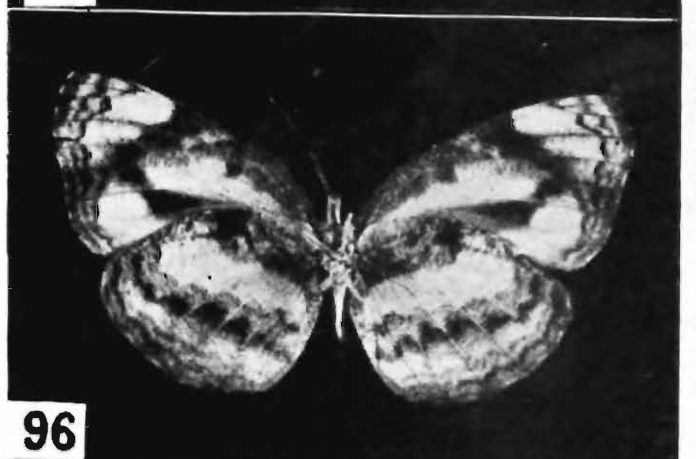
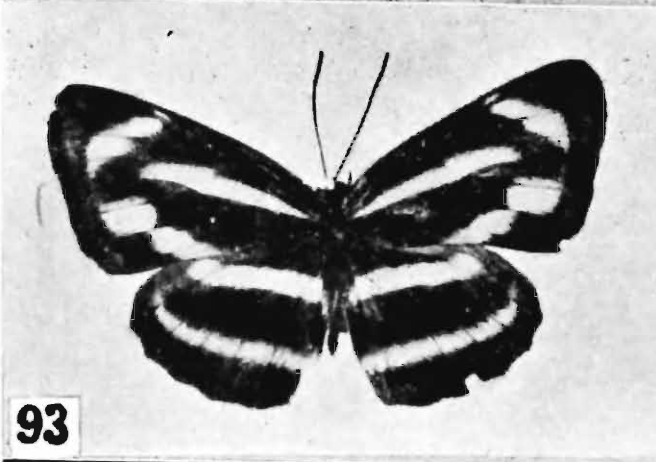
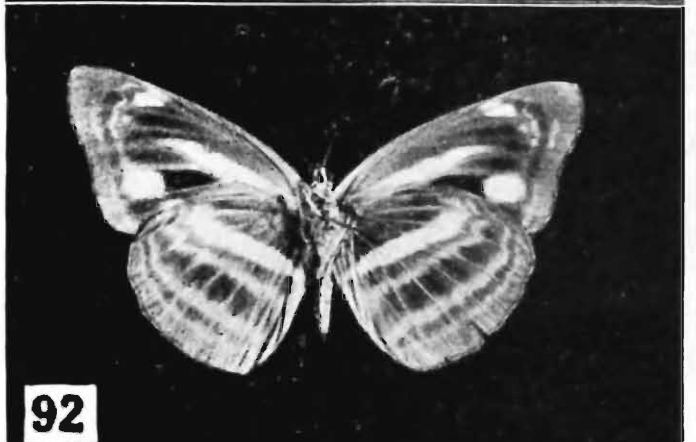
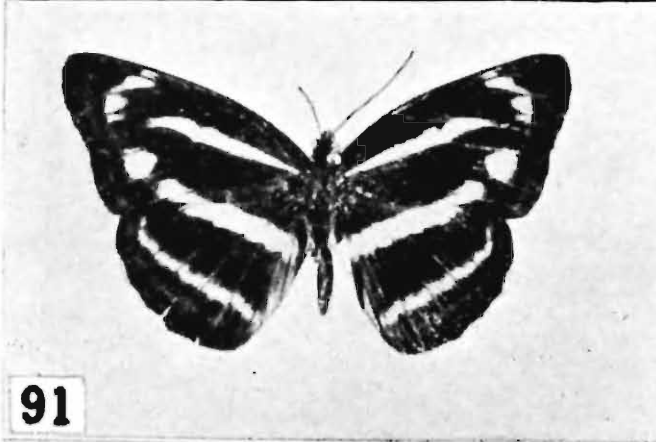
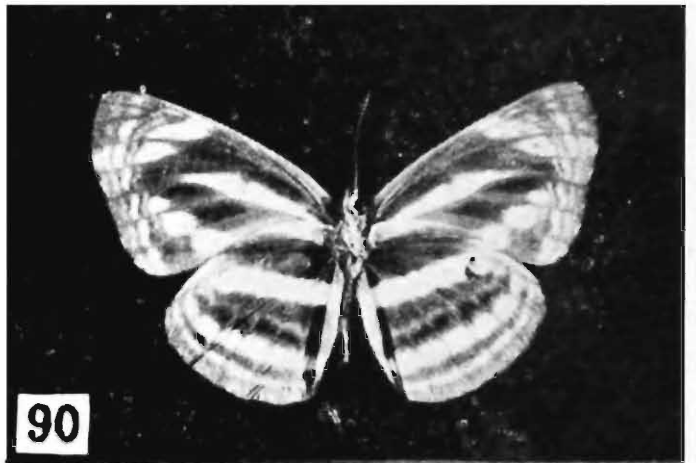
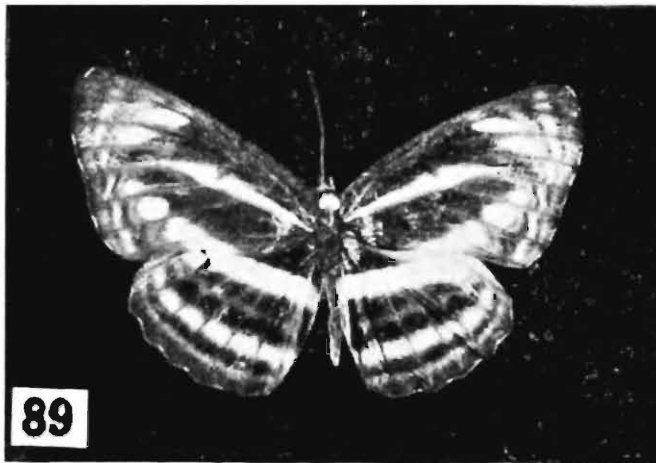


