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BY

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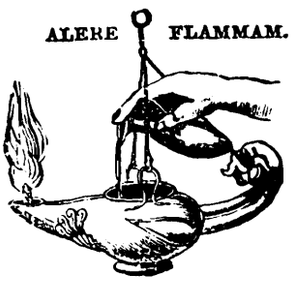

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PREFACE.

In the present volume Col. Bingham has commenced the descriptions of the Indian Butterflies. It was at first hoped that two volumes would complete the series, but three will certainly be necessary if all the forms are dealt with. The next volume will, it is expected, contain, amongst others, the Papilionidæ and the Pieridæ.

For many years, in consequence of the late Mr. de Nicéville having undertaken to describe the Indian Butterflies, it was not thought desirable that the subject should be included in the present series. Unfortunately Mr. de Nicéville died in 1901, without having completed his work, and as he had urged, in a letter to the present editor, that Col. Bingham should, in case of his failure, supply his place, it has now devolved on the latter to complete the series. Since the first appearance of Marshall and de Nicéville's work on Indian Butterflies in 1882, so many additions have been made, and so many new forms have been described, that the species inhabiting the Indian Empire are far more generally known. To these Moore's great work, the 'Lepidoptera Indica,' has added several novelties.

The question of illustrating the present work has presented some difficulty. To figure animals so brilliantly variegated as Butterflies by black and white alone would have given a

very poor idea of their colour, whilst at the same time the expense of procuring coloured representations of their forms would have greatly exceeded the price of the volume. It has consequently been arranged to represent some of the more important kinds by the three-coloured process, and it is hoped that entomologists in India will be satisfied with the work done by Mr. Knight, who has drawn the coloured figures, and Messrs. Hentschel Ltd., who have photographed them.

W T. BLANFORD.

January 1905.

INTRODUCTION.

LEPIDOPTERA PAPILIONINA.

THE Lepidoptera or scaled-wing insects comprise the Butterflies and Moths of popular Entomology. These, under the respective names of *Rhopalocera* and *Heterocera*, in allusion to the difference in the form of the antennæ, were regarded as suborders. Of late years, however, it has been recognized that not only are the distinctions between the divisions, as above indicated, not sharply defined, but that differences exist among the groups of the *Heterocera* quite as, if not more, important than between the two Suborders. In consequence, various revisions of the Order have been proposed.

Comstock ('Manual for the Study of Insects') divides the Lepidoptera into two Suborders:—

A. *The Jugate Lepidoptera.*—"Moths in which the two wings of each side are united by a *jugum*" *.

B. *The Frenate Lepidoptera.*—"Moths, Skippers, Butterflies, in which the two wings on each side are united by a *frenulum* †, or by its substitute a large humeral angle to the hind wing."

In the lesser divisions of the Frenates, the Skippers and the Butterflies form two groups, *Hesperiina* and *Papilionina*.

Much can be said for the separation of the Skippers from the rest of the Butterflies, and there is no doubt that in the existing fauna the former stand as an isolated group, in some respects very different from the true Butterflies.

Meyrick ('Handbook of British Lepidoptera') divides the Order into nine main groups, of which the PAPILIONINA (=*Papilionina*+*Hesperiina* of Comstock) forms one. Accepting this arrangement, the forms in the group of the PAPILIONINA can be distinguished from the rest of the *Lepidoptera*, (1) by the

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* *Jugum*—a yoke—a projection or lobe at the base of the dorsal margin of the fore wing.

† *Frenulum*—a little bridle—a spine or a bunch of bristles at the humeral angle of the hind wing.

Both the above serve to link fore and hind wings together during flight.

entire absence of a *jugum* or *frenulum* *, though their substitute, the enlarged humeral angle to the hind wing, is always present; (2) by the knobbed, or dilated, or hooked antennæ. In certain families of the other main groups of the *Lepidoptera*, the jugum and frenulum are also absent; but then the antennæ are not knobbed, while in the families in which the antennæ are gradually thickened into a club, or are hooked like the antennæ of the Skippers, a frenulum is always present.

This work is primarily intended for collectors, and as an aid to the identification of Indian butterflies; no account, therefore, of the internal anatomy of the insects, in any stage, seems necessary, for little or no use has been made of internal differences for purposes of classification.

All Lepidopterous insects undergo a great and, to all appearance, an abrupt metamorphosis. In their life-cycle there are four stages:—

(1) The egg, which is round or oval, sometimes elongate, often flattened, and very frequently beautifully sculptured on the outside.

(2) The larva or caterpillar (fig. 1, I.), generally cylindrical, with or without a clothing of hair, often provided with protective tubercles, spines, or special fleshy filamentous processes. It is composed of a head and thirteen segments. Of the latter the first three are thoracic and bear pairs of jointed legs, the succeeding one or two simple without appendages, and one or more of the rest have fleshy feet or "prolegs" in pairs; the posterior pair, slightly different from the rest, are called claspers.

Fig. 1.

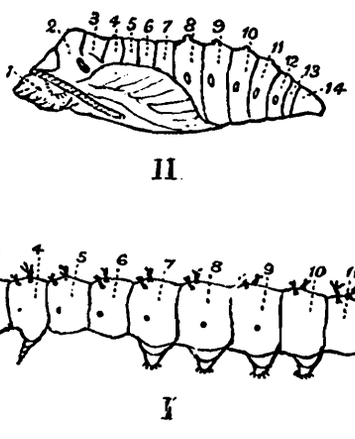


Fig. 1.—Larva (*Vanessa*). 1, head; 2–4, thoracic segments; 5–14, abdominal segments; *a*, true leg; *b*, proleg.

(3) The pupa or chrysalis (fig. 1, II.), more or less fusiform in shape, appendages cemented to the body by a corneous outer covering, often studded with tubercles or spines, or with strangely-formed, sometimes wing-like projections.

(4) The imago or perfect insect. Among the *Papilionina*, four

* Present, so far as known, in a single aberrant form, *Euschemon rafflesiæ* from Australia, belonging to the *Hesperiidæ*.

wings and six legs attached to the thorax are always present. Figs. 2–11 represent the chief external parts of the imago. These are shown more or less in outline, and full details with explanation are given under the figures.

Fig. 2.

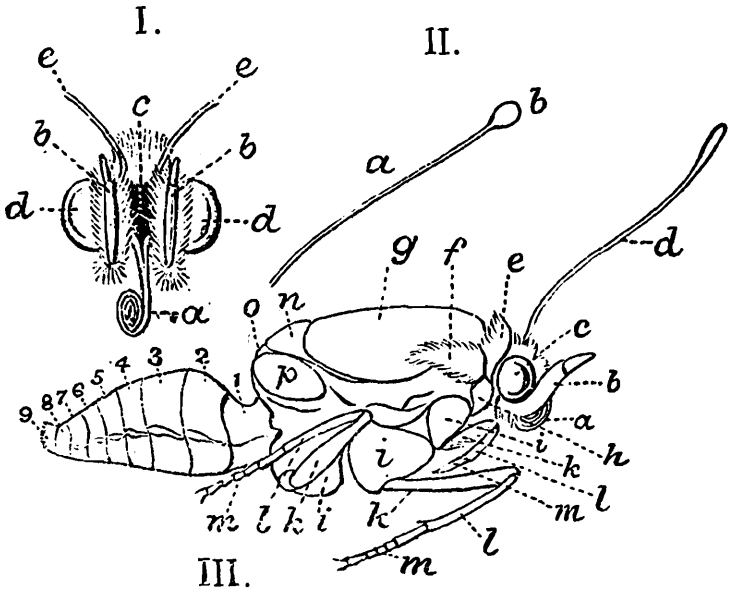


Fig. 3.

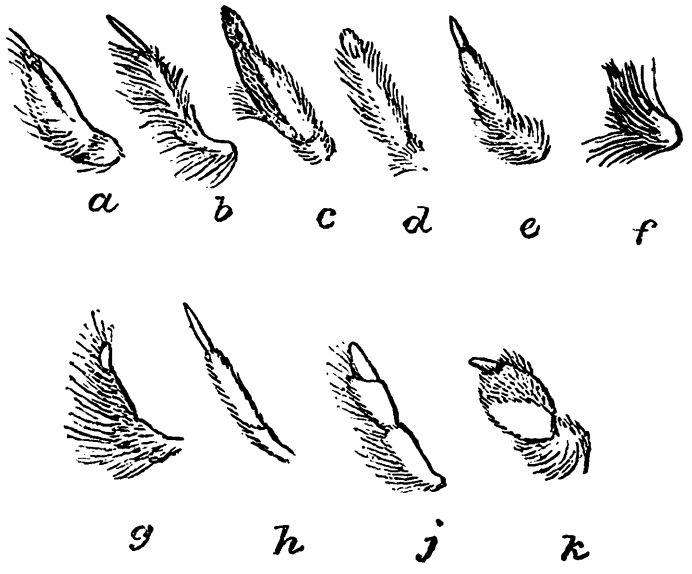


Fig. 2.—I. Head (*Argynnis*). *a*, proboscis; *b*, *b*, labial palpi; *c*, clypeus; *d*, *d*, compound eyes; *e*, *e*, antennæ.—II. Single antenna. *a*, shaft; *b*, club. —III. Side view of head, thorax, and abdomen, without the wings (*Charaxes*). *a*, proboscis; *b*, labial palpi (the maxillary palpi, much aborted and rudimentary, are not shown); *c*, compound eye; *d*, antenna; *e*, pronotum; *f*, patella; *g*, mesonotum; *h*, episternum; *i*, *i*, *i*, coxæ; *k*, *k*, *k*, femora; *l*, *l*, *l*, tibiæ; *m*, *m*, *m*, tarsi; *n*, scutellum of mesothorax; *o*, post-scutellum; *p*, metathorax; 1–9, segments of the abdomen.

Fig. 3.—Labial palpi (much enlarged). *a. Hestia*; *b. Orsotriæna*; *c. Hypolimnas*; *d. Pareba*; *e. Libythea*; *f. Abisara*; *g. Papilio*; *h. Lampides*; *j. Colias*; *k. Tagiades*.

Fig. 4.

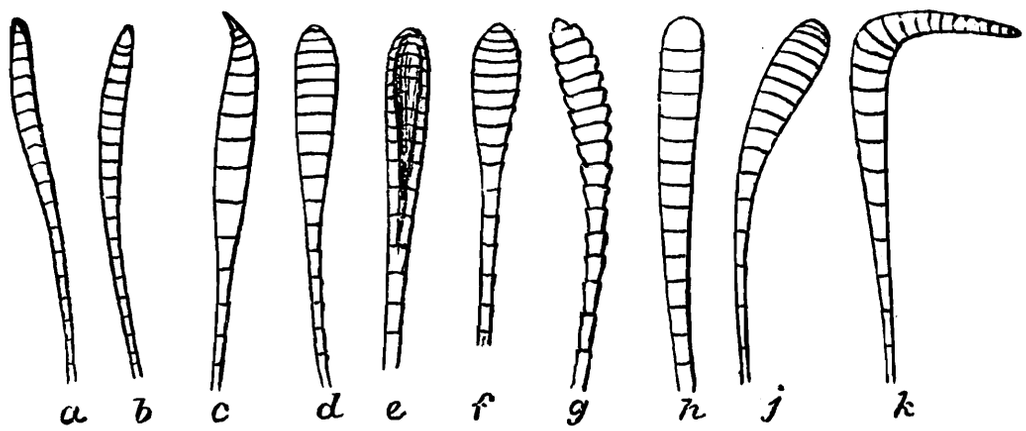


Fig. 4.—Antennæ (apical portions much enlarged). *a. Danais*; *b. Orsotriæna*; *c. Hypolimnas*; *d. Pareba*; *e. Libythea*; *f. Abisara*; *g. Papilio*; *h. Pieris*; *j. Lampides*; *k. Tagiades.*

For classificatory purposes the most important parts are :—

Head (Fig. 2, I. & II.).—The *labial palpi*, *b*, *b*. These, in all butterflies, are three-jointed and variable in shape and in the clothing of scales or hair, but constant in each genus. They are independently moveable, but their function, if they have any, is unknown. The *antennæ* (*e*, *e* & II., also fig. 4) are evidently organs of perception. They are composed of an indefinite number of joints, and vary greatly in length and thickness, in the shape of the club, in the amount of scaling, and in the arrangement of the sensory hairs and pits. In very many forms they are grooved on the underside *.

Thorax.—The appendages, the wings (figs. 5–10) and the legs (fig. 11), are of the utmost importance in classification.

Wings. These are membranous, traversed from the base outwards by nervures ("tubular structures which serve at once as extensions of the tracheal system and to form a stiff framework for the support of the wing"). In the vast majority of the butterflies they are covered on both upper and under sides with flat scales arranged in rows, and often brightly coloured. The usual number of nervures in the wings of butterflies are: fore wing 12; hind wing 9, beside the subcostal, median, and discocellular veins; but one or more of these may be absent, or there may be one or two extra veins or portions of veins developed.

Special note should be taken of fig. 5, as the details given explain the terminology used in the descriptions of the forms throughout this work. This terminology is different from that used in Moore's and de Nicéville's works. The following few additional terms will also be met with:—Anterior or upper and

* A most important paper on the antennæ of butterflies has been published by Dr. Karl Jordan in 'Novitates Zoologicæ,' v, 1898, p. 374.

Fig. 5.

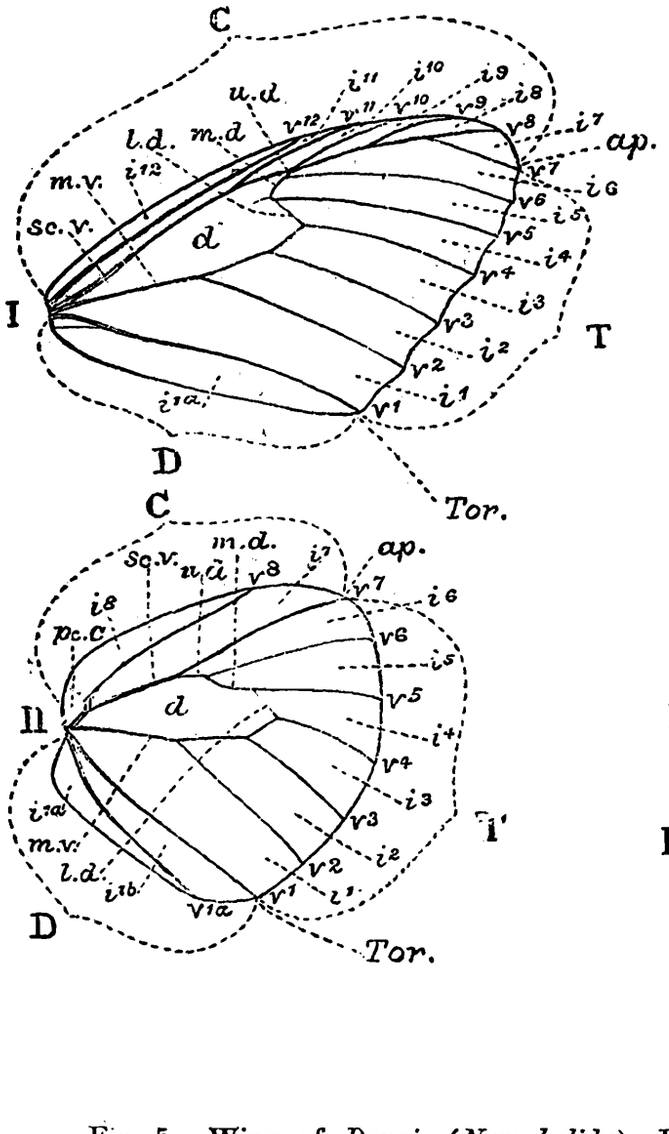


Fig. 6.

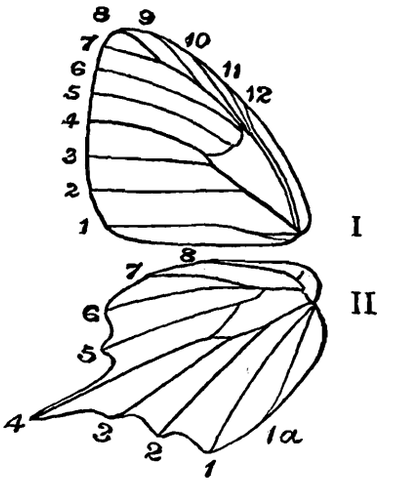


Fig. 7.

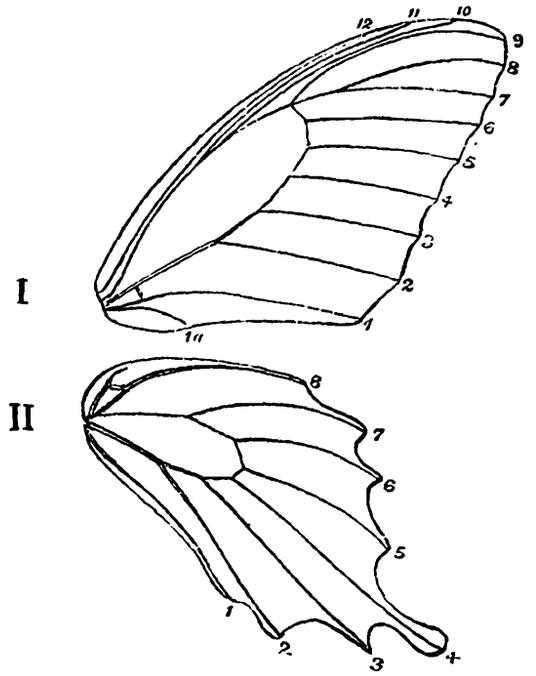


Fig. 5.—Wing of *Danais* (*Nymphalidæ*). I. Fore wing: *d*, discoidal cell; C, costa or costal margin; *ap.*, apex; T, termen or terminal margin; *Tor.*, tornus; D, dorsum or dorsal margin; *s.c.v.*, subcostal vein, extending from base of wing to upper apex of cell; *m.v.*, median vein, extending from base of wing to lower apex of cell; *u.d.*, *m.d.*, *l.d.*, upper, middle, and lower discocellular nervules or discocellulars; v^1–v^{12}, veins; i^{1a}–i^{12}, interspaces. II. Hind wing: *d*, discoidal cell; C, costa or costal margin; *ap.*, apex; T, termen or terminal margin; *Tor.*, tornus; D, dorsum or dorsal margin; *sc.v.*, subcostal vein, extending from base of wing to upper apex of cell; *m.v.*, median vein, extending from base of wing to lower apex of cell; *u.d.*, *m.d.*, *l.d.*, upper, middle, and lower discocellular nervules or discocellulars; v^{1a}–v^8, veins; *pc.c.*, precostal vein; i^{1a}, i^{1b}–i^8, interspaces.