88

81. Upperside  
83. Upperside  
85. Upperside  
87. Upperside

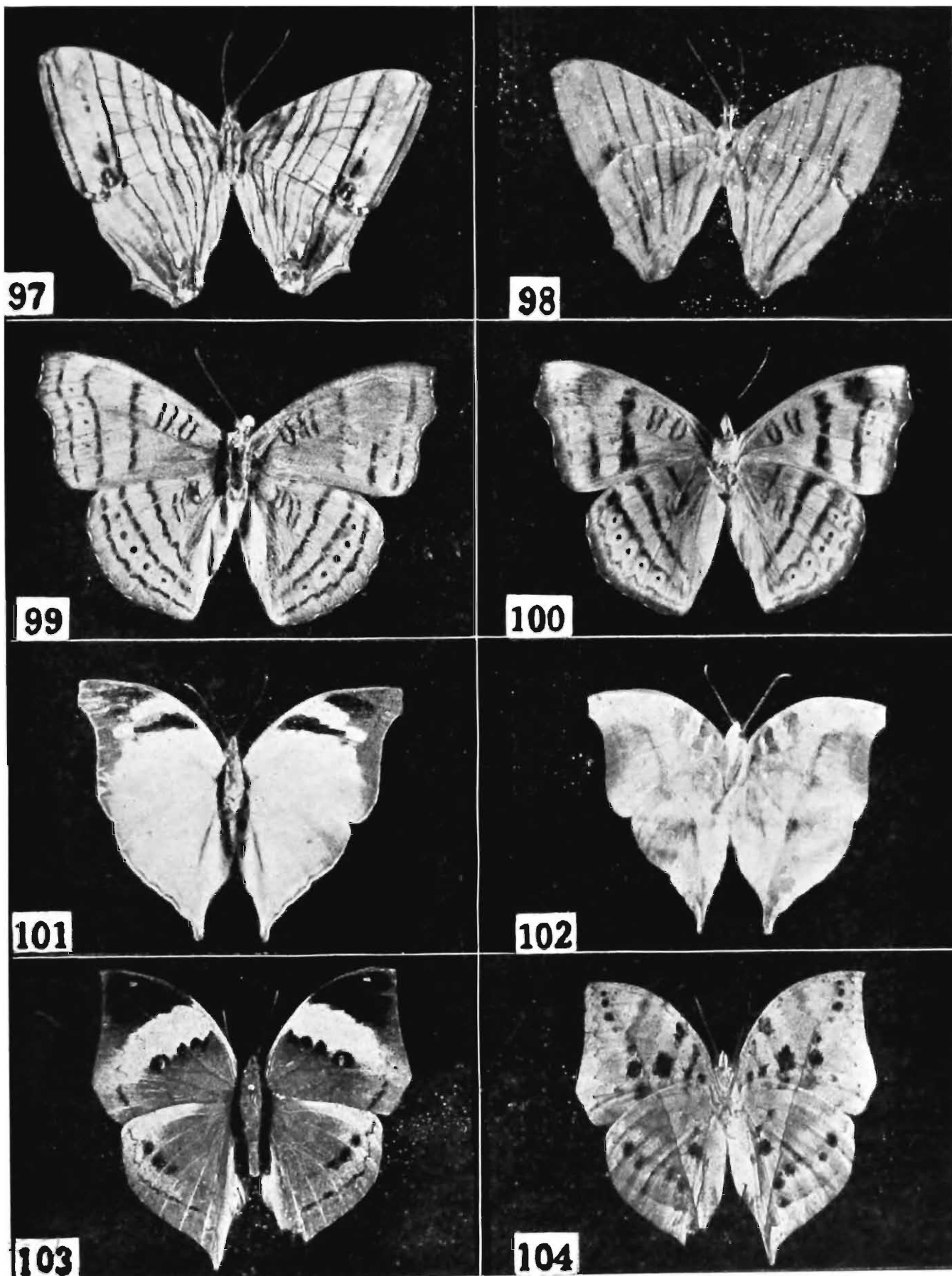
82. Underside of *Neptis hylas astola* Moore  
84. Underside of *Neptis nandina susruta* Moore  
86. Underside of *Neptis yerburyi sikkima* Evans  
88. Underside of *Neptis vikasi pseudovikasi* (Moore)

PLATE XII

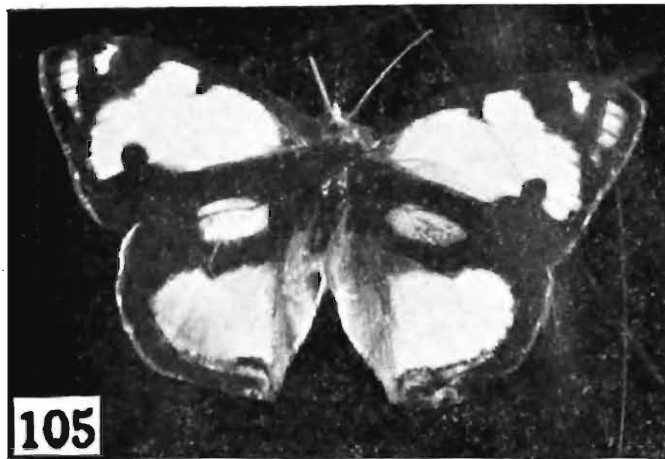


89. Upperside  
91. Upperside  
93. Upperside  
95. Upperside

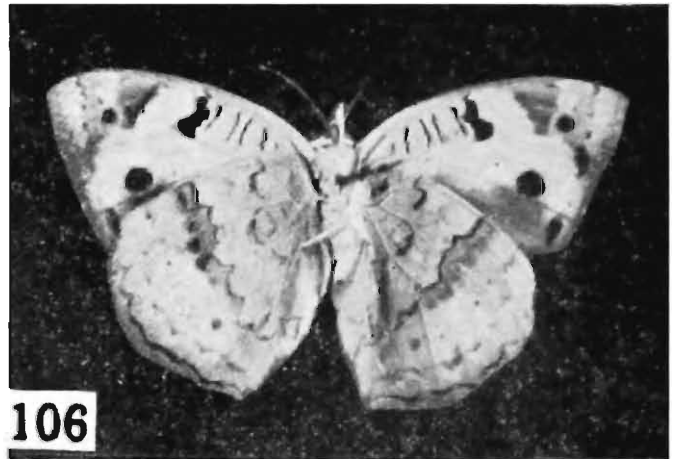
90. Underside of *Neptis cartica cartica* Moore  
92. Underside of *Neptis ananta ochracea* Evans  
94. Underside of *Neptis miah miah* Moore  
96. Underside of *Neptis hordonia hordonia* (Stoll)



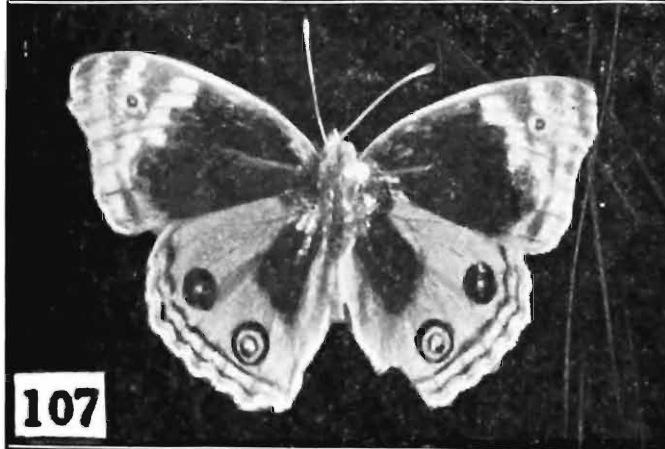
97. Upperside      98. Underside of *Chersonesia risa risa* (Doubleday)  
99. Upperside      100. Underside of *Pseudergolis wedah* (Kollar)  
101. Upperside     102. Underside of *Doleschallia bisaltide indica* Moore  
103. Upperside     104. Underside of *Kallima inachus inachus* (Boisduval)



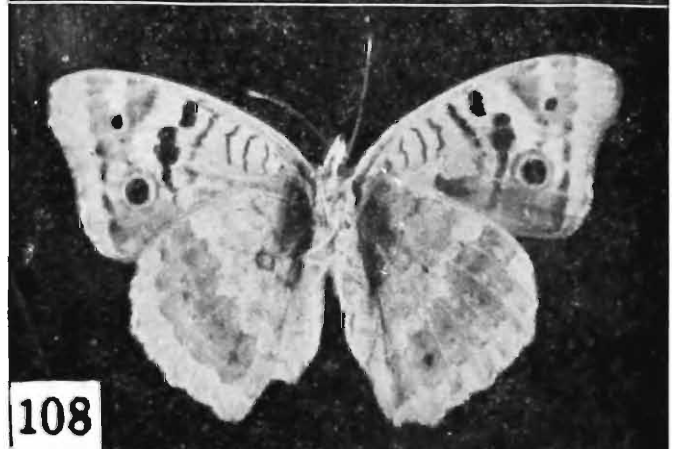
105



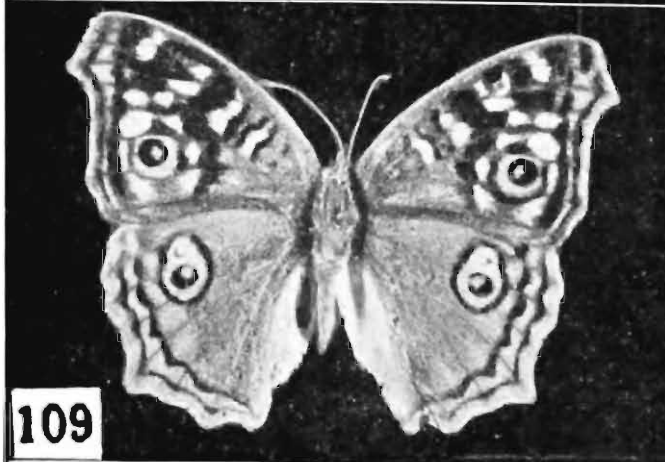
106



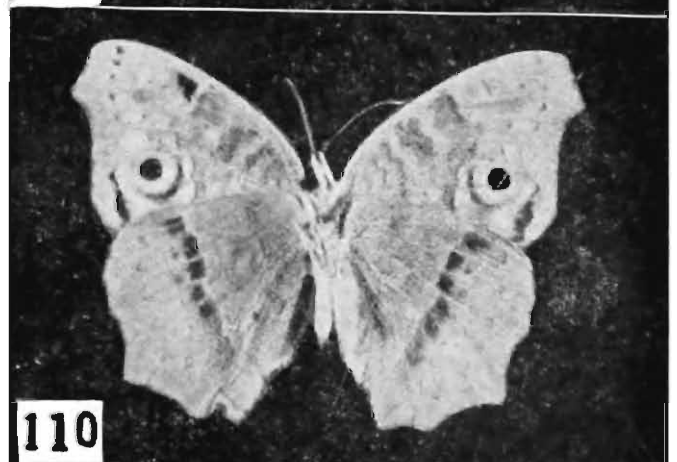
107



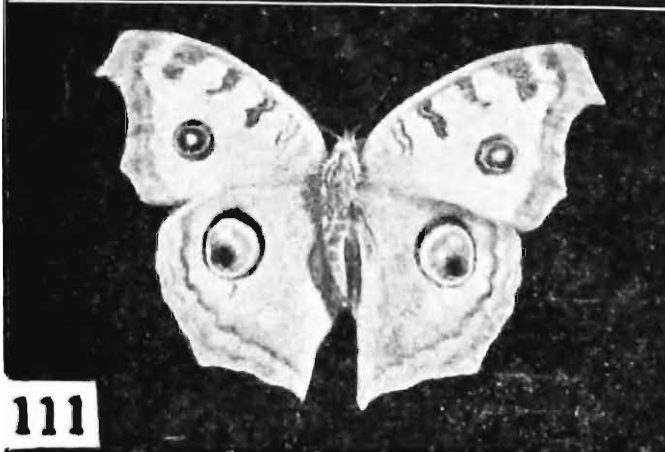
108



109



110

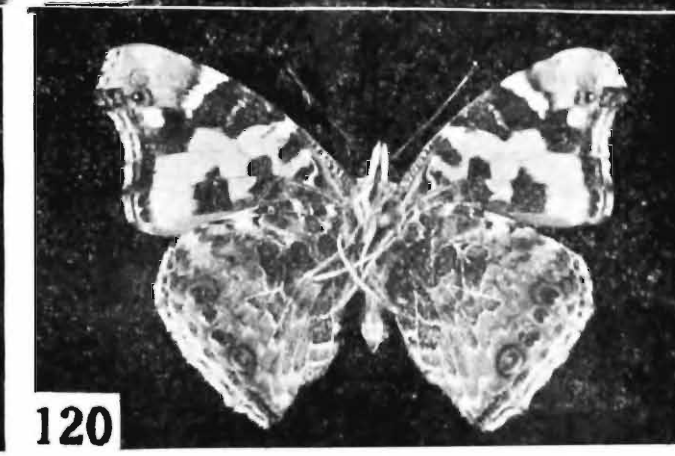
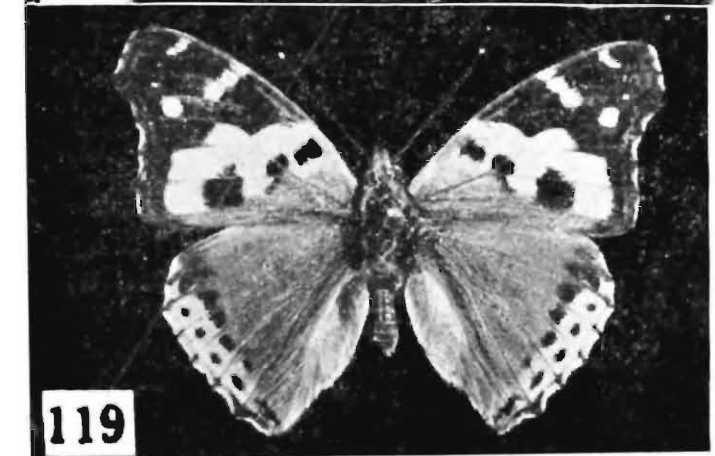
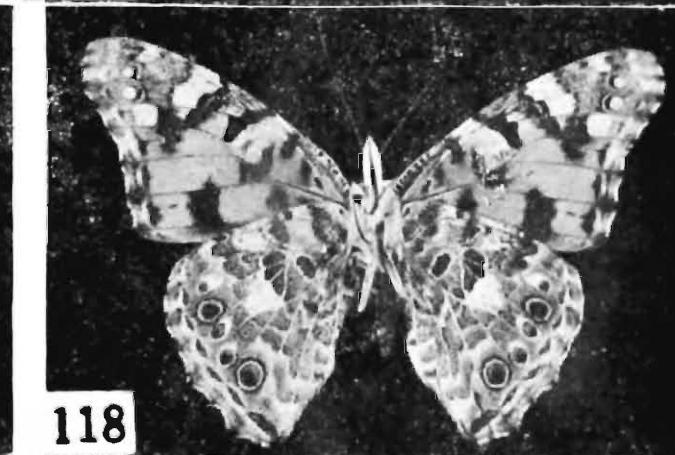
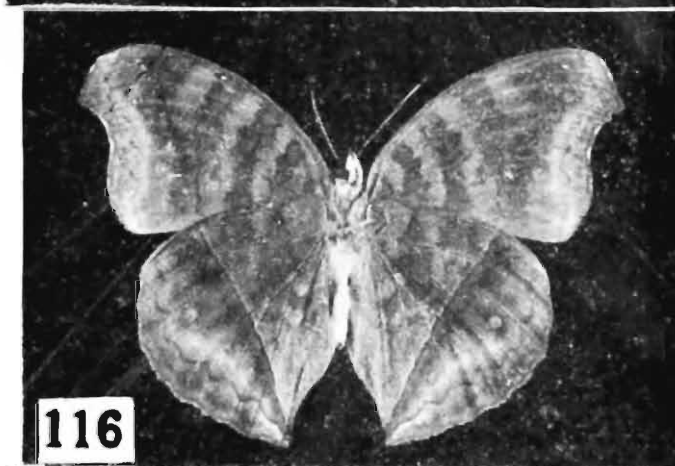
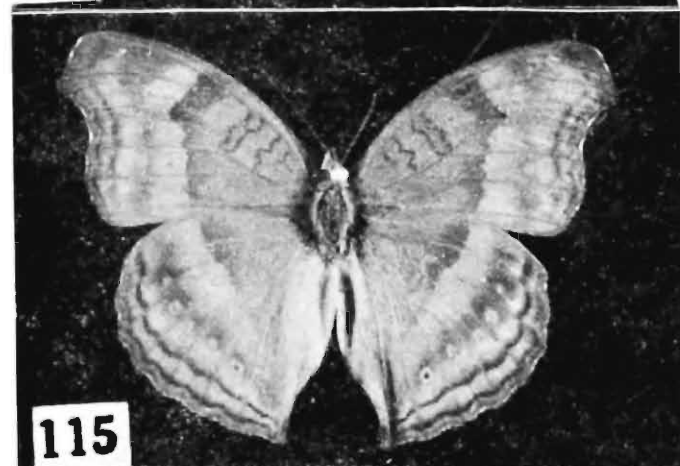