Fig. 6.—Wings of *Abisara* (*Nemeobidæ*). Veins numbered similarly.

Fig. 7.—Wings of *Papilio* (*Papilionidæ*). Veins numbered similarly. I. Fore wing: Extra veins present: 1 *a* and a cross vein between median vein and vein 1. II. Hind wing: vein 1 *a* absent; a cross vein present between vein 8 and precostal vein.

Fig. 8.

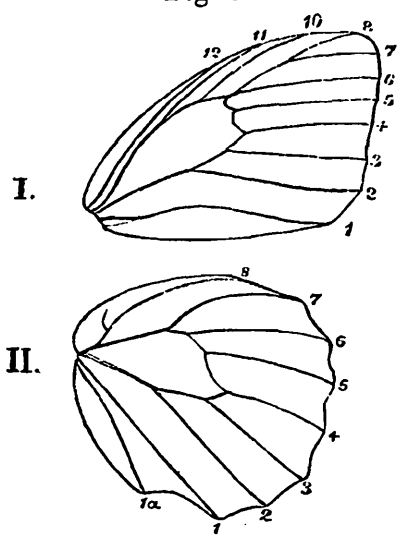


Fig. 9.

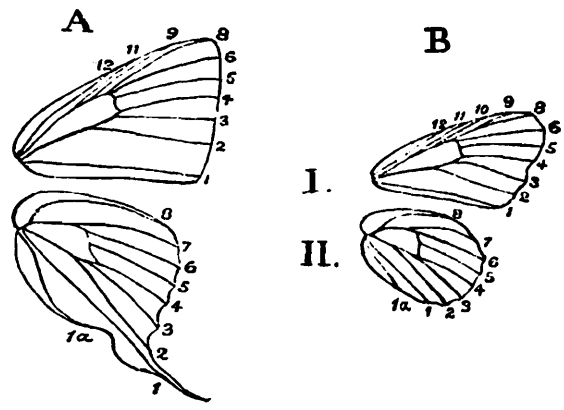


Fig. 10.

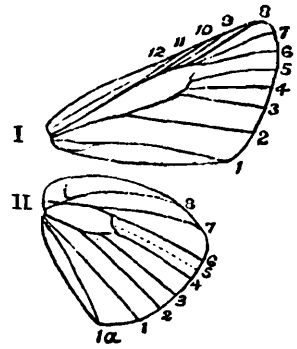


Fig. 8.—Wings of *Ixias* (*Pieridæ*). Veins numbered similarly. I. Fore wing: vein 9 absent. II. Hind wing: veins 1 *a*–8 present.

Fig. 9, A & B.—Wings (*Lycænidæ*). A I. Fore wing: veins 7 and 10 absent. B I. Vein 7 absent. A & B II. Hind wings: precostal veins absent.

Fig. 10.—Wings of *Tagiades* (*Hesperiidæ*). I. Fore wing: all veins present and, except 1 and 12, originating from cell. II. Hind wing: vein 5 absent.

posterior or lower, refer to the costal and dorsal portions of the wings respectively. Markings are said to be basal when occurring between base of wing and up to an imaginary line crossing middle of cell; subbasal from that to a similar line crossing just within the apex of cell; discal or medial when they occupy the medial third of the wing; and postdiscal, subterminal, and terminal in succession after that.

Legs. These organs, though variable on the whole, are, so far as the perfection or imperfection of the front pair of legs is concerned, constant in the larger divisions of the *Papilionina*—the families and subfamilies. In the more specialized forms, the fore legs are more or less, sometimes very considerably, reduced in size. In many genera of the *Nymphalidæ* the fore legs are kept close-pressed to the body, and often appear like mere brushes or tufts of hair; while in nearly all the genera of that family they are useless for walking in both sexes.

Fig. 11.

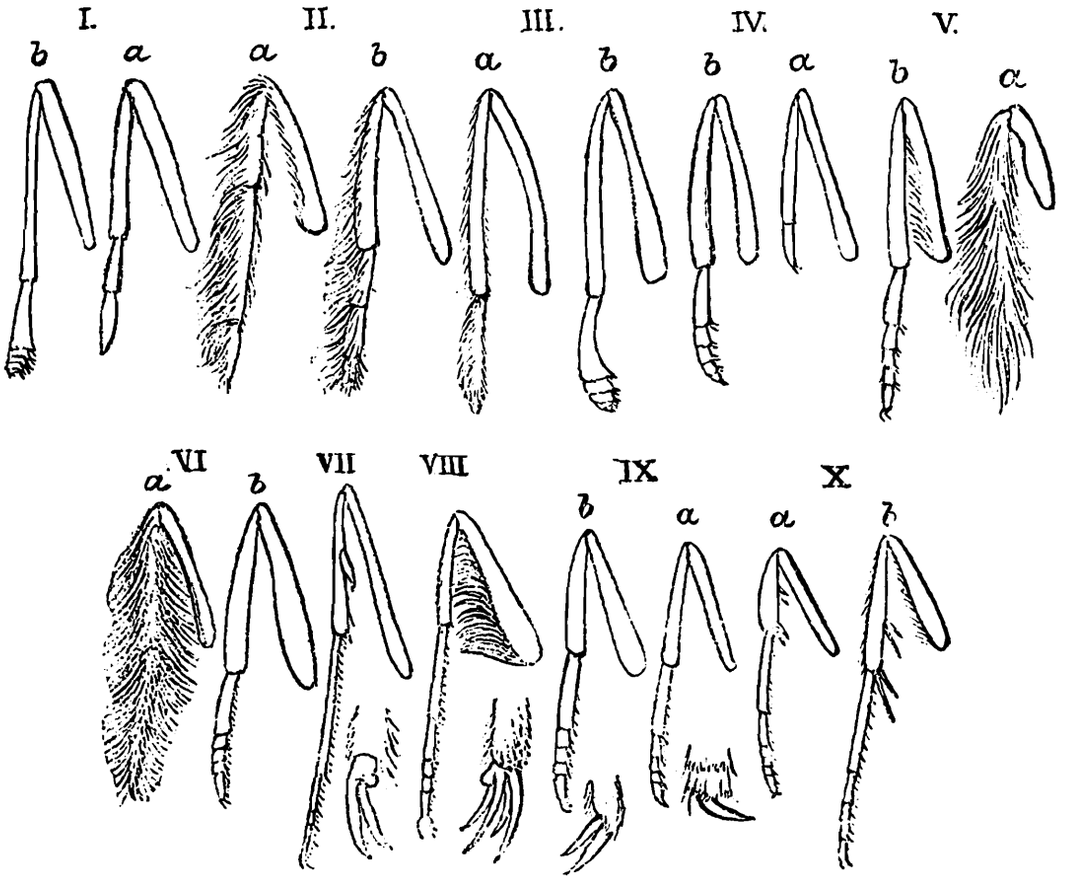


Fig. 11.—Fore legs, *a* ♂, *b* ♀, of I, *Hestia* (*Danainæ*); II, *Mycalesis* (*Satyrinæ*); III, *Cynthia* (*Nymphalinæ*); IV, *Pareba* (*Acræinæ*); V, *Libythea*; VI, *Abisara* (*Nemeobidæ*); VII, *Papilio* (*Papilionidæ*), claws simple (♂ tibiæ with pad on inner side); VIII, *Pieris* (*Pieridæ*), claws bifid; IX. *Lampides* (*Lycænidæ*), ♂ tarsus imperfect with only one claw; X, *Tagiades* (*Hesperiidæ*), tibiæ with a medial as well as an apical pair of spurs.

The six families under which the Indian butterflies can be arranged may be briefly tabulated as follows :—

Key to the Families of Butterflies.

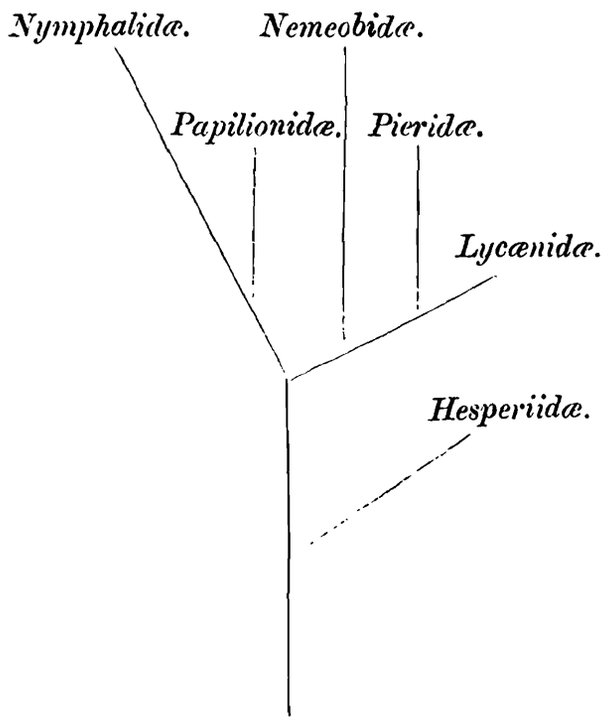
A. Antennæ approximate at base; hind tibiæ with only a terminal pair of spurs; one or more of the veins in the fore wing forked or coincident beyond the cell.
  a. Precostal nervure in hind wing present.
    a'. Front pair of legs imperfect in one or both sexes.
      a^2. Front pair of legs imperfect in both sexes* .. .. **Nymphalidæ.**
      b^2. Front pair of legs imperfect in ♂, perfect in ♀ .. **Nemeobidæ.**

* Except in the genera *Pseudergolis*, *Libythea* and *Calinaga*. In these imperfect only in the ♂. Other characters, however, strongly Nymphaline.

b'. Front pair of legs perfect in both sexes.
*a*². Vein 1 *a* in hind wing wanting; claws simple .. .. **Papilionidæ.**
*b*². Vein 1 *a* in hind wing present; claws bifid .... **Pieridæ.**
b. Precostal nervure in hind wing absent ... **Lycænidæ.**
B. Antennæ wide apart at base; hind tibiæ generally with a medial as well as a terminal pair of spurs; all the veins in the fore wing from base or from cell, none forked or coincident beyond . **Hesperiidæ.**

Opinions vary as to the probable line of descent of the butterflies. Packard considers that the moths of the family *Castniidæ* are their predecessors; Meyrick traces their descent from the *Thyrididæ* group Pyralidina of the Frenatæ, Hampson from the *Zygænidæ*.

However this may be, a provisional genetic tree for the butterflies can be constructed as below.



Hypothetical Moth Ancestor.

The evidence of one family group of the butterflies being derived from another is entirely inconclusive. Specialization of forms has followed often parallel lines in all the families, but similar specialization, when it occurs in different groups, is no proof of genetic descent, but of independent development along similar lines.

The tendency in modern Systematic Natural History is to

greater subdivision and the multiplication of genera. No criterion exists as to what are generic characters, and as there does not seem to me that any greater convenience is gained by this minute subdivision, I have preferred to arrange the forms under large and comprehensive genera.

With regard to species, it may perhaps be noticed that throughout this work I have avoided using that term. My reason for this is that, although the word "species," as now generally understood, is not likely to be entirely misinterpreted, the evil connotations of pre-Darwinian times still cling to it, and to many, perhaps unconsciously, convey the idea of fixity. The term "form," on the other hand, though not entirely satisfactory, at any rate implies the possibility of change. That forms are constantly but slowly changing is a fact that is emphasized by every increase to our knowledge of living things. It is strikingly apparent in the *Lepidoptera*, of which Dr. D. Sharp says: "A great deal of evidence, both direct and indirect, has accumulated showing that the organization of many Lepidoptera is excessively sensitive, so that slight changes of condition produce remarkable results." The system of regarding local representatives of typical forms as of equal rank to them seems to me unsatisfactory, as all connection between the two forms is ignored. It is true that in the present state of our knowledge it is often a matter of conjecture as to which is the typical form and which the race, but in my opinion it is of great importance to draw attention to the extremely close relationship existing between many forms, so as to facilitate the tracing-out of the connection between them. In this work, purely as a matter of convenience, the form first described is made the type, its geographically limited representative—differing perhaps very slightly, but constantly—the race; but it must be clearly understood that in many cases the reverse is quite as likely to be the truth.

In conclusion, my best thanks are due to the many who have aided me by the gift or loan of specimens. From Sikhim my friend Mr. Fritz Möller has sent me large collections in the most perfect condition. Many of the forms in these were procured at high altitudes, and are most interesting and rare. To Col. E. R. Johnson, late of the Indian Medical Service, I owe the gift of a small but very valuable collection from Simla and from Shillong in Assam. To Col. Swinhoe I am indebted, not only for the gift of many specimens, but for the privilege of examining at leisure the fine series of Indo-Malayan forms contained in his collection. Mr. Gilbert Rogers, of the Imperial Forest Service of India, in the most lavish way, employed native collectors in the Andaman and Nicobar Islands, and has generously placed the material

collected at my disposal. Messrs. Allan and Craddock, of the Burma Forest Department, have sent me small but very useful collections from Pegu and the Southern Shan States; and to Mr. E. E. Green and to the Hon. F. Mackwood I owe many specimens from Ceylon. Major E. Stokes-Roberts, R.E., sent me several collections made in the Anaimalai and Nilgiri Hills in Southern India. These were particularly valuable to me for comparison with the northern Indian forms.

I have to thank the Authorities of the British Museum for the privilege of access to the magnificent series of Indian butterflies contained in the National Collection, and I am specially grateful to Sir G. Hampson and Mr. F. Heron for the facilities afforded me for their examination. Mr. Heron has aided me in every possible way, and his intimate knowledge of many groups of butterflies has been most kindly and unreservedly placed at my service.

The National Collection has of late years been greatly increased and enriched by the donations of the Godman, Leech, Crowley, and Elwes collections; and it is fortunate that so well-known an authority on Lepidoptera as Mr. Elwes should have undertaken the re-arrangement of the vast material thus brought together. For me it was specially fortunate that previous to commencing the writing of this volume the arrangement of several of the groups of the *Nymphalidæ* should have been completed. I had thus the advantage of Mr. Elwes' large experience to guide me.

Turning to books, my obligations to the two previous works on Indian Butterflies have to be acknowledged. I am greatly indebted to the information contained in Mr. Moore's great work, the 'Lepidoptera Indica,' as will be seen from the frequent quotations from and references to the volumes so far completed. Of the three volumes issued of the 'Butterflies of India,'* the first two are completely out of date and, I believe, out of print. Col. Marshall and Mr. de Nicéville were pioneers in the systematic investigation of the Indian Lepidopterous Fauna; and the impulse given to the study of Indian butterflies by the publication, by the two authors conjointly, of the first volume of the 'Butterflies of India, Burma and Ceylon,' and, by the late Mr. de Nicéville alone, of volumes II. and III. cannot be rated too highly. De Nicéville's enthusiasm communicated itself to others, and his ever ready and generous help encouraged many who, like myself, feel that his early death has been almost an irreparable loss to Indian Entomology. Had my late friend lived, the compilation of the present work would never have been attempted by me; it would have been in his far abler hands. As it is, it will be good news to many that the Trustees of the Indian Museum

* Vol. I. by Col. G. F. L. Marshall and L. de Nicéville; vols. II and III. by L. de Nicéville.

acquired the MSS. of the volumes on the *Papilionidæ*, *Pieridæ* and *Hesperiidæ* left partially incompleted at Mr. de Nicéville's death. These MSS. have been generously placed at my disposal for use in the compilation of the future volumes of this work.

In connection with this, I ought to add that the unique collection of Indo-Malayan Lepidoptera brought together by the late Mr. de Nicéville was acquired some little time before his death by the Indian Museum, and that through the kindness of Major Alcock, I.M.S., C.I.E., F.R.S., Superintendent Indian Museum, I have had the privilege of examining many of the types.

A few words with regard to the illustrations. This is the first volume of the Fauna series which has had any large number of coloured plates. The ten in this volume have been well executed by Mr. Horace Knight, and reproduced by the modern process of colour-printing which is getting rapidly perfected.

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Suborder *PAPILIONINA.*

Family NYMPHALIDÆ.

Imago. Fore wing: submedian, or vein 1, simple, in one subfamily forked near base; median vein with three branches, veins 2, 3 and 4; veins 5 and 6 arising from the points of junction of the discocellulars; subcostal vein and its continuation beyond apex of cell, vein 7, with never more than four branches, veins 8–11; 8 and 9 always arising from vein 7, 10 and also 11 sometimes from vein 7 but more often free, *i. e.* given off by the subcostal vein before apex of cell. Hind wing: internal (1 *a*) and precostal veins present. Cell in both wings closed or open, often closed in the fore, open in the hind wing. Dorsal margin of hind wing channelled to receive the abdomen in many of the forms. Antennæ always with two grooves on the underside; club variable in shape. Throughout the family the front pair of legs in the ♂, and with three exceptions * in the ♀ also, is reduced in size and functionally impotent; in some the atrophy of the fore legs is considerable, e. g. *Danainæ* and *Satyrinæ.* In many of the forms of these subfamilies the fore legs are kept pressed against the underside of the thorax, and are in the male often very inconspicuous.

The Indian forms belonging to the *Nymphalidæ* can conveniently be arranged under six subfamilies, a key to which is given below.

Key to the Indian Subfamilies of the Nymphalidæ.

A. Discoidal cell in both fore and hind wing closed.
  a. Vein 1 in fore wing forked at base — *Danainæ.*

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* *Libythea, Pseudergolis,* and *Calinaga.*

b. Vein 1 in fore wing not forked at base.
  a' Palpi more or less erect, or only obliquely subporrect, not remarkably long, not forming a beak.
    a^2. Palpi strongly compressed; eyes often hairy, one or more veins in fore wing generally swollen at base; wings as a rule short and broad, hind wing often dentate or caudate — *Satyrinæ*.
    b^2. Palpi not compressed, short, cylindrical, slightly clavate; eyes never hairy; veins never swollen at base; wings always long; hind wing never dentate or caudate — *Acræinæ*.
  b' Palpi porrect, projecting, remarkably long, nearly as long as the thorax, pressed close together forming a beak — *Libytheinæ*.
B. Discoidal cell open, or if closed, lower discocellular very slender, inconspicuous *.
  a. Palpi small, narrow, sharp in front — *Morphinæ*.
  b. Palpi large, broad, rounded in front — *Nymphalinæ*.

Subfamily DANAINÆ.

Egg. "Much higher than wide, leathery, radiate, with numerous broad flattened ribs and distinct cross-lines reticulate over a small area at the apex" (*Doherty*).