111



112

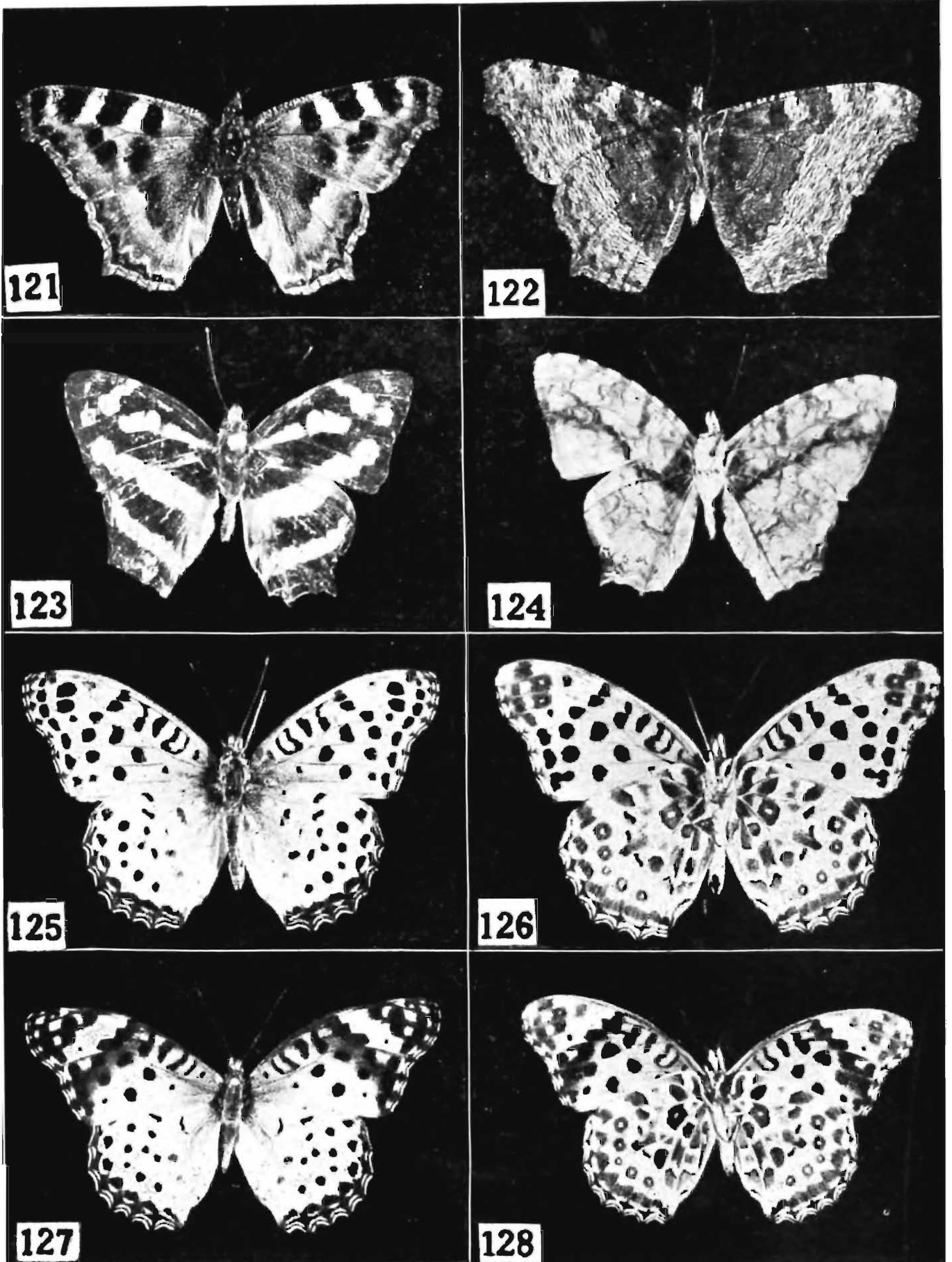
- |                |  |
|----------------|--|
| 105. Upperside | 106. Underside of <i>Precis hierta magna</i> Evans           |
| 107. Upperside | 108. Underside of <i>Precis orithya ocyale</i> Huebner       |
| 109. Upperside | 110. Underside of <i>Precis lemonias lemonias</i> (Linnaeus) |
| 111. Upperside | 112. Underside of <i>Precis almana almana</i> (Linnaeus)     |



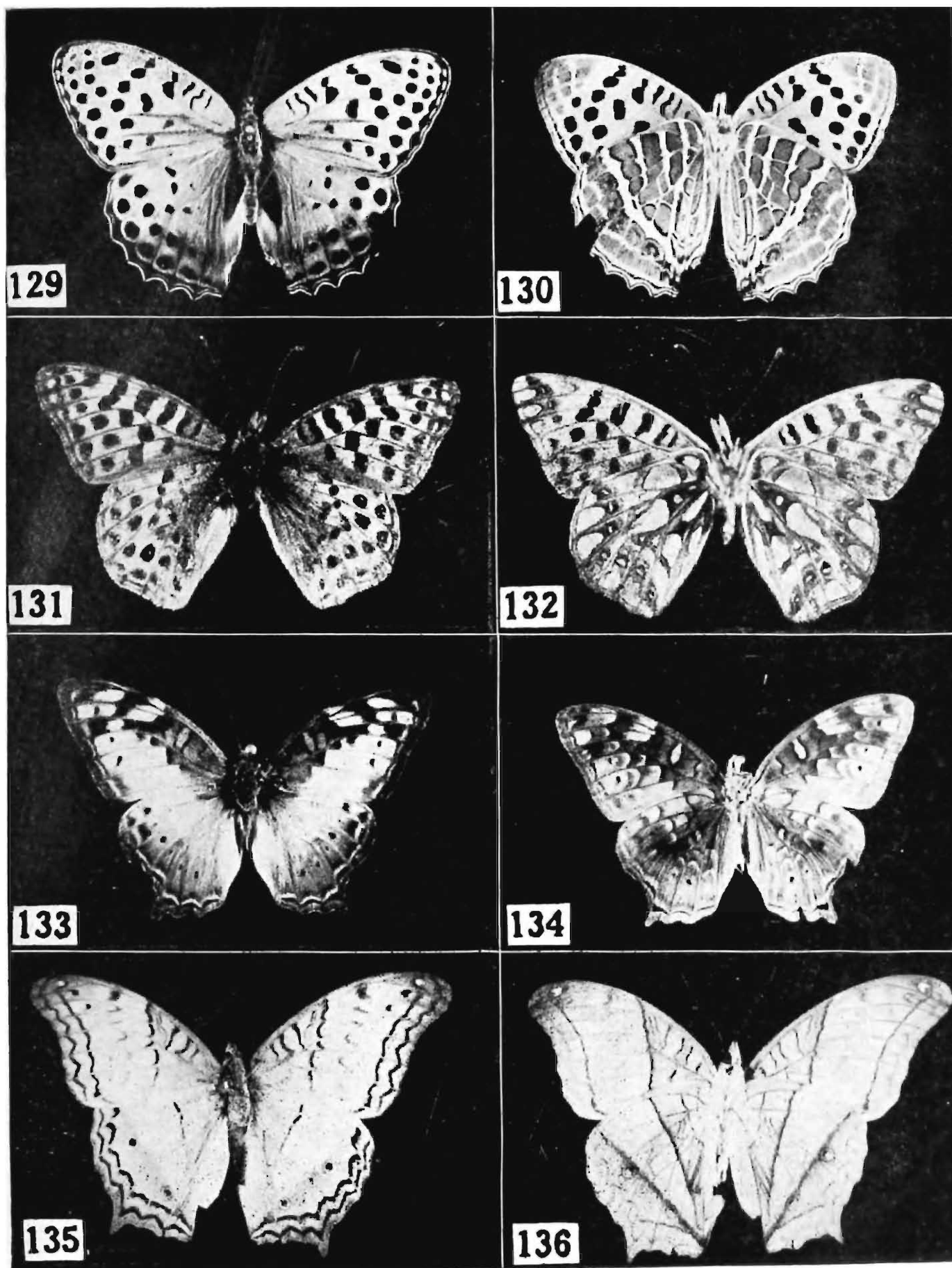
113. Upperside  
115. Upperside  
117. Upperside  
119. Upperside

114. Underside of *Precis atlites* (Linnaeus)  
116. Underside of *Precis iphita iphita* (Cramer)  
118. Underside of *Cynthia cardui* (Linnaeus)  
120. Underside of *Vanessa indica indica* (Herbst)

PLATE XVI



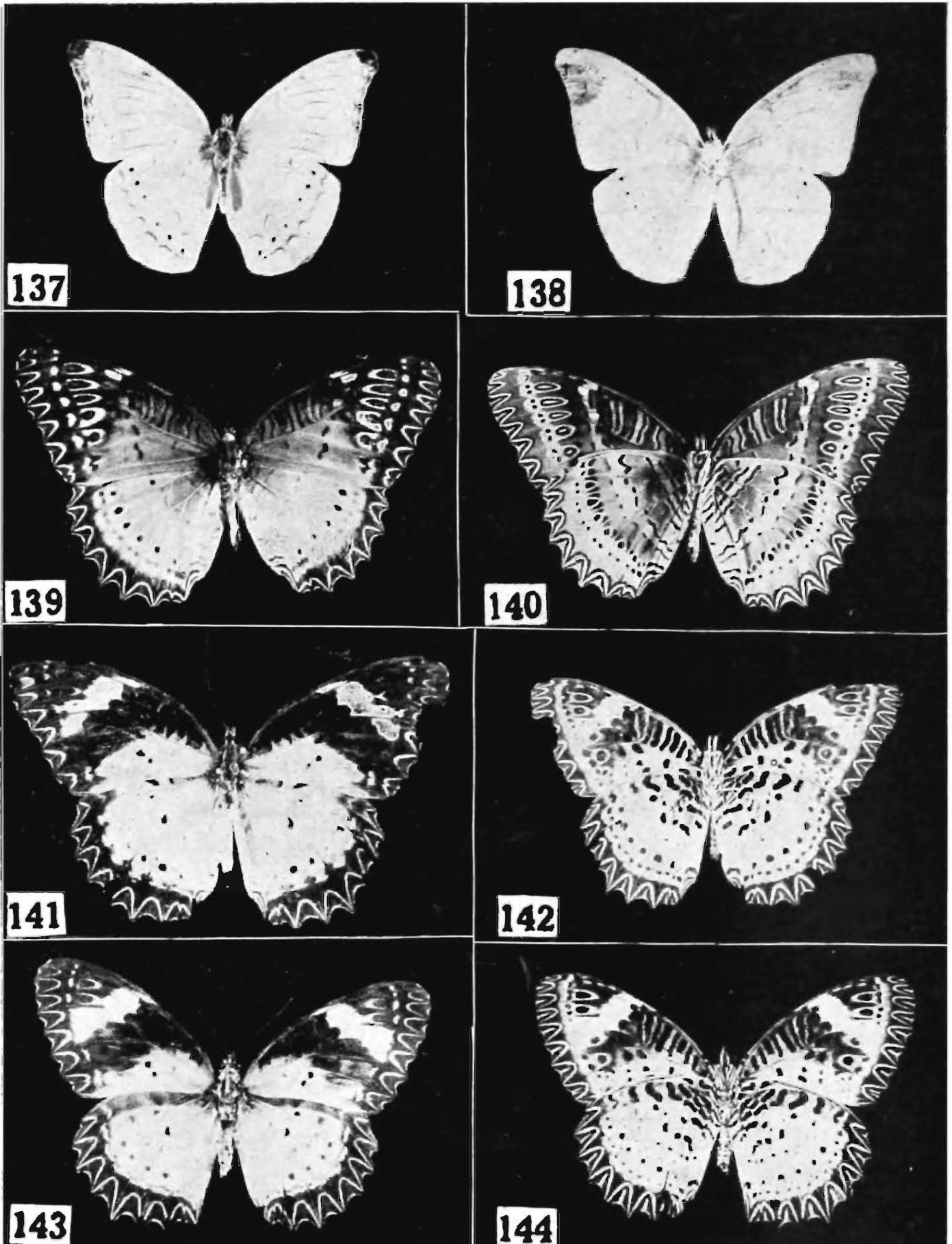
- |                |   |
|----------------|---|
| 121. Upperside | 122. Underside of <i>Vanessa cashmiriensis aesis</i> Fruhstorfer            |
| 123. Upperside | 124. Underside of <i>Symbrenthia hippoclus khasiana</i> Moore               |
| 125. Upperside | 126. Underside of male of <i>Argynnis hyperbius hyperbius</i> (Johanssen)   |
| 127. Upperside | 128. Underside of female of <i>Argynnis hyperbius hyperbius</i> (Johanssen) |