Larva. Smooth, cylindrical or subcylindrical, with from two to four pairs of fleshy tentacula. Colours conspicuous, generally black, yellow and red.

Imago. Wings ample, terminal margins never dentate or caudate; cell of both fore and hind wings closed; vein 1 in fore wing forked close to base, none of the veins basally swollen; no prediscoidal cell in hind wing; antennæ slender, filiform or gradually clavate, bare, without scales; eyes naked, never hairy; palpi slightly compressed, somewhat short and erect; body slender.

The forms in this subfamily are highly specialized, for in addition to the reduction in the number of legs used in walking common to all the members of the family *Nymphalidæ*, the *Danainæ* have without exception developed what to our senses, at any rate, is an acrid disagreeable odour and taste accompanied with a tough leathery consistency of body that to a certain extent evidently protects them from insectivorous enemies. In the great majority of the forms also, secondary sexual characters in the shape of specialized scales, tufts of hair, brushes, or fans having peculiar odours are prominent.

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* Except the forms belonging to the genera *Pseudergolis* and *Calinaga*, which have the cell of the hind wing tubularly closed.

Key to the Genera of the Danainæ.

a. Claws furnished with paronychia and pulvilli.
  a'. Antennæ filiform. Colour in both sexes conspicuously black and white .... HESTIA, p. 3.
  b'. Antennæ distinctly clavate. Colour in both sexes dark, some shade of brown often glossed with iridescent blue . ..... EUPLŒA, p. 22.
b. Claws without paronychia or pulvilli DANAIS, p. 7.

Genus **HESTIA**.

Hestia, *Hübner, Verz. bek. Schmett.* 1816, p. 15.
Nectaria, pt., *Moore, Lep. Ceyl.* i, 1880, p. 2.

Type, *H. lyncea*, Drury, from the Malay Peninsula.

Range. The Indo-Malayan Region.

Wings comparatively of large expanse, body long and slender. Fore wing elongate and narrow or comparatively short and broad; dorsum slightly sinuous; termen oblique, slightly concave below the rounded apex; costa widely arched; cell more than half length of wing; upper discocellular short, middle inwardly oblique, deeply concave, lower outwardly convex; vein 11 anastomosed with vein 12. Hind wing elongate, obovate, or ovate; termen more or less strongly arched; cell more than half length of wing; discocellulars obtusely angulate one with the other. Antennæ long, filiform, scarcely clavate towards apex; palpi erect, flattened outwardly, clothed with appressed scales, third joint short, pointed, slightly porrect; claws of intermediate and posterior legs curved, furnished with paronychia and pulvilli.

Larva. "Cylindrical, naked, banded with several transversely alternating conspicuous colours; furnished with four pairs of long filamentous processes or tentacula" (*Moore*).

The forms of *Hestia* are very closely allied, but are divisible into two groups:—

The *lyncea* group, to which all but one of the Indian races belong, characterized by an elongate narrow wing and large black markings on the white ground-colour; and the Javan *belia* group, with wings broader in comparison with their length and small black markings. The sole Indian representative of the latter group is *H. linteata*, Butler, extending from the Malay Peninsula into the extreme south of Tenasserim.

Key to the forms of Hestia.

A. Transverse black mark in cell of fore wing not extending beyond subcostal vein.
  a. This mark oval .. .. . *H. malabarica*, p. 4.
  b. This mark zigzag, formed of two spots *H. linteata*, p. 4.
B. Transverse black mark in cell of fore wing extending beyond subcostal vein.
  a. Hind wing long and narrow; termen compressed anteriorly, straight between veins 6 and 7 *H. jasonia*, p. 5.

b. Hind wing comparatively short and broad; termen not compressed anteriorly, arched between veins 6 and 7.
  a. Terminal third of fore wing with more or less of white in interspaces 5, 6 and 8.
    a'. Terminal margin of hind wing white, with elongate black spots in the interspaces.... . .. *H. agamarschana*, p. 5.
    b'. Terminal margin of hind wing all black..... ... . Race *cadelli*, p. 6.
  b. Terminal third of fore wing all black, no white in interspaces 5, 6 and 8. *H. hadeni*, p. 6.

1. **Hestia malabarica**, *Moore, A. M. N. H.* (4) xx, 1877, p. 46; *M. & de N. Butt. Ind.* i, 1882, p. 26, pt.; *Moore, Lep. Ind.* i, 1890–92, p. 18, pl. i, figs. 1, 1 *a*, larva & pupa, 1 *b*, 1 *c*, ♂ ♀.
Hestia lynceus, pt., *M. & de N.* (*nec Drury*) *Butt. Ind.* i, 1882, p. 25.
Hestia kanarensis, *Moore, Lep. Ind.* i, 1890–92, p. 21, pl. 2, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ *Upperside* semitransparent white, sometimes slightly infuscate with a powdering of black scales. Fore wing with the following black marks :—narrow margins on both sides of the veins, a dusky streak along dorsum, large subbasal spots in interspaces 1 and 2 (produced inwardly in former), a large oval spot crossing three streaks in discoidal cell, a spot above it in interspace 11, a broad margin to the discocellulars and three rows of spots on outer half of wing, the discal series outwardly conical and curved sharply inwards opposite apex, the subterminal series in pairs coalescent on the veins, the terminal series elongate on veins and in interspaces; costa with a black streak at base, beyond black and white alternately. Hind wing with similar markings; cell with two streaks, the upper forked towards apex; costa white, two spots not touching the vein below in interspace 8; paired spots on veins 5, 6 and 7 not coalescent but one behind the other, black. *Underside* similar. Antennæ black; head and thorax streaked and spotted with black; abdomen white, with broad dusky black streak above.

Exp. ♂ ♀ 120–154 mm. (4·7–6·1″).

Hab. Western Ghats, Travancore.

Var. *H. kanarensis*, Moore, is identical in markings but always smaller. It is recorded from the Konkan and North Kanara.

2. **Hestia linteata**, *Butler, Trans. Linn. Soc.* ser. 2, *Zool.* i, 1879, p. 536, pl. 69, fig. 6.

♂ ♀. Resembles *H. malabarica*, Moore. Differs as follows :—Wings comparatively broader, apex more rounded, termen of hind wing from apex to vein 5 arched, not straight. Ground-colour a purer white, black markings very much smaller. *Fore wing* with an additional spot in interspace 1 *a* and on veins 2, 3 and 4,

coalescing with spots of discal series in interspaces 2 and 3; two coalescent spots in discoidal cell forming an irregular zigzag mark; costal margin white, with no black streak at base and the black markings much narrower. *Hind wing* with markings similar to but much smaller than in hind wing of *H. malabarica*.

Exp. 170–176 mm. (6·6–6·9″).

Hab. Extreme south of Tenasserim, extending into the Malayan Subregion. Procured at Malewoon by the late Mr. W. Davison.

3. **Hestia jasonia**, *Westw. Cab. Or. Ent.* 1848, p. 87, pl. 42, fig. 1 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 27, pl. 3, fig. 1 ♂; *Moore, Lep. Ind.* i, 1890–92, p. 22, pl. 3, figs. 1, 1 *a* ♂, 1 *b* ♀.
Nectaria jasonia, *Moore, Lep. Ceyl.* i, 1880, p. 3, pl. 1, fig. 1.

♂ ♀. Wings proportionately longer and narrower than in *H. malabarica*, margin of hind wing from apex to just above vein 5 almost straight; ground-colour greyish white, varying to fuliginous brown, semitransparent in the lighter varieties. Form and character of the markings as in *H. malabarica*. Differs as follows:—*Fore wing*: the subbasal black spot in interspace 1 elongate, outwardly emarginate; subbasal spot in interspace 2 large, touching above and below the median and vein 2; an oblique broad bar in discoidal cell extending to the costa and uniting with the broad black streak along basal portion of same; discocellulars broadly margined with black, emitting a short streak outwards in interspace 4; discal, subterminal, and terminal series of spots as in *H. malabarica*, but the discal spots quadrate, not outwardly conical; the black markings along the costa of greater extent than the white. Hind wing with markings similar to those in *H. malabarica*. Antennæ black; head and thorax black, spotted with white; abdomen dusky black above, white beneath.

Exp. ♂ ♀ 150 mm. (5·9″).

Hab. Ceylon.

4. **Hestia agamarschana**, *Felder, Novara Reise, Lep.* i, 1867, p. 351, pl. 43, fig. 7 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 27; *Moore, Lep. Ind.* i, 1890–92, p. 23, pl. 4, fig. 1 ♂.
Hestia jasonia, *Westw.* var. *a*; *Kirby, Syn. Cat. D. Lep.* 1871, p. 2.

Race cadelli.

Hestia cadelli, *W.-M. & de N., J. A. S. B.* 1880, p. 225, pl. 13, fig. 1 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 28, pl. 4, fig. 2 ♂; *Moore, Lep. Ind.* i, 1890–92, p. 24, pl. 4, fig. 2 ♂.

♂ ♀ Like *H. jasonia*, Westw., but smaller. Fore wing broader proportionately, apex and tornus more rounded; basal black streak in interspace 1, lengthened and attenuate inwardly, not emarginate outwardly; transverse black spot in cell very broad, coalescing with basal streak above on costa; discal spots in

interspaces 4, 5, 6, 8 and 9 much longer and coalescent. Hind-wing costa arched; termen anteriorly not straight as in *H. jasonia*, but arched, wing altogether proportionately broader and shorter, with the black markings also broader. In most specimens the basal double spot on the black streak in interspace 1 absent.

Exp. ♂ ♀ 124–130 mm. (4·9–5·3″).

Hab. The Andamans; Arrakan; Tenasserim.

Race **cadelli**, W.-M. & de N.—Typically differs from *H. agamarschana* in the greater extent of the black markings. Fore wing: basal mark in interspace 1 and the whole basal portion of cell black coalescent, separated merely by a narrow dusky-white streak on each side of the median vein; discal spots in interspaces 3 and 4 and subterminal and terminal series of spots coalescent, the latter two uniting to form a more or less continuous black terminal border to the wing, but not nearly so broad or so complete as in *H. hadeni*. Hind wing as in *H. agamarschana*, but the subterminal and terminal markings more or less coalescent.

Exp. ♂ ♀ 126–132 mm. (5–5·2″).

Hab. Typical forms from the Andamans. Intermediate forms recorded from Arrakan.

5. **Hestia hadeni**, *W.-M. & de N., J. A. S. B.* 1880, pt. ii, p. 242, pl. 13, fig. 2 ♀; *M. & de N. Butt. Ind.* i, 1882, p. 29, pl. 4, fig. 3 ♀; *Moore, Lep. Ind.* i. 1890–92, p. 25, pl. 4, fig. 3 ♀.

♂ ♀ Resembles *H. agamarschana*, Felder, but the terminal markings on both fore and hind wing have entirely coalesced and form a broad black border covering towards the apex in the fore wing more than one-third of the length of the wing and narrowing towards the tornus; the basal and discal spots in interspaces 1 and 2 are free, and the black in the discoidal cell is more restricted than in *H. cadelli*. In the hind wing the broad black border is of a tolerably even width throughout, with its interior margin irregularly indented or crenulate; the discal spots, the basal spot in interspace 2 and the spot near apex of the discoidal cell are comparatively small. Upper and under sides similar. Antennæ, head, thorax and abdomen black; the head and thorax spotted with white; beneath, the body is white spotted with black.

Exp. ♂ ♀ 130–136 mm. (5·1–5·35″).

Hab. Recorded within our limits only from the district of Bassein in the south-west corner of Lower Burma. A specimen labelled Siam is in the collection of the British Museum.

I am not quite certain whether this form should not also be ranked as a race or subspecies of *H. agamarschana*, but in all the specimens I have seen the conspicuous broad black border to the wings, entirely unspotted and never varying in width, is a constant feature.

Genus **DANAIS.**

Danais, *Latr. Illig. Mag.* vi (1807), p. 291.
Danaus, *Latr. Gen. Crust. & Ins.* iv, 1809, p. 201.
Limnas, *Hübner, Tentamen*, i, 1806 (no desc.).
Radena, Tirumala, Salatura, Parantica, & Chittira, *Moore, Lep. Ceyl.* i, 1880, pp. 3, 4, 5, 7, & 8.
Caduga & Bahora, *Moore, P. Z. S.* 1883, pp. 235 & 245.
Badacara, *Moore, Lep. Ind.* i, 1890–92, p. 63.

Type, *D. plexippus*, Linn., from India.
Range. Both hemispheres.

♂ ♀. Fore wing triangular, costa widely arched, apex broadly rounded; termen below apex straight or slightly concave; dorsum straight; discoidal cell long, well over half length of wing; upper discocellular short, inclined obliquely inwards, middle curved inwards, lower curved outwards; rest of venation variable, veins 10 and 11 free, or 11 anastomosed with 12, or 10 out of 9 (as in type of genus). Hind wing generally pear-shaped; discoidal cell more than half length of wing; venation variable; discocellulars more or less in a line inclined obliquely outwards, or middle bent in two at a right angle, or upper and middle in a line, lower bent

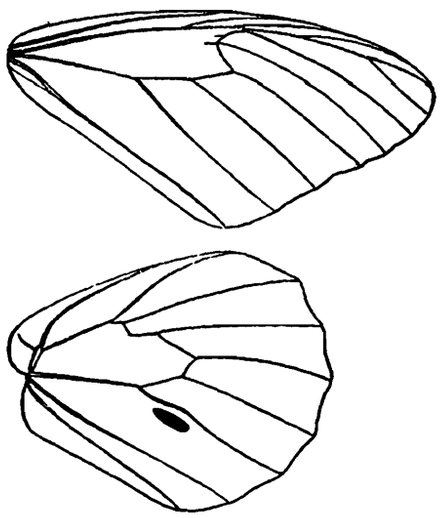

Fig. 1.—Sex-mark form 1 on hind wing, and neuration: *Danais chrysippus.*

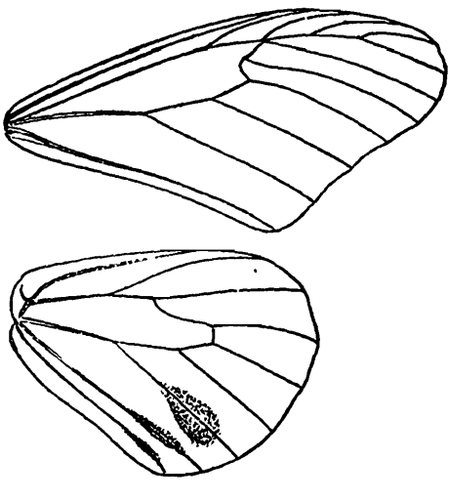

Fig. 2.—Sex-mark form 2 on hind wing, and neuration: *Danais melanea.*

at an angle downwards; vein 3 always from before apex of cell. Antennæ less than half length of fore wing; club very gradual; palpi erect, short, barely reaching top of head, third joint short; eyes naked; legs moderately long, scaled; claws of intermediate and posterior tarsi long, without paronychia or pulvilli. ♂: secondary sex-marks present or absent; when present taking two forms, consisting of (1) a small fold near base of vein 2 on hind wing; or (2) patches of peculiar scent-producing scales near apices of veins 1 *a*, 1, and 2 on hind wing, with a thickening of veins 1 *a* and 1 where they pass through the patch.

Larva. So far as known subcylindrical, with two or three pairs of non-retractile tentacula.

Pupa. Comparatively broad, ovate, contracted medially, green, waxy white, or yellow, spotted and banded with black, golden yellow and silver; sometimes entirely of a shining golden yellow.

Key to the forms of Danais.

A. Fore wing tawny, with black margins and white spots; larva with three pairs of fleshy tentacula.

a. Middle discocellular in hind wing slightly curved inwards; veins in both wings conspicuously bordered with black.

a' Discoidal cell and disc of hind wing entirely tawny.

*a*². Hind wing with a row of white spots on black terminal margin. . . — *D. plexippus*, p. 10.

*b*². Hind wing without any white spots on black terminal margin. . . — Var. *nipalensis*, p. 11.

b'. Discoidal cell and disc of hind wing more or less streaked with white — *D. hegesippus*, p. 11, with var. *nesippus*, p. 11.

b. Middle discocellular in hind wing bent inwards at almost a right angle in the middle; veins in wings not conspicuously bordered with black.

a'. Apical third of fore wing black above, with a preapical obliquely-placed row of elongate white spots.

*a*². Discoidal cell and disc of hind wing entirely tawny . . . . . — *D. chrysippus*, p. 11.

*b*². Discoidal cell and disc of hind wing more or less marked with white — Var. *alcippus*, p. 12, and var. *alcippoides*, p. 12.

b'. Apex of fore wing with narrow even margin only, of black spotted with white; preapical row of white spots quite obsolete. . . . . — Dimorphic form *dorippus*, p. 12.

B. Fore wing fuliginous black, with subhyaline streaks and spots of bluish white; larva, so far as known, with two pairs of fleshy tentacula.

a. Ground-colour of hind wing bright chestnut-red above and below. . . . — *D. tytia*, p. 13.

b. Ground-colour of hind wing purplish black above, beneath more or less chestnut. . . . . — *D. melanea*, p. 14.

c. Ground-colour of hind wing fuliginous black above and below.

a'. Lower discocellular of hind wing not bent inwards at an angle with middle discocellular.