129. Upperside  
131. Upperside  
133. Upperside  
135. Upperside

130. Underside of *Argynnis childreni childreni* Gray  
132. Underside of *Argynnis lathonia issoea* Doubleday  
134. Underside of *Vagrans sinha sinha* (Kollar)  
136. Underside of *Vindula erota erota* (Fabricius)

PLATE XVIII



137. Upperside

139. Upperside

141. Upperside

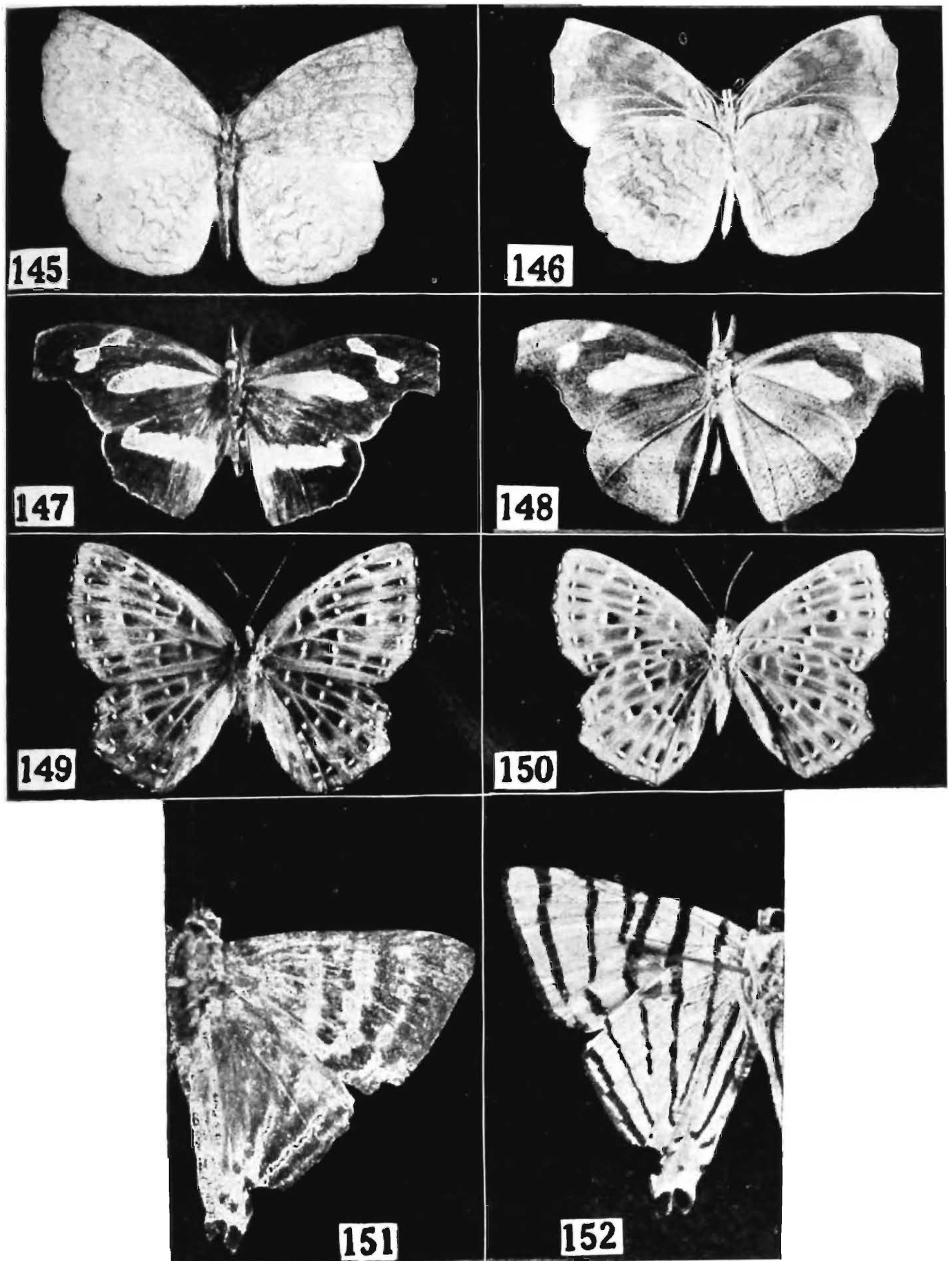
143. Upperside

138. Underside of *Cirrochroa aoris aoris* Doubleday

140. Underside of *Cethosia biblis tisamena* Fruhstorfer

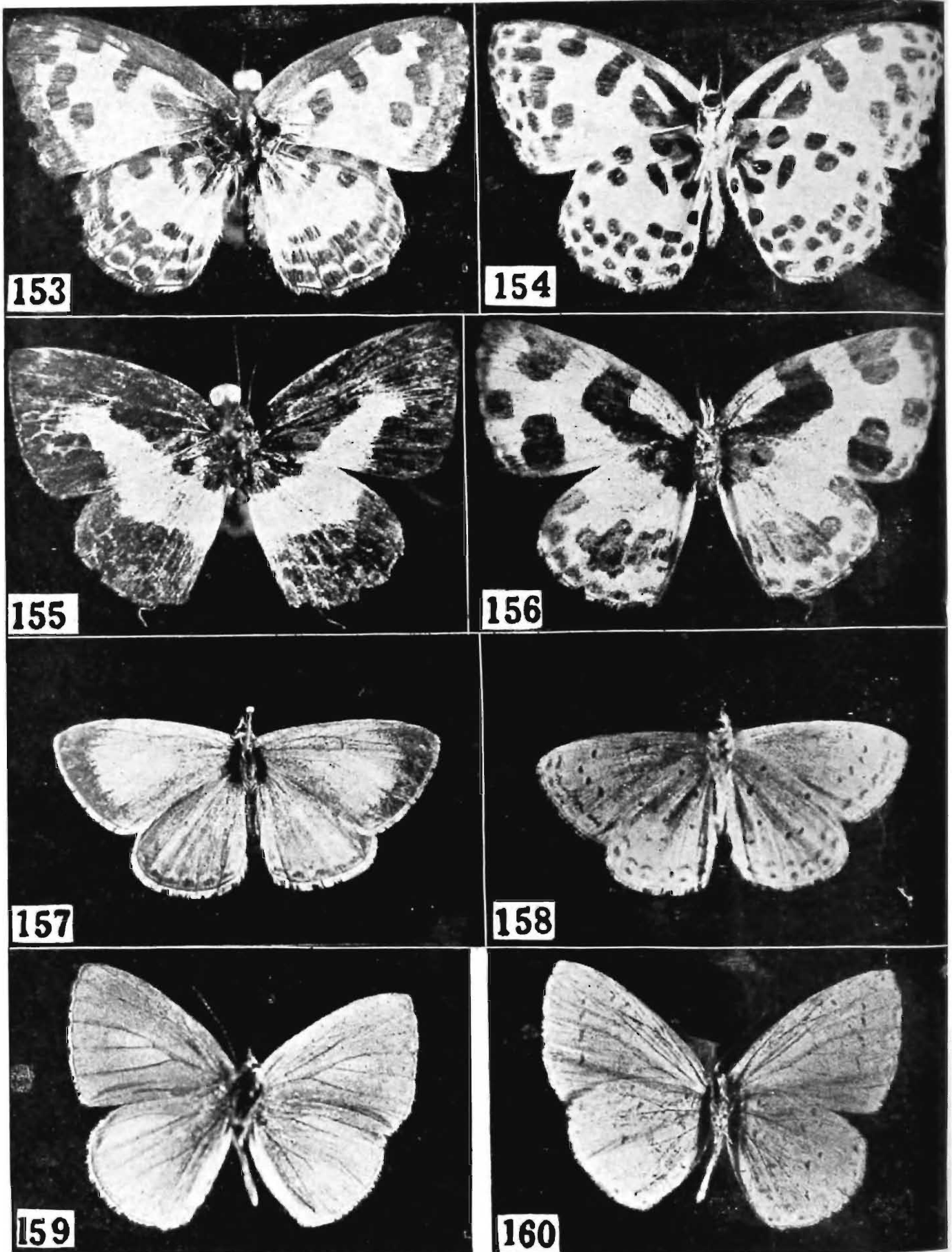
142. Underside of male of *Cethosia cyane* (Drury)

144. Underside of female of *Cethosia cyane* (Drury)

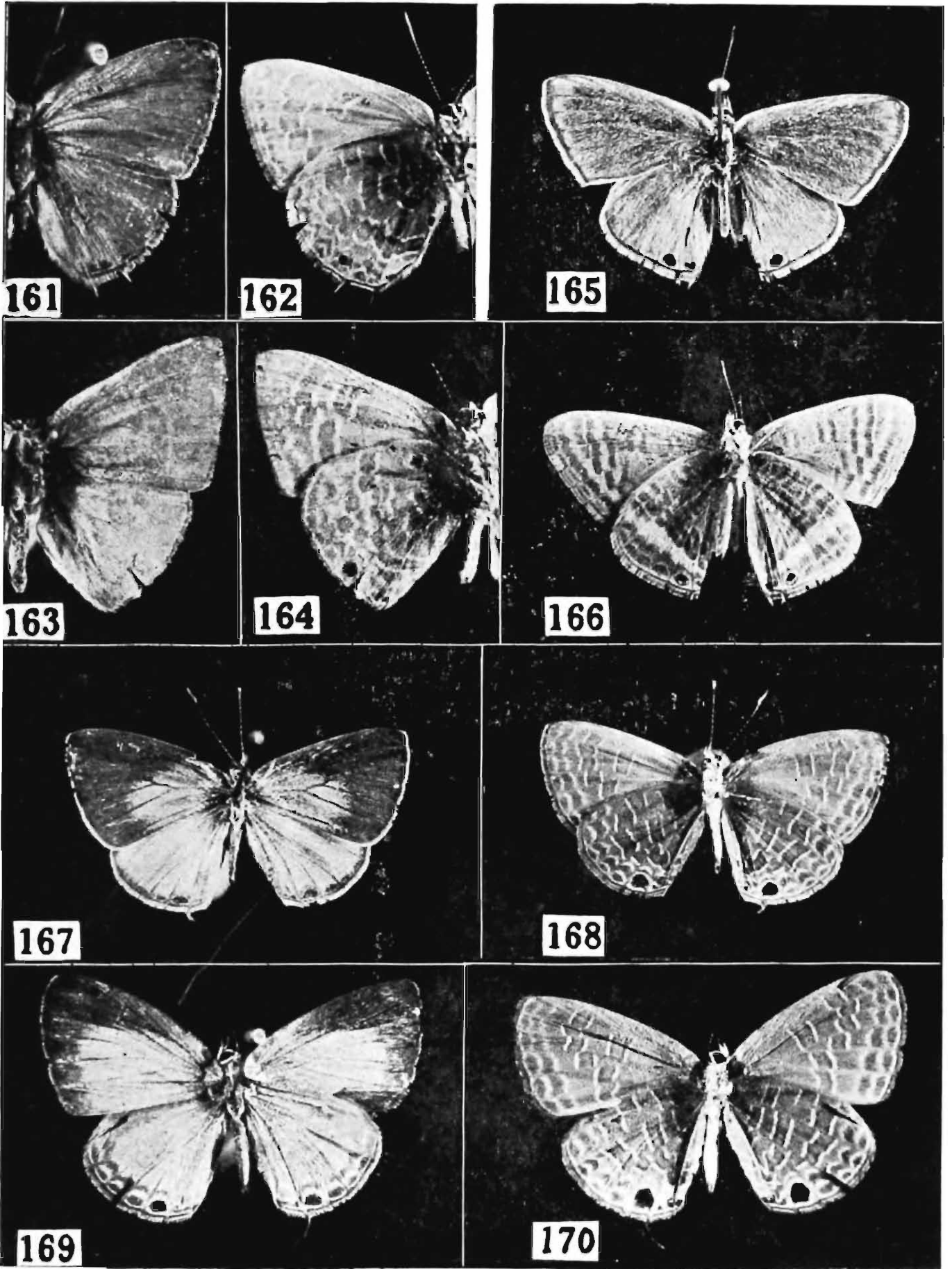


- 145. Upperside
- 147. Upperside
- 149. Upperside
- 151. Upperside

- 146. Underside of *Ariadne merione assama* (Evans)
- 148. Underside of *Libythea lepita lepita* Moore
- 150. Underside of *Zemeros fegyias indicus* Fruhstorfer
- 152. Underside of *Dodona adonira adonira* Hewitson