*a*². Vein 11 in fore wing anastomosed with vein 12. ♂ without sex-marks on wings.

a^3. Subhyaline streaks on both wings comparatively narrow ; two streaks in discoidal cell of hind wing with an obliquely placed short slender streak between their apices . . .. *D. vulgaris*, p. 14.

b^3. Subhyaline streaks on both wings broader ; two streaks in discoidal cell of hind wing, the lower streak with a hook or spur at apex ... . Race *exprompta*, p. 15.

c^3. Subhyaline streaks on both wings very broad, discoidal cell of hind wing entirely bluish white Race *nicobarica*, p. 15.

b^2. Vein 11 in fore wing not anastomosed with vein 12. ♂ with sex-marks on hind wings.

a^3. Streak in discoidal cell of fore wing short, single, somewhat clavate.

a^4. Subhyaline streaks on wings very broad, only faintly bluish ; basal streaks in interspace 1 in fore wing, one above the other, often coalescing .. *D. limniace*, p. 16.

b^4. Subhyaline streaks on wings narrow, conspicuously tinted blue ; basal streaks in interspace 1 in fore wing never coalescing, upper streak placed beyond lower streak . .... *D. septentrionis*, p. 17.

b^3. Streak in discoidal cell of fore wing double, lower branch clavate.

a^4. Upper branch of streak in discoidal cell of fore wing long, generally produced to spot in apex of cell . .. .. *D. gautama*, p. 17.

b^4. Upper branch of streak in discoidal cell of fore wing short, barely indicated, not produced to spot in apex of cell .... Race *gautamoides*, p. 18.

b'. Lower discocellular of hind wing bent inwards at an angle with middle discocellular.

a^2. Vein 11 in fore wing anastomosed with vein 12. ♂ with sex-marks on hind wing.

a^3. Basal spot in interspace 3 of fore-wing more or less quadrate, about half the size of basal spot in interspace 2.

a^4. Discoidal cell of hind wing generally with 2 streaks, sometimes all but coalescent *D. aglea*, p. 18.

b^4. Discoidal cell of hind wing entirely bluish white, enclosing a longitudinal bifid black line . . . . . Race *melanoides*, p. 19.

b^3. Basal spot in interspace 3 of fore wing small, triangular, not one-quarter the size of basal spot in interspace 2 . *D. melanoleuca*, p. 19.

b^2. Vein 11 in fore wing not anastomosed with vein 12. ♂ with sex-marks on hind wing.

a^3. Subhyaline streaks in discoidal cell and in interspaces 1 *a*, 1 *b* and 1 of hind wing suffused with bright canary-yellow. . . . . *D. aspasia*, p. 20.

b^3. Subhyaline streaks in discoidal cell and in interspaces 1 *a*, 1 *b* and 1 of hind wing absent, or when present white or bluish white.

a^4. Two streaks from base in discoidal cell of hind wing . . *D. agleoides*, p. 20.

b^4. A single streak from base in discoidal cell of hind wing.

a^5. Subhyaline streaks in interspaces 1, 1 *a* and 1 of hind wing present . . . . . *D. nilgiriensis*, p. 21.

b^5. Subhyaline streaks in interspaces 1, 1 *a* and 1 of hind wing absent *D. fumata*, p. 21.

6. **Danais plexippus**, *Linn.* (Papilio) *Syst. Nat.* x, 1758, p. 471; *Kirby, Syn. Cat. D. Lep.* 1871, p. 5.

Papilio genutia, *Cramer, Pap. Exot.* iii, 1779, p. 23, pl. 206, figs. C, D; *Moore* (Salatura), *Lep. Ceyl.* i, 1880, p. 6, pl. 4, figs. 2, 2 *a*; *M. & de N.* (Danais) *Butt. Ind.* i, 1882, p. 52; *Moore* (Salatura), *Lep. Ind.* i, 1890–92, p. 45, pl. 10, figs. 1, 1 *a* larva, 1 *b*, 1 *c*, ♂ ♀.

Danais nipalensis, *Moore, A. M. N. H.* (4) xx, 1877, p. 43; *id.* (Salatura) *Lep. Ind.* i, 1890–92, p. 48, pl. 10, figs. 2, 2 *a*, ♂.

♂ ♀ *Upperside*: fore wing—costal and dorsal margins and apical half of wing black, the greater portion of interspaces 1 and 2, a spot at base of interspace 3 and cell tawny; veins with broad black margins; three white postdiscal spots followed by an oblique preapical white bar crossed by the veins; an irregular subterminal and terminal series of white spots. Hind wing tawny, the veins broadly bordered with black; terminal margin black, bearing two more or less complete rows of white spots. *Underside* similar; apex of fore wing dusky brown; ground-colour of hind wing paler than on the upperside, the white spots on both fore and hind wing distinct. Antennæ black; head and thorax black spotted with white; abdomen dusky tawny, with white markings beneath. Male sex-mark in form 1.

Exp. ♂ ♀ 72–100 mm. (2·82–2·92″).

Hab. Spread generally throughout our limits, extending to Siam, China, and the Malay Peninsula.

Larva. Described by Moore as black with a lateral yellow stripe, two yellow dorsal patches, with three white spots in front, and two maculated white lines behind them on each segment, also a pair of dusky black fleshy tentacula on the 2nd, 10th and 12th segments.

Raphis pulchellum, *Raphis lemma*, *Passularia*, and *Ceropegia intermedia* are mentioned as food-plants.

Pupa: green variegated with spots and lines of black, silvery white and golden yellow.

Var. *nipalensis*, Moore, described from a single specimen from Nepal, is probably only an aberration. From the typical form it differs in being slightly larger, the preapical bar on the fore wing is macular, and the subterminal and terminal series of spots are nearly obsolete on the fore and completely obsolete on the hind wing.

7. **Danais hegesippus** (Pl. I, fig. 1), *Cramer* (Papilio), *Pap. Exot.* ii, 1779, pl. 180, fig. A; *M. & de N. Butt. Ind.* i. 1882, p. 55; *Moore* (Salatura), *Lep. Ind.* i, 1890–92, p. 49, pl. 11, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Danais nesippus, *Felder*, *Verh. zool.-bot. Ges. Wien*, xii, 1862, p. 486; *M. & de N. Butt. Ind.* i, 1882, p. 55; *Moore* (Salatura), *Lep. Ind.* i, 1890–92, p. 50, pl. 11, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀. This form closely resembles *D. plexippus*, from which it differs in colour as follows:—*Upperside* of fore wing: the black on the margins and on the apical half of the wing of greater extent, the preapical white bar divided into well-separated elongate spots. Hind wing black, the cell and the interspaces beyond it from 1 *a* to 5 with narrow white streaks. *Underside* similar to the upperside, apex of fore wing dusky black; white streaks in the interspaces on the hind wing broader and washed with ochraceous at their apices; also additional white streaks in interspaces 6 and 7.

Exp. ♂ ♀ 70–78 mm. (2·75–3·05″).

Hab. Recorded from Bengal, Burma, Tenasserim, and the Nicobars. Extends to Malacca and Sumatra.

Within our limits *D. plexippus* and *D. hegesippus* seem to be distinct and constant; but from the Malayan Subregion intermediate forms, such as *D. sumatrana*, Moore, and *D. intermedia*, Moore, have been recorded.

Var. *nesippus*, Felder, is found in the Nicobars. From typical *hegesippus* it differs in being smaller and darker, the tawny red on the fore and the white on the hind wing being more restricted.

8. **Danais chrysippus** (Pl. I, fig. 2), *Linn.* (Papilio) *Syst. Nat.* x, 1758, p. 471; *Moore* (Salatura), *Lep. Ceyl.* i, 1880, p. 7, pl. 3, fig. 1; *M. & de N. Butt. Ind.* i, 1882, p. 50, pl. 6, fig. 10, ♂ ♀; *Moore* (Limnas apud *Hübner*), *Lep. Ind.* i, 1890–92, p. 36, pl. 8, figs. 1, larva, 1 *a*–1 *e*, ♂ ♀

Papilio alcippus, *Cramer*, *Pap. Exot.* ii, 1777, pl. 127, figs. E, F; *M. & de N.* (Danais) *Butt. Ind.* i, 1882, p. 51.

Limnas alcippoides, *Moore*, *P. Z. S.* 1883, p. 238, pl. 31, fig. 1 ♂; *id. Lep. Ind.* i, 1890–92, p. 41, pl. 9, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Dimorph dorippus.

Euplœa dorippus, *Klug, Symb. Phys., Ins.* v, 1845, pl. 48, figs. 1–5; *M. & de N.* (Danais) *Butt. Ind.* i, 1882, p. 52.

Limnas klugii, *Butler, P. Z. S.* 1885, p. 758; *Moore, Lep. Ind.* i, 1890-92, p. 42, pl. 9, figs. 1, 1 *a*, ♂ ♀.

♂ ♀. Termen of fore wing more concave near the middle than in *D. plexippus*. *Upperside*: fore wing tawny darkening towards the costal margin; costa narrowly and the apical third of the wing black; one or two white spots beyond and above apex of cell followed by a preapical, white, oblique bar, with one inner and two subterminal white spots below its lower end; lastly, a more or less complete series of terminal white spots and dots of varying size. Hind wing: ground-colour paler; termen somewhat narrowly black, with an incomplete series of white spots; three black marks on the discocellulars. *Underside* similar, paler; ground-colour of the hind wing and a triangular area at apex of fore wing ochraceous; white markings and spots more distinct. Antennæ black; head and thorax black spotted with white; abdomen ochraceous above, whitish below. Male secondary sex-mark in form 1.

Exp. ♂ ♀ 70–84 mm. (2·75–3·3″).

Hab. A widespread species throughout our limits, and found in Southern Europe, Syria, over a great part of the Ethiopian Region, through Arabia, Persia, and Afghanistan. Eastwards it extends to China and through the Malayan Subregion to Sulu and the Celebes.

Larva. Bluish grey, the sides yellow, each segment with five transverse black lines and two yellow patches, the head with a yellow patch anteriorly and three black lines, the 3rd, 6th and 12th segments each with a pair of fleshy black filaments, crimson at the base. Feeds on *Calotropis gigantea* (*Madar*, Hind.) and various Asclepiads.

Pupa: dichroic, some green, others pale pink or wax-white, beautifully marked with golden spots and a black gold-bordered line near the tail.

Var. *alcippus*, Cramer, and var. *alcippoides*, Moore, only differ from the typical form in having the hind wing suffused more or less with white. In the long series of these two forms in the British Museum collection a regular gradation can be traced from specimens having just a touch of white on the disc of the hind wing to specimens which have part of the cell and seven-eighths of the disc beyond white.

Dimorph **dorippus** [*D. dorippus*, Klug (*D. klugii*, Butler)] has been found, by Col. Yerbury and other observers, *in cop.* with typical *chrysippus*. The points of difference between it and *chrysippus* are as follow:—No black apex nor oblique white bar on fore wing; the latter, however, sometimes indicated; subterminal and terminal series of white spots on both fore and hind wing fewer in number, occasionally absent altogether. As in the typical form, a variety of *D. dorippus* is found with the hind wing

more or less suffused with white *. *D. dorippus* occurs only sporadically within our limits. It has been taken at Campbellpur in the Punjab (*Yerbury*), at Karáchi (*Swinhoe*), near Poona (*Aitken*), in the neighbourhood of Trincomalee, Ceylon (*Yerbury*), and recorded from the southern and eastern coasts of the same island (*Manders*).

9. **Danais tytia**, *Gray* (Euplœa), *Lep. Ins. Nepal*, 1833–46, p. 2, pl. 9, fig. 2 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 42; *Moore* (Caduga), *Lep. Ind.* i, 1890–92, p. 61, pl. 15, figs. 1, 1 *a*–1 *c*, ♂ ♀.
Danais sita, *Kollar, in Hügel's Kaschmir*, iv, 1844, p. 424, pl. 6 ♂; *Mackinn. & de N., Jour. Bomb. N. H. Soc.* xi, 1897, p. 213, pl. U, figs. 1 *a* & 1 *d*, larva & pupa.

♂ ♀. Wings elongate, almost as in *Hestia*. *Upperside* of fore wing black or fuliginous black, with the following bluish-white subhyaline markings. A streak from base in interspace 1 *b*, very broad streaks filling the basal three-fourths of interspace 1, and the whole of the cell, five very large quadrate discal spots, two long preapical streaks, three shorter streaks above them, a subterminal series of more or less rounded spots decreasing in size anteriorly and curved inwards opposite apex, and an incomplete subterminal series of smaller spots. Hind wing chestnut-red, with subhyaline streaks and spots as follows: streaks from base, not reaching the termen in interspaces 1 *a* and 1 *b*, two broad streaks united to near their apex in interspace 1, a streak filling the cell, and beyond it a discal series of large inwardly pointed elongate spots and incomplete ill-defined subterminal and terminal series of spots. *Underside* similar, the markings clearer and more complete. Antennæ black; head and thorax black, spotted with white; abdomen from brown to bright ochraceous, beneath whitish. Male secondary sex-mark in form 2.

Exp. ♂ ♀ 96–114 mm. (3·8–5·5″).

Hab. The Himalayas, Kashmir to Sikhim; Assam; Burma and Tenasserim, extending to the Malay Peninsula.

Larva. "On emergence a dirty white colour with transverse lines on each segment . . . two somewhat long and thin tentacles or processes on the third, and two shorter ones on the twelfth segment . . . When full-fed the larva is about an inch and a half long, the ground-colour is of a pale yellowish green, with two rows of dorsal and a row on each side of lateral yellow spots, the head is black with grey spots on the face, the legs black.

"*Pupa* pale emerald-green with golden-yellow spots. From eggs laid in September the imago issued in the following April. . . Food-plant, *Marsdenia roylei*, Wright. Natural order Asclepiadeæ." (*Mackinnon.*)

* In the text of the 'Symbolæ Physicæ,' Klug described the tawny form of this insect under the name "*Dorippus*," adding "*variat uterque sexus alis posticis medio albis.*" On the plate, probably by an error, the dark-winged form is labelled "*Euplœa dorippus*, mas. var."

10. **Danais melanea**, *Cramer* (Papilio), *Pap. Exot.* i, 1775, pl. 30, fig. D; *M. & de N. Butt. Ind.* i, 1882, p. 43, pl. 5, fig. 5 ♂ ♀; *Moore* (Caduga), *Lep. Ind.* i, 1890–92, p. 60, pl. 14, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀ *Upperside*: fore wing black, hind wing very dark purplish brown, with faintly bluish-white subhyaline markings. *Underside*: fore wing black, the apex broadly suffused with bright chestnut-brown; hind wing bright chestnut-brown, with a patch on the costa and a portion of the disc and termen very much darker in most specimens. For the rest exactly resembles *D. tytia* in form and disposition of the subhyaline markings, but these are more clearly defined and proportionately smaller, the subterminal and terminal spots on the hind wing generally very distinct. Antennæ black; head and thorax black, spotted with white; abdomen bright ochraceous.

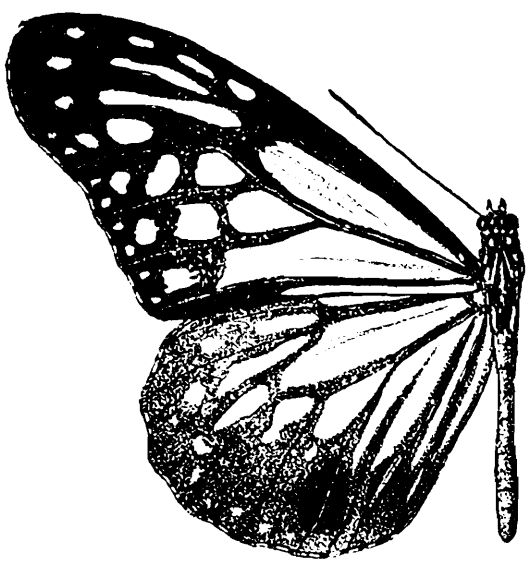

Fig. 3.—*Danais melanea*, ♂. ½.

Exp. ♂ ♀ 94–100 mm. (3·7–3·95″).

Hab. The Eastern Himalayas; Assam; Burma; Tenasserim, extending to the Malayan subregion.

11. **Danais vulgaris**, *Butler, Ent. Month. Mag.* 1874, p. 164; *M. & de N. Butt. Ind.* i, 1882, p. 32, fig. ♂; *Moore* (Radena), *Lep. Ind.* i, 1890–92, p. 27, pl. 5, figs. 1, 1 *a*, ♂ ♀

Race exprompta.

Danais exprompta, *Butler, Ent. Month. Mag.* 1874, p. 164; *Moore* (Radena), *Lep. Ceyl.* i, 1880, p. 4, pl. 2, fig. 1; *M. & de N. Butt. Ind.* i, 1882, p. 33; *Moore* (Radena), *Lep. Ind.* i, 1890–92, p. 28, pl. 5, figs. 3, 3 *a*, ♂ ♀

Race nicobarica.

Danais similis, *Linn.*, var. nicobarica, *W.-M. & de N., J. A. S. B.* 1881, pt. ii, p. 225, fig.

Danais nicobarica, *M. & de N. Butt. Ind.* i, 1882, p. 34, fig. ♀; *Moore* (Radena), *Lep. Ind.* i, 1890–92, p. 28, pl. 5, figs. 2, 2 *a*, ♂ ♀.

Upperside black, the dorsal margin of hind wing broadly cinereous; both wings with the following subhyaline bluish-white streaks and spots:—fore wing: a short streak along dorsal margin, two broad streaks united at base in interspace 1, the upper one curved, a broad streak in cell with an outwardly indented detached

spot beyond it in apex, a slender costal streak, two large discal spots inwardly pointed, outwardly truncate, three elongate spots beyond apex of cell and four or five elongate preapical spots beyond them, finally a subterminal and a terminal series of spots decreasing in size towards apex of wing. Hind wing: elongate streaks in interspaces 1 *a* and 1 *b*, two in interspace 1, two in cell with a short slender streak obliquely between their apices, shorter streaks radiating outwards in interspaces 2–6, a subterminal series of small spots and a terminal row of dots beyond. *Underside* similar, the markings better defined. Antennæ black, palpi black above, bluish white below; head and thorax black, spotted with bluish white; abdomen brown above, sullied white below. Male without any special sex-marks on the wings.

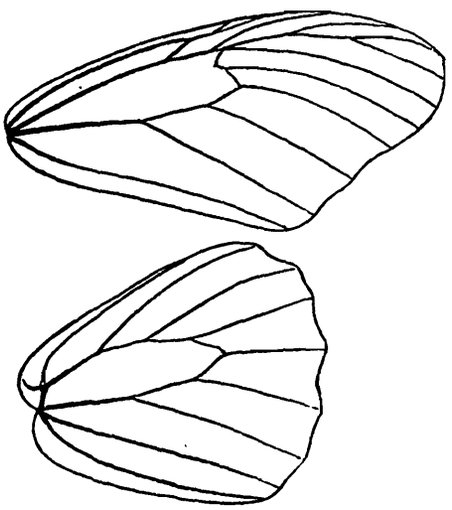

Fig. 4.—Venation of wings. *Danais vulgaris.*

Exp. ♂ ♀ 84–87 mm. (3·3–3·45″).

Hab. Burma, Tenasserim, extending to Malacca, Borneo, Sumatra, and Java. The type in the collection of the British Museum is labelled Nepal, but the locality is almost certainly wrong.

Race **exprompta**, Butler.—♂ ♀ Closely resembles *D. vulgaris*, Butler, but has all the markings much broader, the apical spot in cell of fore wing outwardly less emarginate; on the hind wing interspaces 1 *a* and 1 *b* are entirely filled with the white streak, while the short slender streak lying between the apices of the streaks in the cell coalesces with the lower one.

Exp. ♂ ♀ 76–84 mm. (3–3·8″).

Hab. Ceylon. One specimen in the collection of the British Museum is labelled Padang, Sumatra.

Race **nicobarica**, W.-M. & de N.—♂ ♀ Like the preceding race, but the subhyaline markings still broader and somewhat blurred. *Upperside*:—fore wing: the whole basal two-thirds of interspace 1 bluish white, enclosing a fine longitudinal black line; streak in discoidal cell very broad, occasionally produced to the apical spot in the cell. Hind wing: the black in interspace 1 reduced to a mere streak; cell entirely bluish white, traversed longitudinally by a faint black forked line. In the solitary specimen of the ♂ in the collection of the British Museum this line is entirely absent.

Exp. ♂ ♀ 80–84 mm. (3·12–3·3″).

Hab. Apparently confined to the Nicobars.

Wood-Mason in his original description of the form speaks of a "little specialized sexual mark or gland" on the hind wing. There is no trace of this in the ♂ specimen I have examined.

12. **Danais limniace**, *Cramer* (Papilio), *Pap. Exot.* i, 1775, figs. D, E, ♀; *Moore* (Tirumala), *Lep. Ceyl.* i, 1880. p. 4, pl. 1, fig. 3; *M. & de N. Butt. Ind.* i, 1882, p. 47; *Moore* (Tirumala), *Lep. Ind.* i, 1890–92, p. 30, pl. 6, figs. 1, larva & pupa, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* black, with bluish-white semihyaline spots and streaks. Fore wing: interspace 1 two streaks, sometimes coalescent, with a spot beyond; cell: a streak from base and an outwardly indented spot at its apex; a large oval spot at base of interspace 2, another at base of interspace 3, with a smaller spot beyond it towards termen; five obliquely placed preapical streaks, and somewhat irregular subterminal and terminal series of spots, the latter the smaller. Hind wing: interspaces 1 *b*, 1 *a*, and 1 with streaks from base, double in the latter two, cell with a forked broad streak, the lower branch with a hook, or spur-like short projection; beyond the cell at base of interspaces 2 and 3 a slender loop, at base of 4 and 5 a broad elongate streak, and at base of 6 a quadrate spot; beyond these again a number of scattered unequal subterminal and terminal spots. *Underside*: basal two-thirds of fore wing dusky black, the apex and hind wing olive-brown, the spots and streaks much as on the upperside. Antennæ, head and thorax black, the latter two spotted and streaked with white; abdomen dusky above, ochraceous spotted with white beneath. Male secondary sex-mark in form 1.

Fig. 5.—*Danais limniace*, ♀. ½.

Exp. ♂ ♀ 98–106 mm. (3·8–4·2″).

Hab. Throughout our limits and extending into Siam and China.

Larva. Yellowish white; 3rd and 12th segments, each with a pair of fleshy filaments, black and greenish white; each of the segments with four transverse black bars, the second bar on all broader than the others, bifurcated laterally, a yellow longitudinal line on each side; head, feet and claspers spotted with black.

Pupa. "Green with golden scattered spots and beaded dorsal crescent" (*Moore*).

Food-plants: *Asclepiads* and *Calotropis*. I found the caterpillars feeding on the thick fleshy leaves of a *Hoya* at Bassein in Burma.

13. **Danais septentrionis**, *Butler, Ent. Month. Mag.* 1874, p. 163; *M. & de N. Butt. Ind.* i, 1882, p. 48, pl. 6, fig. 8 ♂ ♀; *Moore* (Tirumala), *Lep. Ceyl.* i, 1880, p. 5, pl. 1, fig. 2; *id.* (Tirumala), *Lep. Ind.* i, 1890–92, p. 34, pl. 7, figs. 2, 2 *a*, ♂ ♀; *Davidson, Bell, & Aitken, Jour. Bomb. N. H. Soc.* x, 1896, p. 240.

♂ ♀ Closely resembles *D. limniace*, Cramer, but is always sufficiently distinct to be easily recognized, even on the wing. From *D. limniace* it differs on the upperside in the ground-colour being darker and the semihyaline markings narrower, more distinct, and of a bluer tint. In the fore wing, in interspace 1 the two streaks are narrower, never coalescent, the upper one forming an oval detached spot; the short streaks above vein 5 are outwardly never truncate, always acute. In the hind wing the two streaks in the discoidal cell united at base are wide apart at their apices, the lower one never formed into a hook. On the underside *D. septentrionis* is generally darker, the apex of the fore wing and the whole of the ground-colour of the hind wing not being of the conspicuous golden brown that they are in *D. limniace*.

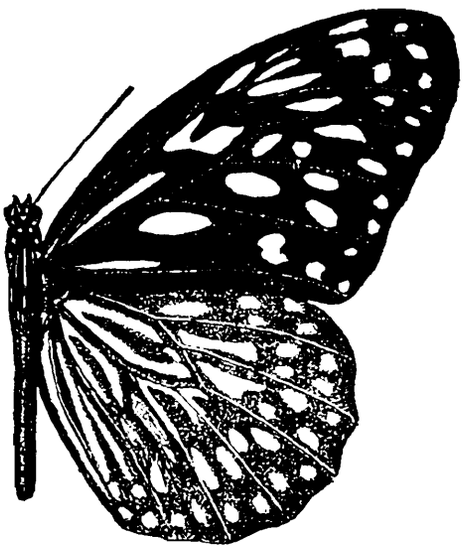

Fig. 6.
Danais septentrionis, ♂. ½.

Exp. ♂ ♀ 80–115 mm. (3·15–4·55″).

Hab. The Himalayas from Simla to Sikhim; Orissa; Southern India, Canara, Malabar, and the Nilgiris; Ceylon; Assam; throughout Burma and Tenasserim, extending to the Malayan Subregion.

I have been unable to find any description of the larva, but presume it is similar to that of *D. limniace* (see Jour. Bomb. N. H. Soc. x, 1896, p. 240). It is said by Mackinnon and de Nicéville to feed on *Vallaris dichotoma* (Jour. Bomb. N. H. Soc. xi, 1897, p. 212).

14. **Danais gautama**, *Moore, A. M. N. H.* (4) xx, 1877, p. 43; *M. & de N. Butt. Ind.* i, 1882, p. 45; *Moore* (Tirumala), *Lep. Ind.* 1890–92, p. 33, pl. 7, figs. 1, 1 *a*, ♂ ♀.

Race gautamoides.

Danais gautamoides, *Doherty, J. A. S. B.* 1886, pt. 2, p. 257; *Moore* (Tirumala), *Lep. Ind.* i, 1890–92, p. 33, pl. 6, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ *Upperside* fuliginous black with semi-hyaline bluish-white streaks and spots. Fore wing: a long narrow streak generally extended to spot beyond and a short curved broader upper streak in interspace 1; cell with two narrow streaks joined

at base, and an irregular spot sometimes divided into three at apex, the upper of the two basal streaks generally extended to the apical spot; a curved discal series of streaks, broad and elongate in interspace 2, short, almost rectangular, in interspace 3, narrow and elongate in the interspaces to the costa; finally, an irregular, somewhat crooked subterminal row of spots and a terminal more regular series of dots. Hind wing: two streaks, joined at base in cell, with short, slender, detached streak between their apices; interspace 1 *b* white; 1 *a*, 1, 2 and 3 with two streaks, joined at base in each; 4 to 8 with single broad short streaks; beyond these, subterminal and terminal rows of spots. *Underside* similar, hyaline markings clearer. Antennæ black; head and thorax black, spotted and streaked with bluish white; abdomen fuscous, ochraceous beneath. Male secondary sex-mark in form 1.

Exp. ♂ ♀ 98–100 mm. (3·88–3·95″).

Hab. Chittagong; Arrakan; Burma, and Tenasserim.

Not nearly so common as *D. limniace.*

Race **gautamoides.**— ♂ ♀ Smaller than *D. gautama,* Moore, with comparatively narrower wings. Fore wing: upper streak in cell very short and ill-defined. Hind wing: streaks in cell much broader, the lower one with a projection in form of a hook or spur.

Exp. ♂ ♀ 76–80 mm. (3–3·5″).

Hab. Recorded from the Nicobars.

15. **Danais aglea,** *Cramer* (Papilio), *Pap. Exot.* iv, 1781, p. 377, fig. E, ♂; *M. & de N. Butt. Ind.* i, 1882, p. 38, pl. 6, fig. 7 *; *Moore* (Parantica), *Lep. Ind.* i. 1890–92, p. 55, pl. 13, figs. 1, 1 *a*, larva & pupa, 1 *b*–1 *d*, ♂ ♀.

Danais grammica, *Boisduval, Spéc. Gén. Lép.* i, 1836, pl. 11, fig. 10 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 40.

Danais ceylanica, *Felder, Verh. zool.-bot. Ges. Wien,* xii, 1862, p. 479; *Moore* (Parantica), *Lep. Ceyl.* i, 1880, p. 8, pl. 2, figs. 2, 2 *a*, ♀ & larva; *M. & de N. Butt. Ind.* i, 1882, p. 40.

Race melanoides.

Parantica melanoides, *Moore, P. Z. S.* 1883, p. 247; *id. Lep. Ind.* i, 1890–92, p. 54, pl. 12, figs. 3, 3 *a*, ♂ ♀

♂ ♀ Southern race (typical *aglea*).—Ground-colour fuliginous black with subhyaline bluish-white streaks and spots. Fore wing: vein 11 anastomosed with vein 12. *Upperside*: fore wing—interspace 1 with two comparatively long, broad streaks united at base, truncate exteriorly; cell with a very broad, somewhat clavate streak traversed by two fine black lines; basal spots in interspaces 2 and 3; an irregular discal series of three spots and two elongate streaks and a subterminal series of spots, the two series curved inwards opposite apex of wing, the latter

* Both the description and the plate are of the northern race *D. melanoides,* Moore.

continued along the apical half of the costa; finally a terminal row in pairs in the interspaces, of much smaller spots. Hind wing: interspaces 1 *a*, 1 *b* with broad long streaks from base; interspace 1 and cell with two streaks united at base in each, the pair in the cell with a short streak obliquely between their apices, an outwardly radiating series of broad, elongate, inwardly pointed spots in interspaces 2–8, followed by somewhat irregular rows of subterminal and terminal spots. *Underside* similar, the markings and spots sometimes a little ill-defined and blurred. Antennæ black; head and thorax black spotted with white; abdomen blackish brown, ochraceous beneath. Male secondary sex-mark in form 2.

Exp. ♂ ♀ 70–100 mm. (2·75-3·95″).

Hab. Ceylon, the Anaimalai hills, Mysore and the Deccan up to Poona.

Race **melanoides.**—Northern and Eastern form. Differs as follows:—Wings on the whole longer and narrower; hyaline markings, especially in interspace 1 of fore wing and in cells of both fore and hind wing, very much broader. In many specimens the black ground-colour in these spaces is reduced to a mere slender black line enclosed in the subhyaline marking. On the underside the streaks are often much blurred and diffuse.

Hab. The Himalayas from Kashmir to Nepal; Sylhet; Assam; Cachar; Chittagong; Arrakan; Burma and Tenasserim.

Neither form is constant either in markings or in habitat. In the British Museum collection there are specimens of true *aglea* from Burma, and others, inseparable from typical *melanoides*, from Mysore.

Larva. Dark claret-brown, two round chrome-yellow spots on each segment, with scattered smaller bluish-white spots between, clustering into and forming a conspicuous line along the sides; legs and ventral surface purplish black, the tentacula, placed as usual on the 3rd and 12th segments, claret-brown. Food-plant, *Tylophora carnosa*.

Pupa. Green, spotted with blue and gold; much constricted behind the thorax.

16. **Danais melanoleuca**, *Moore, P. Z. S.* 1877, p. 581, pl. 58, fig. 3 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 38; *Moore* (Parantica), *Lep. Ind.* i, 1890–92, p. 58, pl. 12, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ Very closely resembles *D. aglea*, Cramer; but the ground-colour of both fore and hind wings on the upperside is much darker, almost black, not fuliginous; the subhyaline streaks and spots, especially on the hind wing, are of greater extent and appear more transparent and white. A constant point of difference is the contrast in size of the basal and discal spots in interspaces 2 and 3 of the fore wing in *D. melanoleuca*, as compared with the proportion those spots bear in either the northern or southern race of *D. aglea*. Male sex-mark as in *D. aglea*.

Exp. ♂ ♀ 68–82 mm. (2·7–3·5″).

Hab. Confined apparently to the Andamans and Nicobars. A very distinctly marked insular form allied to *aglea*. I have seen no varieties intermediate between the two.

17. **Danais aspasia** (Pl. I, fig. 3), *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 15.
Danais crocea, *Butler*, *P. Z. S.* 1866, p. 57, pl. 4, fig. 5; *M. & de N. Butt. Ind.* i, 1882, p. 37, pl. 5, fig. 6; *Moore* (Bahora), *Lep. Ind.* i, 1890-92, p. 52, pl. 12, figs. 1, 1 *a*, ♂ ♀

♂ ♀ Closely resembles both *D. melanoleuca*, Moore, and *D. melanoides*, Moore. In size and in shape of wings it is like the former, but vein 11 in fore wing is never anastomosed with vein 12; in the shape and position of the hyaline bluish-white markings it is like the latter. It differs from both as follows:—fore wing: hyaline marks in interspace 1; hind wing: interspaces 1 *a*, 1 *b*, 1, the discoidal cell, and the markings at the bases of interspaces 2–7 suffused more or less deeply with bright chrome-yellow. The outer border beyond the basal markings in the interspaces of the hind wing broader than in either *D. melanoleuca* or *D. melanoides*, showing more of the black ground-colour.

Exp. ♂ ♀ 62–84 mm. (2·44–3·3″).

Hab. Nepal? Assam? (*Brit. Mus. Coll.*); Arrakan, South Tenasserim, extending to Malacca, Nias Island, and Sumatra.

I have compared the type of *D. crocea*, Butler, with the types of *Papilio aspasia*, Fabr., in the Banksian collection in the British Museum. They do not seem to me separable even as varieties.

D. philomela, Zinken-Sommer, from Java, differs in the greater extent of the yellow in the fore wing.

18. **Danais agleoides**, *Felder*, *Wien. ent. Monatsch.* iv, 1860, p. 398; *M. & de N. Butt. Ind.* i, 1882, p. 41; *Moore* (Parantica), *Lep. Ind.* i, 1890-92, p. 58, pl. 14, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ Like *D. aglea*, but differs structurally in vein 11 of fore wing not being anastomosed with 12; the semihyaline streaks and spots on both fore and hind wing are shorter and narrower, especially on the latter, where a larger area of black margin beyond the streaks is shown than in *D. aglea*; the short slender streak between the apices of the two cellular streaks on the hind wing is longer and always free, never joined on either to the upper or to the lower streak. On the underside the ground-colour is of a browner tint than in *D. aglea*. Male sex-mark in form 2.

Exp. ♂ ♀ 76–80 mm. (2·95–3·1″).

Hab. Burma, Tenasserim, extending through the Malayan Subregion to Java.

19. **Danais nilgiriensis**, *Moore*, *A. M. N. H.* (4) xx, 1877, p. 44; *M. & de N. Butt. Ind.* i, 1882, p. 43, pl. 6, fig. 9 ♂; *Moore* (Badacara), *Lep. Ind.* i, 1890–92, p. 65, pl. 16, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀. *Upperside* fuliginous black with bluish-white markings

and spots. Fore wing: two streaks in interspace 1, coalescent at base and generally at their apices, a narrow streak, with two faintly indicated streaks above it, in cell; five discal spots and above them a long streak in interspace 5; a shorter one in 6; some costal spots and subterminal and terminal series of spots, the former series curved inwards opposite apex of wing, the four lower spots conspicuously larger than the others; the latter series incomplete, the spots small. Hind wing: interspaces 1 *a*, 1 *b*, and 1 with narrow streaks, double in the last; the cell with a much broader, outwardly bluntly pointed streak, and beyond this in the interspaces a radiating series of elongate spots with a subterminal series of smaller spots and a terminal very incomplete series of dots. *Underside* similar, ground-colour browner, the spots more clearly defined. Antennæ black; head and thorax black spotted with white; abdomen brownish above, dusky white below.

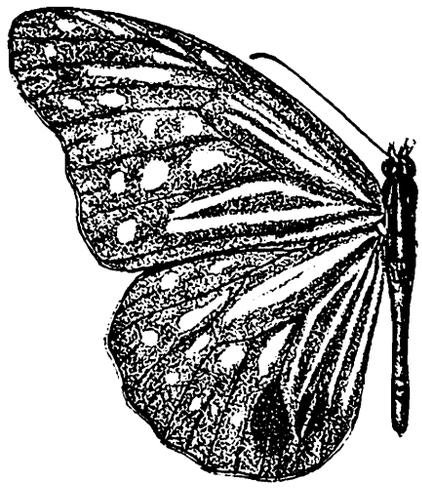

Fig. 7.—*Danais nilgiriensis*, ♂. ½.

Exp. ♂ ♀ 82–84 mm. (3·2–3·33″).

Hab. Southern India; the Nilgiris; Malabar, and Travancore hills.

20. **Danais fumata**, *Butler*, *P. Z. S.* 1866, p. 53; *Moore* (Chittira), *Lep. Ceyl.* i, 1880, p. 9, pl. 4, figs. 1, 1 *a*, ♂ ♀; *id.* (Chittira), *Lep. Ind.* i, 1890–92, p. 67, pl. 16, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Danais taprobana, *Felder*, *Novara Reise*, *Lep. Rhop.* 1867, p. 349, pl. 42, fig. 4; *M. & de N. Butt. Ind.* i, 1882, p. 44.

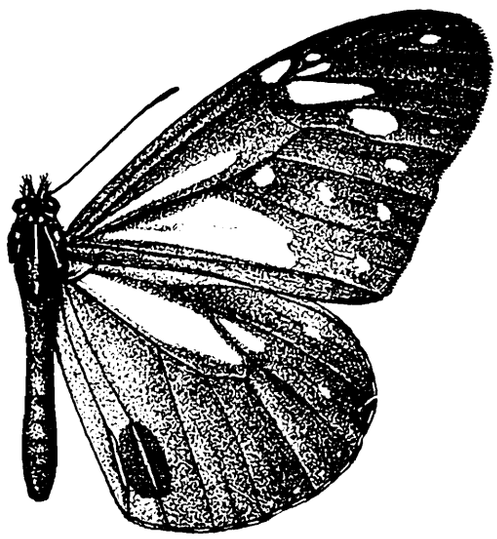

Fig. 8.—*Danais fumata*, ♂. ½.