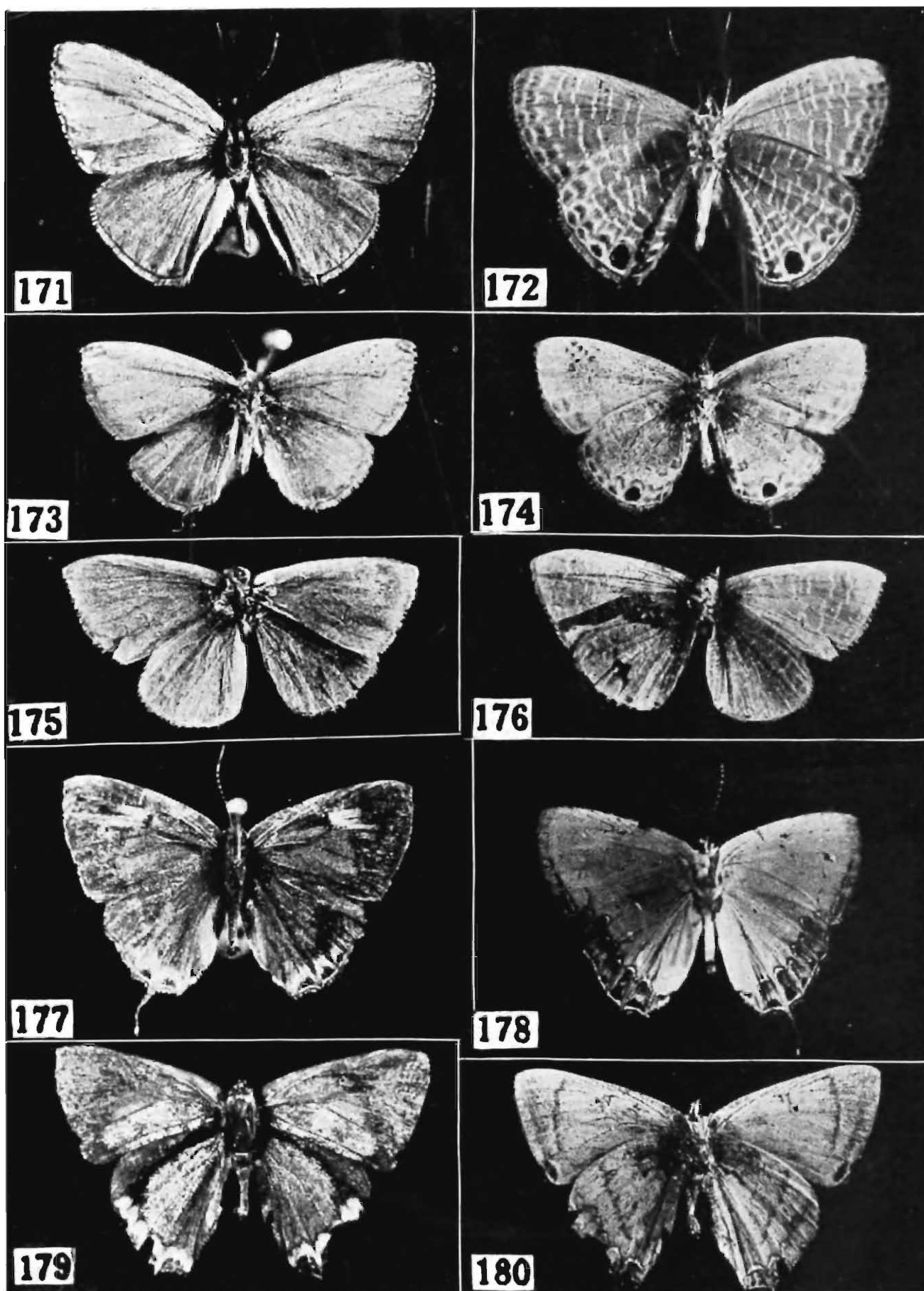


|                |  |
|----------------|--|
| 153. Upperside | 154. Underside of <i>Castalius rosimon rosimon</i> (Fabricius)     |
| 155. Upperside | 156. Underside of <i>Castalius elna noliteia</i> Fruhstorfer       |
| 157. Upperside | 158. Underside of <i>Celastrina limbata placida</i> (de Nicéville) |
| 159. Upperside | 160. Underside of <i>Celastrina dilectus</i> (Moore)               |



- |                |  |
|----------------|--|
| 161. Upperside | 162. Underside of <i>Anthene emolus emolus</i> (Godart)          |
| 163. Upperside | 164. Underside of <i>Anthene lycaenoides lycambes</i> (Hewitson) |
| 165. Upperside | 166. Underside of <i>Lampides boeticus</i> (Linnaeus)            |
| 167. Upperside | 168. Underside of <i>Jamides bochus bochus</i> (Cramer)          |
| 169. Upperside | 170. Underside of <i>Nacaduba subperusta lysa</i> Fruhstorfer    |

PLATE XXII



171. Upperside

173. Upperside

175. Upperside

177. Upperside

179. Upperside

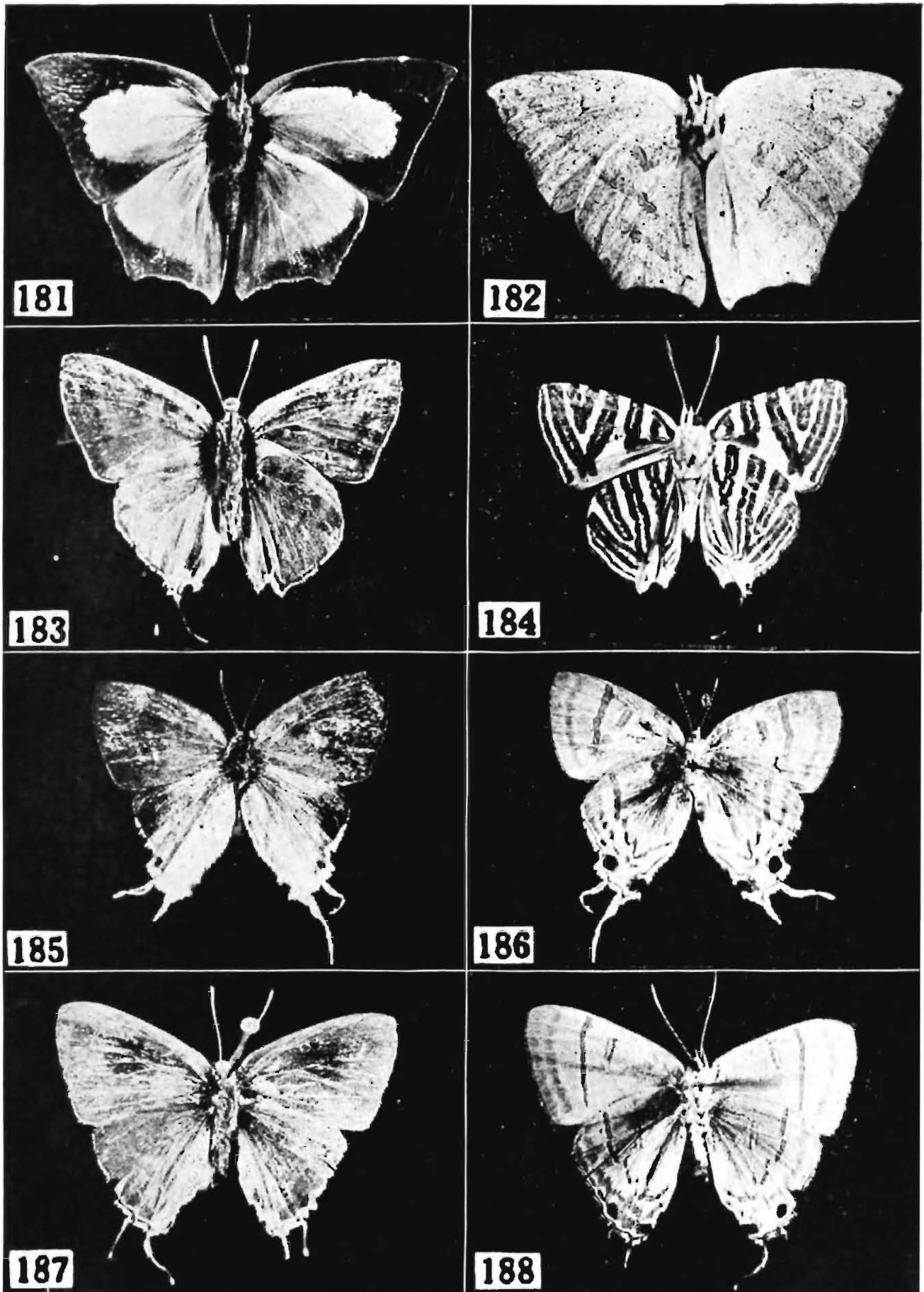
172. Underside of *Nacaduba beroe gythion* Fruhstorfer

174. Underside of *Nacaduba nora nora* (Felder)

176. Underside of *Petrelaea dana* (de Nicéville)

178. Underside of *Heliophorus epicles indicus* (Fruhstorfer)

180. Underside of *Heliophorus brahma brahma* (Moore)



181. Upperside

183. Upperside

185. Upperside

187. Upperside

182. Underside of *Curetis dentata dentata* Moore

184. Underside of *Spindasis lohita himalayanus* (Moore)

186. Underside of *Zeltus amasa* (Hewitson)

188. Underside of *Rapala varuna orseis* (Hewitson)