♂ ♀ *Upperside* fuliginous black with sullied white markings and spots as follows—fore wing: an elongate, broad, inwardly attenuate, outwardly truncate stripe in interspace 1; a narrow stripe with indications of two other stripes above it in discoidal cell; an oblique preapical series of three large rectangular spots and two short streaks and a subterminal series of seven or eight small spots. Hind wing: a streak from base almost filling the discoidal

cell, a much shorter, narrower streak at base of interspace 5, three or four subterminal spots and a series of minute obscure terminal dots. *Underside* browner, the white markings and spots more distinct, but shaded more or less with fuliginous brown, the disc beyond cell very dark brown; termen subapically with a powdering of white scales. Antennæ, head and thorax black, the latter two spotted with white beneath; abdomen dark brown above, whitish below.

Exp. ♂ ♀ 90–100 mm. (3·54–3·94″).

Hab. Ceylon.

Genus **EUPLŒA.**

Euplœa, *Fabr. Illig. Mag.* vi, 1807, p. 280.
Crastia, Trepsichrois & Salpinx, *Hübner, Verz. bek. Schmett.* 1816, pp. 16 & 17.
Calliplœa, *Butler, Trans. Ent. Soc.* 1875, p. 1.
Stictoplœa, *Butler, Journ. Linn. Soc.* xiv, 1878, p. 301.
Isamia, Narmada, *Moore, Lep. Ceyl.* i, 1880, pp. 10 & 13.
Menama, Tronga, Penoa, Mahintha, Karadira, Danisepa & Pademma, *Moore, P. Z. S.* 1883, pp. 264, 266, 274, 280, 281, 296 & 305.

Type, *E. corus*, from Ceylon.

Range. Indo- and Austro-Malayan Regions. Found also in Mauritius and the Seychelles.

♂ ♀ Fore wing variable in shape, more or less triangular, comparatively broad and short, or elongate and narrow, or, in the ♂ of typical *Euplœa*, and in some others, owing to the great convexity of the dorsum, almost subquadrate. Costa widely arched; termen oblique, sometimes slightly convex or concave; dorsum in ♂ always convex, in ♀ straight or sinuous. Hind wing ovate, broad, sometimes subtriangular. Discoidal cell of both fore and hind wing broad and long, over half length of wing; in the hind wing sometimes over two-thirds the length of wing; discocellulars of fore wing sharply angulated and with a spur inwards, or slightly concave; rest of the neuration not variable; veins 11 and 12 of fore wing never anastomosed; dorsum of fore wing on the underside, and costa of hind wing on the upperside, nacreous. Antennæ over half length of fore wing; club very gradual; palpi short; somewhat thick, third joint conical; fore legs: tibiæ and femora subequal; tarsi much shorter in ♂, cylindrical, biarticulate and tapering; in ♀ clavate, quadriarticulate; intermediate and posterior legs normal, their claws with paronychia and pulvilli. Secondary sex-marks in the ♂ present or absent; when present consisting of peculiarly modified scales which take the appearance of a brand when on the fore wing, and of a patch different in colour from the surrounding scales on the hind wing.

Taking the secondary sex-marks in the males as a guide, Fabricius's original genus *Euplœa* has been split up into a very

large number of genera. It seems to me, however, more convenient and more in accord with the very close relationship existing among the forms, to regard these secondary sexual characters in the males as of subgeneric value only, as was done

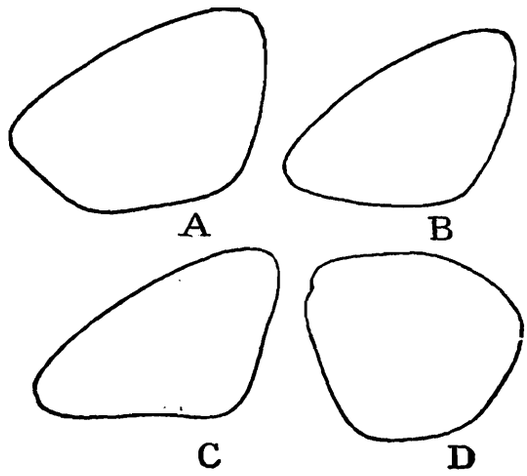

Fig. 9.—Shape of wings in *Euplœa*.
A. Subquadrate, ♂. } Fore wing.
B. Subtriangular, ♂. }
C. Triangular, ♀. }
D. Hind wing.

by Marshall and de Nicéville in vol. i. of the 'Butterflies of India, Burma, and Ceylon.' The arrangement given below, however, differs slightly from that adopted in the work just quoted.

Key to the Subgenera.

♂ ♂.

A. Without secondary sex-marks (*Menama* and *Tronga*, Moore) ..	MENAMA, p. 24.
B. With secondary sex-marks.	
a. On fore wing only *.	
a'. One brand on fore wing (*Crastia*, Hübner, *Mahintha*, *Karadira*, *Penoa*, Moore)	CRASTIA, p. 31.
b'. Two brands on fore wing (*Stictoplœa*, Butler, and *Narmada*, Moore) . .	STICTOPLŒA, p. 28.
b. On both fore and hind wing. A brand on fore wing, a patch on hind wing on or above subcostal vein (*Salpinx*, Hübner, and *Pademma*, *Isamia*, *Tiruna*, Moore)	SALPINX, p. 37.

* With the exception of *E. alcathoe*, the ♂ of which has on the upperside of the hind wing, anteriorly, from base to near termen, a large area covered with specialized scales unlike anything in any other form.

c. On hind wing only.
a'. A patch on hind wing *on* or above subcostal vein (*Euplœa*, Fabr., and *Calliplœa*, Butler) .. .. EUPLŒA (typical), p. 27.
b'. A patch on hind wing within cell below subcostal vein (*Trepsichrois*, Hübner) TREPSICHROIS, p. 45.

Key to the forms of Menama.

A. Fore wing more or less glossed with blue.
a. Hind wing not or only very slightly glossed with blue. Expanse 88–94 mm. *E. modesta*, p. 24.
b. Hind wing: basal two-thirds glossed with blue. Expanse 118–120 mm. *E. camaralzaman*, p. 25.
B. Fore wing not glossed with blue.
a. Upperside dark purplish brown, terminal margins broadly paler, unspotted, or with only two or three white spots .. *E. simulatrix*, p. 25.
b. Upperside dark brownish black with numerous white spots.
a' Spots in subterminal series on hind wing much larger than spots in terminal series .. .. .. *E. nicevilli*, p. 26.
b' Spots in subterminal and terminal series on hind wing subequal in size.
a^2. Fore wing: apical spots of subterminal series large, elongate, divided only by the veins .. .. *E. bremeri*, p. 26.
b^2. Fore wing: apical spots of subterminal series small, oval, somewhat widely separate . Race *biseriata*, p. 26.

21. **Euplœa modesta**, *Butler, P. Z. S.* 1866, p. 273 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 77; *Moore* (Menama), *Lep. Ind.* i, 1890–92, p. 73, pl. 17, figs. 2, 2 *a*, 2 *b*, ♂ ♀.
Crastia cupreipennis, *Moore, P. Z. S.* 1878, p. 823 ♂; *M. & de N.* (Euplœa) *Butt. Ind.* i, 1882, p. 77.
Menama tavoyana, *Moore, P. Z. S.* 1883, p. 265, pl. 30, fig. 6 ♂.

♂ Fore wing much as in fig. 9 B (p. 23), but apex more produced, termen more oblique. ♀. Fore wing as in fig. 9 C. Hind wing in both sexes as in fig. 9 D, but termen straighter and more widely arched. ♂ ♀. *Upperside* dark velvety brown; fore wing: basal two-thirds glossed with blue, disc with a few white spots and occasionally a subterminal row of white specks. Hind wing uniform, rarely with a suffusion of blue at base; subterminal and terminal series of white spots generally not extending beyond interspace 5, subterminal spots oval, larger than the terminal, the latter sometimes absent. *Underside* silky brown; fore wing: a spot in apex of cell, a more or less complete series of discal spots and spots in interspaces 8 and 9 white. Hind wing: a spot in apex of cell, a series of five or six small spots beyond, subterminal and terminal series of spots more complete than on the

upperside, white, the subterminal spots elongate. Antennæ, head, thorax and abdomen dark brown; beneath, except the antennæ, speckled with white.

Exp. ♂ ♀ 88–94 mm. (3·48–3·7″).

Hab. Upper Burma, Pyinmana; Lower Burma; Tenasserim, extending to Siam.

22. **Euplœa camaralzaman,** *Butler, P. Z. S.* 1866, p. 271, pl. 29, fig. 1 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 77; *Moore* (Menama), *Lep. Ind.* i, 1890–92, p. 72, pl. 17, figs. 1, 1 *a*, ♂.
Isamia carpenteri, *Moore, Lep. Ind.* i, 1890–92, p. 131, pl. 50, figs. 1, 1 *a*, ♀.

♂. Fore wing as in fig. 9 B (p. 23), but dorsum much more convex. ♀ Fore wing as in *E. modesta*. Hind wing in both sexes ovate. ♂ ♀. *Upperside* dark velvety brown; basal two-thirds of both fore and hind wing glossed with blue, more restricted in the ♀ than in the ♂ Fore wing in ♂ with a few terminal white dots near tornus; in ♀, with a spot in apex of cell, two or three discal, a costal spot and an incomplete subterminal and terminal series of spots, white. Hind wing: ♂, an incomplete subterminal and terminal series of white subquadrate spots; ♀ similar, with in addition a white spot in apex of cell and six or seven white discal spots; the spots in the subterminal and terminal series larger. *Underside* similar, but the spots and markings more distinct, with one or two additional spots. Antennæ, head, thorax and abdomen dark brown; beneath, antennæ excepted, spotted and marked with white.

Exp. ♂ ♀ 118–120 mm. (4·55–4·75″).

Hab. South Tenasserim. Male originally described from Siam.

I think there is little doubt that, as suggested by Herr Frühstoffer, *E. camaralzaman* and *Isamia carpenteri* are the ♂ and ♀ of the same insect.

23. **Euplœa simulatrix,** *W.-M. & de N., J. A. S. B.* 1881, pt. 2, p. 229, ♂; *M. & de N. Butt. Ind.* i, 1882, p. 76; *Moore* (Menama), *Lep. Ind.* i, 1890–92, p. 74, pl. 18, figs. 1, 1 *a*–1 *e*, ♂ ♀.

♂ ♀. Shape of wings more or less as in *E. modesta*, dorsum straighter near tornus in ♂. *Upperside* dark brown, the margins broadly paler; ♀ altogether paler than the ♂; fore and hind wing in ♂ uniform unspotted, in ♀ with a small pinkish-white costal spot. *Underside*: ground-colour similar; fore wing: a spot at apex of discoidal cell, a small costal spot, and three discal spots bluish white. Hind wing: a bluish-white spot at apex of discoidal cell with five or six discal spots beyond. Antennæ, head, thorax and abdomen very dark brown, almost black; head, thorax and abdomen spotted with white.

Exp. ♂ ♀ 96–100 mm. (3·8–4″).

Hab. The Nicobars.

24. **Euplœa nicevilli**, *Moore* (Tronga), *Lep. Ind.* i, 1890–92, p. 77, pl. 20, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ This form very closely resembles *E. core*, Cramer, var. *vermiculata*, Butler (p. 32), but the ♂ lacks the secondary sex-mark on the fore wing; the white spots on the wings in both sexes, especially the subterminal series, are extraordinarily large; the spots opposite the apex on the fore wing are elongated inwardly. Ground-colour of both wings darker than in *E. core*.

Exp. ♂ ♀ 80 mm. (3·15″).

Hab. Recorded so far only from the Sundarbans below Calcutta.

The types ♂ and ♀, the only specimens I know of, are in the British Museum. They were presented by Col. Swinhoe.

25. **Euplœa bremeri**, *Felder*, *Wien. ent. Monatsch.* iv, 1860, p. 398, ♂; *M. & de N. Butt. Ind.* i, 1882, p. 78; *Moore* (Tronga), *Lep. Ind.* i, 1890–92, p. 76, pl. 19, figs. 1, 1 *a*–1 *d*, ♂ ♀.
Tronga olivacea, *Moore*, *P. Z. S.* 1883, p. 267, ♀

Race biseriata.

Tronga biseriata, *Moore*, *P. Z. S.* 1883, p. 266, ♂; *id. Lep. Ind.* i, 1890–92, p. 78, pl. 21, figs. 1, 1 *a*–1 *d*, ♂ ♀

♂. Fore wing somewhat as in fig. 9 A (p. 23), but less decidedly subquadrate. ♀ Fore wing as in fig. 9 C, but apex more rounded, less produced. Hind wing in both sexes broadly ovate. *Upperside*: from light somewhat yellowish brown to dark brownish black, costa of hind wing broadly paler. Fore wing: a spot in apex of cell, sometimes absent in the ♂, a curved discal series of seven spots present only in the ♀, in the ♂ reduced to a spot in interspace 3 and a minute costal dot, a subterminal series of large oval spots, curving inwards opposite apex of wing—the spot in interspace 6 the largest—and a terminal series of much smaller spots, white. Hind wing with more or less incomplete subterminal and terminal rows of white spots. *Underside* similar, paler, with in the fore wing of ♂ an additional white spot at the apex of the cell and at bases of interspaces 3 and 4; in the hind wing of both sexes a spot at apex of cell and a discal series of five or six spots beyond. Antennæ, head, thorax and abdomen dark brown; the head and thorax beneath, and the abdomen at the sides, marked and spotted with white.

Exp. ♂ ♀ 84–100 mm. (3·3–3·95″).

Hab. Recorded so far only from Tenasserim, extending to the Malay Peninsula.

Race **biseriata**, Moore, seems confined to the Nicobars, and differs from *E. bremeri* in the white spots on the wings being much smaller and more restricted.

Key to the forms of Euplœa (*typical*).

a. Of large size. Expanse 114–124 mm. Wings not glossed with blue.
  a'. Subterminal and terminal series of white spots on fore wing very incomplete, more or less obsolescent .. .. *E. corus*, p. 27.
  b'. Subterminal and terminal series of white spots on fore wing complete, blurred, not well-defined, but never obsolescent ... .. *E. phœbus*, p. 27.
b. Smaller. Expanse under 84 mm. Fore wings partially glossed with blue *E. ledereri*, p. 28.

26. **Euplœa corus**, *Fabr.* (Papilio) *Ent. Syst.* iii, 1793, p. 41, ♀; *Moore, Lep. Ind.* i, 1890–92, p. 107, pl. 37, figs. 1, larva & pupa, 1 *a*, 1 *b*, ♂ ♀.
  Euplœa elisa, *Butler, P. Z. S.* 1866, p. 270; *Moore*, (Macroplæa) *Lep. Ceyl.* i, 1880, p. 9, pl. 5, figs. 2, 2 *a*, ♂ ♀; *M. & de N. Butt. Ind.* i, 1882, p. 72, pl. 8, fig. 14.

♂. Fore wing as in fig. 9 A (p. 23). ♀ Fore wing as in fig. 9 C. Hind wing in both sexes ovate. ♂ ♀ *Upperside* golden olive-brown, lower portion of both wings shaded with fuscescent purple. Fore wing: a spot at apex of cell, two discal and a more or less incomplete subterminal and terminal series of white spots. Hind wing: a faintly marked spot in apex of cell and a very incomplete subterminal and terminal series of white spots, varying from two or three in the subterminal and none in the terminal to six or seven in each series. ♀ with some faintly defined discal spots also. *Underside* similar, the spots better defined. Antennæ, head, thorax and abdomen dark brown, the abdomen glossed with blue above; the palpi, thorax beneath and legs spotted with white.

Exp. ♂ ♀ 114–120 mm. (4·1–4·75″).

Hab. Ceylon. Confined apparently to the littoral tracts.

Larva. "Cylindrical, purple-brown, with a pair of black-tipt fleshy filaments on the 3rd, 4th, and 12th segments, each of the segments with transverse dark brown streaks; lateral line paler; head and legs dark purple-brown." (*Moore.*)

Pupa. "Broad, thorax above oblique, uneven; abdominal segment dorsally convex, purplish silvery grey, fasciated with golden brown; abdominal segments brown-spotted." (*Moore.*)

Food-plant unknown.

27. **Euplœa phœbus**, *Butler, P. Z. S.* 1866, p. 270; *Moore, Lep. Ind.* i, 1890–92, p. 109, pl. 38, figs. 1, 1 *a*, ♂ ♀.
  Euplœa castelnaui, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 315; *M. & de N. Butt. Ind.* i, 1882, p. 72.

♂ ♀. I am in doubt whether this is not merely a race of *E. corus*, Fabr., and not a distinct form. It certainly is very closely allied to the Ceylon form, from which it differs chiefly in the spots on both wings being larger, more blurred and dusky white, the centres of these often purer white; the discal and terminal series of spots on the fore wing are more complete,

the former bent sharply inwards opposite the apex. Hind wing: lower portion below cell dark, unspotted. *Underside*: the white spots larger, better defined, the discal and terminal series on the hind wing complete.

Exp. ♂ ♀ 120–124 mm. (4·75–4·9″).

Hab. Tenasserim, extending into the Malayan Subregion.

28. **Euplœa ledereri**, *Felder, Wien. ent. Monatsch.* iv, 1860, p. 397; *M. & de N. Butt. Ind.* i, 1882, p. 73; *Moore* (Calliplœa), *Lep. Ind.* i, 1890–92, p. 105, pl. 36, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ Fore wing as in fig. 9 A (p. 23). ♀. Fore wing as in fig. 9 C. Hind wing in both sexes: costa strongly, termen and dorsum widely arched. *Upperside*: fore wing silky brown, in ♂ glossed with blue, in ♀ with purplish on the anterior half; in both sexes it bears the following bluish-white spots—one in lower apex of cell, one in each of the interspaces 4, 6 and 10, and a subterminal series of six or seven, the upper two generally large, coalescent and blurred. Hind wing olivascent brown, darker in the middle in the ♂. *Underside* silky brown, the spots as on the upperside but white, and in the ♂ the subterminal series on fore wing incomplete, with two or three terminal dots beyond. In the ♀ both series complete. Hind wing: the subterminal and terminal series of spots generally nearly complete. Antennæ, head, thorax and abdomen dark brown; head and thorax beneath and abdomen on underside barred with white.

Exp. ♂ ♀ 70–84 mm. (2·7–3·2″).

Hab. Tenasserim, Mergui and southwards, extending to the Malay Peninsula.

Key to the forms of Stictoplœa.

A. Fore wing not glossed with blue on upperside.	
a. Subterminal and terminal series of white spots on fore wing distinct	*E. coreta*, p. 29.
b. Subterminal and terminal series of white spots on fore wing more or less obsolescent.	Race *montana*, p. 29.
B. Fore wing glossed with blue on upperside.	
a. No discal spots on fore wing.	
a'. A complete series of subterminal white spots on hind wing	*E. harrisi*, p. 30.
b' Subterminal series of white spots on hind wing broken, very incomplete	Var. *crowleyi*, p. 30.
b. Discal spots on fore wing present.	
a'. A complete series of subterminal white spots on hind wing	Race *hopei*, p. 30.
b' Subterminal series of white spots on hind wing broken, incomplete, reduced to two or three spots below apex or entirely absent.	
a^2. Expanse 100–105 mm..	Var. *binotata*, p. 30. Var. *regina*, p. 30.
b^2. Expanse 86 mm.	Var. *pygmea*, p. 31.

29. **Euplœa coreta**, *Godart* (Danais), *Encycl. Méth.* ix, 1819, p. 178, ♂ ♀.

Euplœa coreoides, *Moore*, *A. M. N. H.* (4) xx, 1877, p. 44; *id.* (Narmada) *Lep. Ceyl.* i, 1880, p. 13; *M. & de N. Butt. Ind.* i, 1882, p. 90; *Moore* (Narmada), *Lep. Ind.* i, 1890-92, p. 134, pl. 51, figs. 1, 1 *a*, ♂ ♀.

Race montana.

Euplœa montana, *Felder*, *Novara Reise*, *Lep. Rhop.* 1867, p. 330; *Moore* (Narmada), *Lep. Ceyl.* i, 1880, p. 13, pl. 6, fig. 1 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 91; *Moore* (Narmada), *Lep. Ind.* i, 1890-92, p. 135, pl. 51, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ In shape, colour, and markings, very closely resembles *E. core* (p. 32). Males, however, can be distinguished at once by the presence of *two* brands instead of a single one on the fore wing. Of the females de Nicéville says, females of *E. coreta* can be separated from the females of *E. core* by the following points: "First by the outline of the fore wing being more entire; in *core* it is slightly but perceptibly scalloped. Second, by the underside of the fore wing having a complete series of six spots, one between each pair of nervules outside the cell; in *core* two of these spots, those above the discoidal nervules (veins 5 and 6), are always wanting. Third, the two brands on the interno-median area (interspace 1) of the fore wing in the male are faintly but quite perceptibly to be traced in the female in the same position."

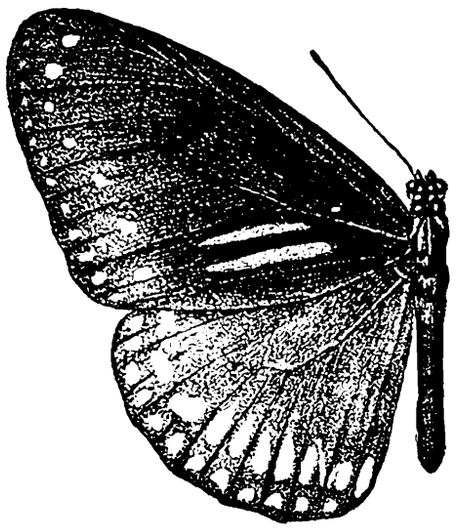

Fig. 10.—*Euplœa coreta*, ♂. ½.

Exp. ♂ ♀ 92–96 mm. (3·65–3·8″).

Hab. Southern India, Canara, Mysore, Wynaad, the Nilgiris, Travancore.

Race **montana**, Felder.—As typical *E. coreta* closely resembles typical *E. core*, so *montana*, the Ceylon race of *coreta*, resembles *asela*, the Ceylon race of *E. core*. Recognizable points of difference between *asela* and *montana* are in both sexes the same as between *core* and *coreta*.

Exp. ♂ ♀ 90–94 mm. (3·55–3·7″).

Hab. Confined to Ceylon.

An occasional specimen of *E. coreta* approximates towards *montana* by the partial obsolescence of the terminal series of spots.

30. **Euplœa harrisi** (Pl. I, fig. 4), *Felder, Novara Reise, Lep. Rhop.* 1867, p. 328; *Moore* (Stictoplœa), *Lep. Ind.* i, 1890-92, p. 136, pl. 52, figs. 1, 1 *a*, ♂ ♀

Euplœa grotei, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 339, pl. 41, fig. 7 ♀; *M. & de N. Butt. Ind.* i, 1882, p. 91.

Stictoplœa crowleyi, *Moore, Lep. Ind.* i, 1890–92, p. 138, pl. 52, fig. 2, ♂.

Race hopei.

Euplœa hopei, *Felder, Novara Reise, Lep. Rhop.* p. 328, ♂; *M. & de N. Butt. Ind.* i, 1882, p. 92, pl. 9, fig. 18, ♂ ♀; *Moore* (Stictoplœa), *Lep. Ind.* i, 1890-92, p. 138, pl. 53, figs. 1, 1 *a*, ♂ ♀

Stictoplœa microsticta, *Butler, Journ. Linn. Soc.* xiv, 1878, p. 302, ♂; *M. & de N.* (Euplœa) *Butt. Ind.* i, 1882, p. 94.

Stictoplœa binotata, *Butler, Jour. Linn. Soc.* xiv, 1878, p. 302; *M. & de N.* (Euplœa) *Butt. Ind.* i, 1882, p. 93; *Moore, Lep. Ind.* i, 1890–92, p. 138, pl. 53, fig. 2 ♂.

Stictoplœa regina *et* pygmea, *Moore, P. Z. S.* 1883, pp. 319, 320; *id. Lep. Ind.* i, 1890–92, pp. 139, 140, pl. 53, fig. 3 ♂, & pl. 52, figs. 3, 3 *a*, ♂ ♀

♂ Fore wing as in fig. 9 B (p. 23), but dorsum more convex, apex more rounded. ♀ Fore wing as in fig. 9 C, but apex slightly more rounded. ♂ ♀ Hind wing ovate. Upperside dark velvety brown, fore wing glossed with blue from base to termen, a subterminal series of bright blue spots and an incomplete terminal series, commencing at the tornus, of small dots. Hind wing blue-glossed only in the middle; subterminal and terminal series of very white spots, the spots in the latter smaller and the series generally incomplete. *Underside* dark umber-brown, fore wing slightly blue-glossed in middle; markings as on the upperside, but with the following additional spots on both fore and hind wing:—a spot at apex of cells, and five to seven discal spots beyond bluish white; one or more of these spots minute, often absent. Antennæ black; head, thorax and abdomen dark brown, the head and thorax slightly and minutely spotted with white.

Exp. ♂ ♀ 90–112 mm. (3·55–4″).

Hab. Tenasserim, extending to the Malay Peninsula; Khási Hills, Assam (*de Nicéville*).

Euplœa grotei, Felder, seems to be a variety of *E. harrisi*.

Euplœa (*Stictoplœa*) *crowleyi*, Moore, of which the type is now in the Collection of the British Museum, is an undoubted variety of *E. harrisi*. It has the hind wing more or less immaculate on the upperside, the subterminal series of spots reduced to three just below the apex in the type, and the terminal series of spots wanting.

Race **hopei**, Felder, differs from typical *harrisi* in having on the fore wing, in addition to the subterminal and incomplete terminal series of spots, a spot in apex of cell and a row of discal spots varying from two in var. *regina*, Moore, to six or seven in *microstictà* and *binotata*, Butler. On the hind wing the subterminal and terminal series of spots are very incomplete, reduced to two or three below the apex. *Underside* similar to the underside in *E. harrisi*,

but the subterminal and terminal series reduced to mere dots, the former commencing below the apex and not reaching the tornus, the latter commencing at the tornus and not reaching the apex.

Exp. ♂ ♀ 100–105 mm. (3·95–4·15″).

Hab. This, the northern form of *E. harrisi*, is found in Sikhim, Bhutan, Assam, Cachar, Arrakan and in many parts of Upper and Lower Burma to Northern Tenasserim. The farthest point to the south from which I have seen a specimen is Beeling.

Euplœa (*Stictoplœa*) *pygmea*, Moore, is clearly only a stunted variety of *E. hopei*.

Key to the forms of Crastia.

A. Fore wing not glossed with blue.
  a. Upperside: fore and hind wings dark brown, with numerous white spots.
    a'. Hind wing: subterminal series of spots prolonged into white streaks; ♂ with a large area anteriorly covered with specialized scales . . . . . *E. alcathoe*, p. 36.
    b'. Hind wing: subterminal series not prolonged into streaks; ♂ without any specialized scales on hind wing.
      a^2. Hind wing: spots in subterminal series considerably larger than spots in terminal series.
        a^3. Fore wing without a violaceous-white apical patch.
          a^4. Fore wing with subterminal series of spots complete.
            a^5. Fore wing: upper or preapical spots of subterminal series rounded, not elongate . . *E. core*, p. 32.
            b^5. Fore wing: upper or preapical spots of subterminal series elongate . . . . . [p. 32. Var. *vermiculata*, [p. 32.
          b^4. Fore wing with subterminal series of spots incomplete, obsolescent . Race *asela*, p. 32.
        b^3. Fore wing with a violaceous-white apical patch . . . . . *E. godarti*, p. 33.
      b^2. Hind wing: spots in subterminal series not larger than spots in terminal series. *E. esperi*, p. 33.
  b. Upperside: fore and hind wings purplish brown, terminal margins broadly paler, unspotted or with only one or two white spots . . . . . *E. camorta*, p. 34.
  c. Upperside: fore and hind wing pale vandyke-brown, with numerous white spots . . . *E. andamanensis*, [p. 35.
B. Fore wing: basal half very obscurely glossed with blue, seen only in certain lights. . *E. layardi*, p. 34.
C. Fore wing glossed with blue from base to termen.
  a. Gloss on fore wing glistening cobalt-blue, conspicuous.
    a'. Hind wing with subterminal and terminal spots more or less faint on upperside *E. dione*, p. 35

b' Hind wing with subterminal and terminal spots always present, though series often incomplete . . . . . Race *limborgi*, p. 36.

b. Gloss on fore wing deep Prussian-blue, difficult to see except in certain lights Race *menetriesi*, [p. 36.

31. **Euplœa core**, *Cramer* (Papilio), *Pap. Exot.* iii, 1780, pl. 266, figs. E, F, ♂; *M. & de N. Butt. Ind.* i, 1882, p. 80, pl. 9, fig. 16, ♂ ♀; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 81, pl. 23, figs. 1, 1 *a*, larva & pupa, 1 *b*-1 *d*, ♂ ♀; *Dav. & Aitk. Jour. Bomb. N. H. Soc.* v, 1890, p. 266.

Euplœa vermiculata, *Butler*, *P. Z. S.* 1866, p. 276; *M. & de N. Butt. Ind.* i, 1882, p. 81; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 80, pl. 22, figs. 1, 1 *a*–1 *c*, ♂ ♀

Race asela.

Euplœa asela, *Moore*, *A. M. N. H.* (4) xx, 1877, p. 45; *id. Lep. Ceyl.* i, 1880, p. 11, pl. 6, figs. 2 ♀, 2 *a*, larva & pupa; *M. & de N. Butt. Ind.* i, 1882, p. 81; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 84, pl. 24, figs. 1, 1 *a*, larva & pupa, 1 *b*-1 *d*, ♂ ♀.

♂ ♀ Fore wing as in fig. 9 B and C respectively (p. 23); hind wing as in fig. 9 D, but termen more evenly arched. *Upperside* dark brown, broadly paler along terminal margins; fore and hind wing with subterminal and terminal series of white spots; on fore wing the former more or less oval, curved inwards opposite apex, the latter series often incomplete, not reaching apex, the spots smaller; often there is a small costal spot, and very rarely a spot in apex of cell and one or more discal spots; on the hind wing the inner series of spots are elongate, the outer conical. *Underside* similar, but ground-colour more uniform; cell, costal and discal spots on both fore and hind wing nearly always present.

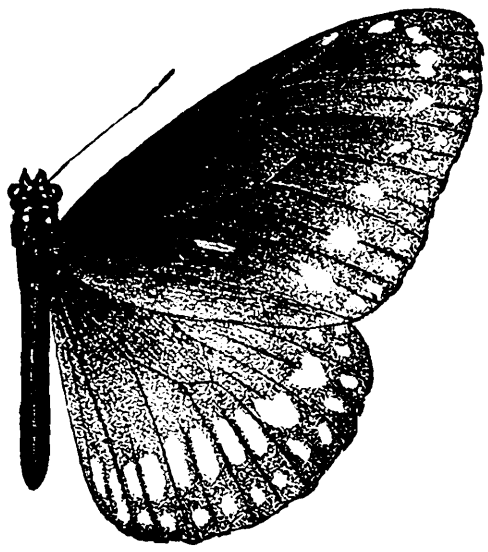

Fig. 11.—*Euplœa core*, ♂. ½.

Exp. ♂ ♀ 78–98 mm. (3-3·9″).

Hab. Throughout Continental India, and recorded from the Andamans.

Var. *vermiculata*, Butler, the common form in the foot-hills and lower ranges of the Himalayas, differs in the spots of the subterminal series on the fore wing being conspicuously larger and either quadrate or cordate. Numerous intermediate forms between it and typical *E. core* are recorded.

Race **asela**, Moore, seems more or less confined to Ceylon, though incidentally recorded from Western India. It differs

from typical *E. core* in having the white spots in the subterminal and terminal series on the fore wing smaller and more or less obsolescent.

Exp. ♂ ♀ 78–100 mm. (3–4″).

Larva of typical *E. core*.—Above bluish lilac, with a brownish-yellow lateral stripe, and each segment with three brownish transverse lines, four pairs of purplish tentacula, and the spiracles margined with brownish; beneath dark brown. Recorded food-plants: the common oleander, *Cryptolepis pauciflora*, *Ficus indica*, and *Ficus glomerata*.

Pupa. "Smooth, rounded, and fulvous, beautifully marked with silvery or golden spots and streaks" (*de Nicéville*).

Larva of the race *asela*, as figured and described by Moore, differs in being of a pale colour and in wanting the brownish-yellow lateral stripes. Food-plant, the oleander.

32. **Euplœa esperi**, *Felder, Verh. zool.-bot. Ges. Wien*, xii, 1862, p. 482, ♀; *M. & de N. Butt. Ind.* i, 1882, p. 83; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 88, pl. 27, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀. Shape of the wings as in *E. godarti*, Lucas. *Upperside* very dark brown, almost black, scarcely at all paler towards the terminal margins; fore and hind wings with subterminal and terminal series of white spots; on the fore wing the spots in the subterminal series much larger than the spots in the terminal series and bent inwards opposite apex, a spot in the apex of the cell often obsolescent and a discal series of four or five spots, of which one or two may be very small or obsolescent; on the hind wing the spots in the subterminal and terminal series subequal. *Underside* chocolate-brown, the white spots as on the upperside but more distinct, and in the hind wing with the addition of a spot in the apex of the cell and five or six discal small spots beyond. Antennæ, head, thorax and abdomen very dark brown, and, the antennæ excepted, spotted with white beneath.

Exp. ♂ ♀ 88–94 mm. (3·45–3·7″).

Hab. The Nicobars.

33. **Euplœa godarti**, *Lucas, Rev. et Mag. Zool.* 1853, p. 319, ♀; *M. & de N. Butt. Ind.* i, 1882, p. 84; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 85, pl. 25, figs. 1 *a*–1 *d*, ♂ ♀.

Euplœa siamensis, *Felder, Novara Reise, Lep.* ii, 1867, p. 341, pl. 41, fig. 6 ♂.

♂. Fore wing subtriangular, tornus more rounded than in *E. core*. ♀ Fore wing as in fig. 9 C (p. 23).— ♂ ♀. Hind wing broadly ovate. *Upperside* dark brown, broadly paler along the terminal margins, especially on the fore wing. Fore wing with more or less incomplete and obsolescent series of subterminal and terminal small white spots, and a powdering of violaceous-white scales at apex, varying very considerably in extent from a mere trace of violaceous between the veins to a large and very con-

spicuous patch occupying the whole of the apex. Hind wing with a subterminal series of oval or inwardly conical and terminal series of more rounded white spots. *Underside* paler brown, the white spots larger, more clearly defined. Fore wing not violaceous at apex, a spot (sometimes absent) in apex of cell, and two or three discal spots. Hind wing: a spot in apex of cell, also sometimes absent, and a discal series of five small spots beyond. Antennæ, head, thorax and abdomen very dark brown, and, the antennæ excepted, sparsely spotted with white.

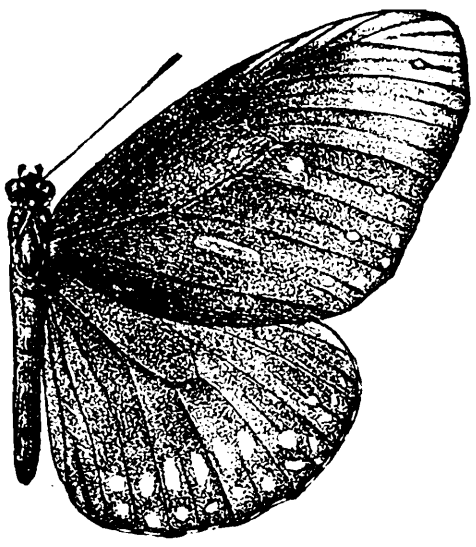

Fig. 12.—*Euplœa godarti*, ♂. ½.

Exp. ♂ ♀ 82–108 mm. (3·25–4·25″).

Hab. Throughout Burma and Tenasserim, extending to Siam.

34. **Euplœa layardi**, *Druce, P. Z. S.* 1874, p. 103, pl. 16, fig. 1 ♀; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 87, pl. 26, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Euplœa subdita, *Moore, P. Z. S.* 1878, p. 823; *M. & de N. Butt. Ind.* i, 1882, p. 82; *Moore* (Mahintha), *Lep. Ind.* i. 1890–92, p. 91, pl. 29, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Crastia binghami, *Moore, P. Z. S*, 1883, p. 278, ♂ ♀.

♂ ♀ This form was originally described from Siam. It closely resembles *E. godarti*, Lucas, but the base of the fore wing is faintly suffused with blue, there is no violaceous-white patch at apex, and the spots are more obsolescent than in typical *E. godarti*. Superficially it also resembles *E. core* race *asela*, Moore, from Ceylon, but in the ♂ the brand on the fore wing is broader and the dorsal margin of that wing distinctly more convex.

Exp. ♂ ♀ 88–100 mm. (3·5–3·95″).

Hab. Burma; Tenasserim; Siam.

The types of Moore's *Mahintha subdita* are in the British Museum, and after careful comparison I am unable to find any valid distinction between them and the types (also in the British Museum) of *E. layardi*. Dr. Frühstoffer has, I believe, suggested that *Mahintha subdita*, Moore, is a dimorph of *E. godarti*. Certainty on this point can only be obtained by experiments in breeding the insects.

35. **Euplœa camorta**, *Moore, P. Z. S.* 1877, p. 582, ♂; *M. & de N. Butt. Ind.* i, 1882, p. 86; *Moore* (Crastia), *Lep. Ind.* i, 1890–92, p. 90, pl. 28, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂ ♀. Shape of wings much as in *E. godarti*, Lucas, but tornus of fore wing still more rounded. *Upperside*: wings at base warm

dark sepia-brown, fading to bright burnt-umber-brown on the terminal third; uniform, entirely without spots or rarely with one or two small discal and a costal spot on the fore wing. *Underside* similar, somewhat paler. Fore wing: a spot in apex of cell, a large and a small discal and an outwardly conical costal spot white. Hind wing: a white spot in apex of cell and a discal series of five or six small spots beyond. These spots often tinged with blue. Antennæ, head, thorax and abdomen dark brown, and, the antennæ excepted, sparsely spotted with minute violaceous-white dots.

Exp. ♂ ♀ 90–100 mm. (3·55–3·95″).

Hab. The Nicobars.

36. **Euplœa andamanensis**, *Atkinson, P. Z. S.* 1873, p. 736, pl. 63, fig. 2 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 84; *Moore* (Karadira), *Lep. Ind.* i, 1890-92, p. 93, pl. 30, figs. 1, 1 *a*–1 *c*, ♂ ♀

♂. Fore wing as in fig. 9 B (p. 23), but the termen slightly concave in the middle. ♀. Fore wing as in fig. 9 C.— ♂ ♀ Hind wing broadly ovate. *Upperside* very pale vandyke-brown, darkening outwardly. Fore and hind wings with subterminal and terminal series of white spots. In the fore wing, in addition, a spot in apex of cell and two discal spots; in the subterminal series the lower three spots diamond-shaped, very much larger than the upper spots, which latter are curved inwards opposite apex of wing. On the hind wing the spots in both series are elongate, the spots in the subterminal longer than the spots in the terminal series. *Underside* very similar, the white spots larger, the discal series on the fore wing often complete. On the hind wing some additional spots near base, a spot at apex of cell and a discal series of five or six small spots. Antennæ dark brown; head, thorax and abdomen pale silky brown, spotted, chiefly beneath, with white.

Exp. ♂ ♀ 90–100 mm. (3·5–3·95″).

Hab. The Andamans.

A variety, larger, darker, and with proportionately narrower wings, but with the character of the markings identical, was sent to me by Mr. G. Rogers, Deputy Conservator of Forests, from the Little Andamans.

37. **Euplœa dione**, *Westwood, Cab. Or. Ent.* 1848, p. 76, pl. 37, fig. 3 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 88; *Moore* (Penoa), *Lep. Ind.* i, 1882, p. 98, pl. 34, figs. 1, 1 *a*–1 *c*, ♂.

Euplœa poeyi, *Felder, Novara Reise, Lep.* ii, 1867, p. 340, ♀.

Euplœa magnifica, *Butler, Trans. Ent. Soc.* 1874, p. 423, ♀.

Race limborgi.

Euplœa limborgi, *Moore, P. Z. S.* 1878, p. 823, pl. 51, fig 2 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 89; *Moore* (Penoa), *Lep. Ind.* i, 1890–92, p. 97, pl. 33, figs. 1, 1 *a*–1 *c*, ♂ ♀

Race menetriesi.

Euplœa menetriesi, *Felder*, *Wien. ent. Monatsch.* iv, 1860, p. 398; *M. & de N. Butt. Ind.* i, 1882, p. 87; *Moore* (Penoa), *Lep. Ind.* i, 1890–92, p. 95, pl. 32, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ Wings as in *E. godarti* but more elongate, and the tornus of ore wing in the ♂ more rounded; hind wing somewhat pear-shaped in both sexes. *Upperside* very dark brown. Fore wing, except a narrow apical margin, entirely suffused with a brilliant iridescent blue; a spot at apex of cell, a discal and a costal spot white. These spots rarely absent. Hind wing uniform brown, without or with only a faint blue iridescence in the middle, and subobsolete, somewhat incomplete subterminal and terminal series of dusky white spots. *Underside* chocolate-brown, the spots as on the upperside, but more distinct; in the fore wing an additional comparatively large spot in interspace 2; in the hind wing a small white spot in apex of cell and five or six discal spots beyond; the subterminal series of spots sometimes wanting.

Exp. ♂ ♀ 94–110 mm. (3·7–4·35″).

Hab. Northern India; Sikhim; Sylhet; Assam; Upper Burma, on Western frontier.

Race **limborgi**, Moore, differs from typical *dione* as follows:—Hind wing somewhat paler, subterminal and terminal series of spots more complete, pure white not dusky, the former elongate, the latter more or less truncate exteriorly and rounded interiorly. Fore wing on the upperside generally but not invariably unspotted, on the underside in addition to the cellular, discal and costal spots there are often a few terminal white dots at apex and tornus.

Exp. ♂ ♀ 92–106 mm. (3·6–4·2″).

Hab. Burma; Tenasserim; Siam. In Upper Burma the range of this race overlaps that of the typical form and in Southern Tenasserim that of the race *menetriesi*.

Race **menetriesi**, Felder.—Differs from *dione* in the ground-colour of the wings, which are of a dark Prussian-blue only iridescent in certain lights. As in *dione*, the subterminal and terminal series of spots on the upperside of the hind wing are dusky white and incomplete.

Exp. ♂ ♀ 85–90 mm. (3·4–3·6″).

Hab. The extreme south of Tenasserim, extending far into the Malayan Subregion.

38. **Euplœa alcathoe**, *Godart* (Danais), *Encycl. Méth.* ix, 1819, p. 178; *M. & de N. Butt. Ind.* i, 1882, p. 86, pl. 9, fig. 17, ♂ ♀; *Moore* (Penoa), *Lep. Ind.* i, 1890–92, p. 94, pl. 31, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀. Shape of wings as in *E. dione*. ♂. *Upperside* very dark velvety brown without any blue gloss. Fore wing unspotted or with only two or three white dots near the tornus. Hind wing: a dull opaque fuscous patch from base nearly to termen through

the cell; a subterminal series of very elongate white spots or streaks in the interspaces, decreasing in length towards apex, often in the posterior interspaces produced on to the conspicuous terminal row of elongate spots. *Underside* similar, but in both fore and hind wing an additional white spot in apex of cell and a few discal spots beyond.—♀ *Upperside* similar to the ♂, but of a lighter brown. Fore wing with a cellular, two or three discal, a costal and subterminal and terminal series of white spots, the former series often, the latter always incomplete. Hind wing as in the ♂, but no dark fuscous patch and the subterminal streaks and terminal spots fuller and broader. *Underside* similar, the white spots very large. Antennæ black; head, thorax and abdomen dark velvety brown, thickly spotted with white beneath.

Exp. ♂ ♀ 94–100 mm. (3·5–4″).

Hab. Manipur; Assam; Cachar; Arrakan; Burma and Tenasserim.

Key to the forms of Salpinx.

A. Brand on fore wing in ♂ short, not longer than 6 mm.
  a. Fore wing entirely suffused with brilliant iridescent blue.
    a'. Three white elongate costal spots above apex of cell on fore wing.
      a^2. Hind wing without or with only a very small spot in interspace 4. — *E. diocletiana*, p. 38.
      b^2. Hind wing with a comparatively large triangular spot always present in interspace 4. — Race *ramsayi*, p. 39.
    b'. One white costal spot, occasionally absent, in fore wing.
      a^2. Wings comparatively elongate. Fore wing with one or more discal spots always present. — *E. klugii*, typical, p. 39.
      b^2. Wings generally broader in proportion to length; discal spots sometimes present, often absent — *E. klugii*, varieties, p. 41.
  b. Fore wing: base only suffused with blue, sometimes very faint or wanting.
    a'. Fore wing: spots in subterminal series decreasing in size towards apex.
      a^2. These spots distinct. — *E. kollari*, p. 41.
      b^2. These spots more or less obsolescent. — Race *sinhala*, p. 42.
    b'. Fore wing: spots in subterminal series increasing in size towards apex.
      a^2. Fore wing: subterminal series of white spots complete, distinct, well-defined.
        a^3. Subterminal series of white spots on hind wing complete. — *E. crassa*, p. 42.
        b^3. Subterminal series of white spots on hind wing very incomplete. — Var. *macclellandi*, p. 43.
      b^2. Fore wing: subterminal series of white spots very incomplete, often blurred, very large near apex — Other varieties, p. 43

B. Brand on fore wing in ♂ long and narrow, over 9 mm. in length.
  a. Fore wing suffused with brilliant iridescent blue from base to termen .. .. — *E. splendens*, p. 43.
  b. Fore wing suffused with blue only on basal portion . ... .. — *E. margarita*, p. 44.
  c. Fore wing bronze-brown without any blue gloss — *E. roepstorfi*, p. 44.

39. **Euplœa diocletiana** (Pl. I, fig. 5), *Fabr.* (Papilio) *Ent. Syst.* iii, 1793, p. 40; *M. & de N. Butt. Ind.* i, 1882, p. 71.
Papilio rhadamanthus, *Fabr. Ent. Syst.* iii, 1793, p. 42; *M. & de N.* pt. (Euplœa), *Butt. Ind.* i, 1882, p. 69; *Moore* (Danisepa), *Lep. Ind.* i, 1890–91, p. 112, pl. 39, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Race ramsayi.

Euplœa rhadamanthus, pt., *M. & de N. Butt. Ind.* i, 1882, p. 69, pl. 7, fig. 11, ♂ ♀.
Danisepa ramsayi, *Moore, Lep. Ind.* i, 1890-91, p. 111, pl. 39, figs. 1, 1 *a*, ♂ ♀

♂ Fore wing: dorsum and termen very convex; costa arched. ♀ Fore wing: differs only in being narrower and the dorsum sinuous. Hind wing in both sexes: costa and termen strongly curved, forming together half of an ellipse of which the straight dorsal margin is the chord.— ♂ *Upperside* black, the fore wing with a brilliant blue gloss throughout, the base brown; hind wing: the upper portion silky hair-brown, the disc and terminal margin shot with blue. Fore wing: a very large, irregular, white spot filling the apex of the discoidal cell, three elongate spots divided by the nervures above and one or two small white spots below, the whole forming an irregular oblique bar; a large subterminal blue spot in interspace 2 and smaller similar spots in interspaces 4–7; finally a line of 3 or 4 small terminal blue spots near the tornus: all these blue spots occasionally white-centred. Hind wing: broad white streaks in interspaces 1 *a*, 1 *b*, 1 and 2, a spot (sometimes absent) at base of interspace 3, another (but rarely) at base of interspace 4, one or two discal blue spots and very incomplete subterminal and terminal series of similar spots. *Underside* hair-brown, the markings as above but more complete and larger; on the hind wing there are in addition one or two spots or streaks in the cell and on the disc beyond it.— ♀. *Upperside* pale umber-brown, the apical half of the fore wing with or without blue gloss; markings similar to those of the ♂, but all of them white and somewhat larger, especially the two spots at the lower end of the oblique bar on fore wing; on the hind wing there are in addition three white streaks in the cell with two or three spots beyond, the subterminal and terminal series of spots white and generally complete. *Underside* similar, the markings broader. Antennæ black; head, thorax and abdomen in ♂ bluish black, in ♀ cinereous; in both sexes the palpi and thorax beneath spotted

with white, the abdomen transversely barred with the same colour.

Exp. ♂ ♀ 73–86 mm. (2·9–3·4″).

Hab. N. India? (*Lt. James*), Sylhet; Khási Hills; Assam; Cachar; throughout Burma; Tenasserim and the Malay Peninsula; Sumatra.

Race **ramsayi**, Moore.—Differs in being on the whole larger, with the white markings of great width, in the ♀ almost entirely filling the cell in the hind wing. In both sexes streaks are always present in interspaces 3 and 4 of the hind wing, while the subterminal and terminal series of spots on that wing are generally complete. The ♀ in all the specimens I have examined has a decided blue gloss on the apical half of the fore wing.

Exp. ♂ ♀ 96–102 mm. (3·8–4″).

Hab. Eastern Himalayas, Nepal, Sikhim.

Other allied races are *E. lowii* from Borneo, and *E. alcidice*, Godt., from Java.

40. **Euplœa klugii**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 130; *M. & de N. Butt. Ind.* i, 1882, p. 64; *Moore* (Pademma), *Lep. Ind.* i, 1890–92, p. 117, pl. 42, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Euplœa novaræ, *Felder, Verh. zool.-bot. Ges. Wien*, xii, 1862, p. 482; *id. Novara Reise, Lep. Rhop.* 1867, p. 317, pl. 39, fig. 7 ♂; *M. & de N. Butt. Ind.* i, 1882, p. 68; *Moore* (Salpinx), *Lep. Ind.* i, 1890-92, p. 114, pl. 40, figs. 1, 1 *a*, 1 *b*, ♂.

Euplœa vestigiata, *Butler, P. Z. S.* 1866, p. 288, fig. 1 ♀; *M. & de N. Butt. Ind.* i, 1882, p. 67.

Salpinx leucogonis, *Butler, Trans. Linn. Soc.* (2) i, 1878, p. 536, pl. 68, fig. 5 ♀; *M. & de N.* (Euplœa), *Butt. Ind.* i, 1882, p. 69; *Moore, Lep. Ind.* i, 1890-92, p. 115, pl. 41, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Salpinx illustris, *Butler, Jour. Linn. Soc.* xiv, 1879, p. 294; *M. & de N.* (Euplœa), *Butt. Ind.* i, 1882, p. 66; *Moore* (Pademma), *Lep. Ind.* i, 1890–92, p. 119, pl. 43, figs. 1, 1 *a*, ♂ ♀.

Salpinx grantii, *Butler, Trans. Ent. Soc.* 1879, p. 2; *M. & de N.* (Euplœa) *Butt. Ind.* i, 1882, p. 65.

Pademma dharma, augusta, indigofera, imperialis, & regalis, *Moore, P. Z. S.* 1883, pp. 306, 307, pl. 32, fig. 2 (dharma ♀), fig. 3 (indigofera ♂); *id. Lep. Ind.* i, 1890–92, pp. 118–120, pl. 42, figs. 2, 2 *a* (augusta ♂ ♀), pl. 43, figs. 2, 2 *a* (imperialis ♂ ♀), pl. 43, figs. 1, 1 *a*, & 3 (regalis ♂ ♀ & indigofera ♂).

Pademma hamiltoni, var. nov., *Swinh. Trans. Ent. Soc.* 1893, p. 269.

♂. Fore wing very variable in shape, especially in the outline of the termen and dorsum. In the type it is comparatively long in proportion to width owing to the less convexity of the dorsal margin, and has the termen oblique, slightly convex; in var. *novaræ* it is remarkably broad, the great convexity of the dorsal margin making it almost subquadrate, while the termen is more convex than in the typical form. In the ♀ the difference is less marked.

♂ ♀. Typical form. *Upperside*: fore wing dark brown suffused

up to the termen with a brilliant blue gloss; a spot in apex of cell, a small costal spot, two short streaks beyond apex of

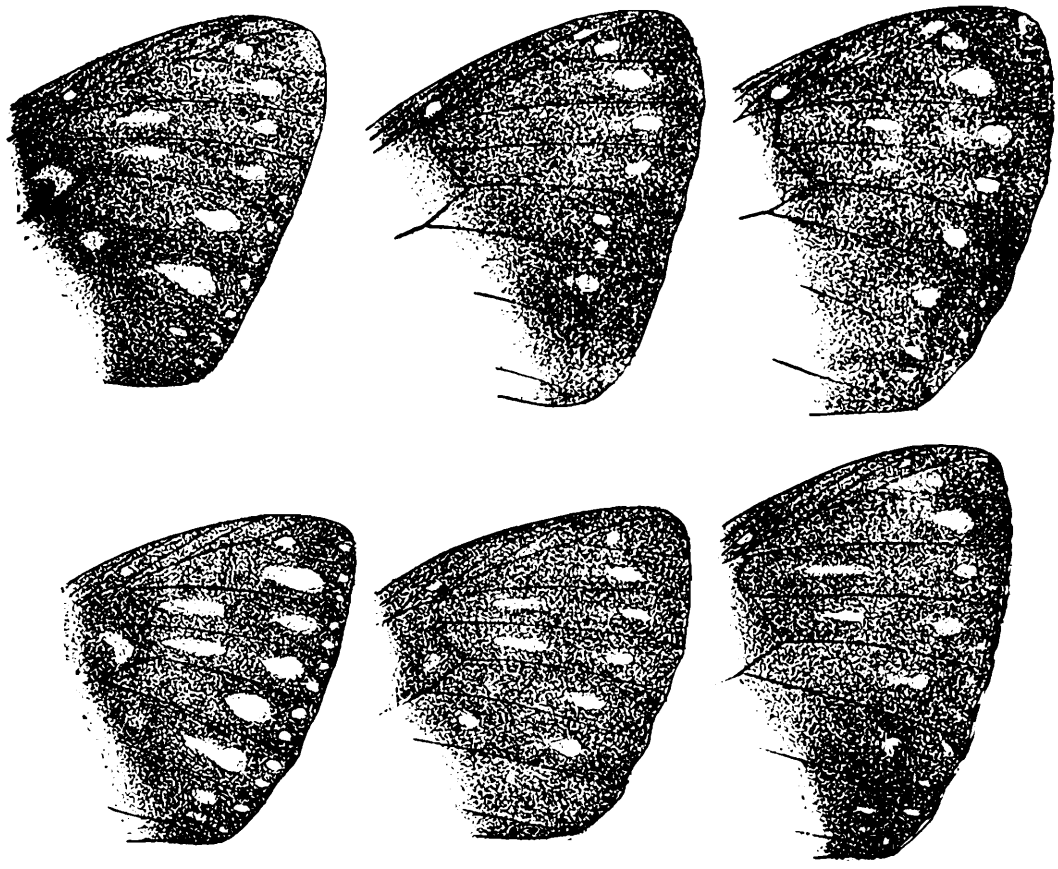

Fig. 13.—*Euplœa klugii.* Variations in shape and markings of fore wing.

cell, and in the ♀ two discal spots: in the ♂ subterminal and terminal series of spots; in the ♀ the latter series wanting: in both sexes the subterminal spots produced inwards. All the spots bluish white in colour. Hind wing umber-brown, the centre glossed with blue; subterminal rows of spots incomplete or obsolescent, the former reduced to two or three spots below the apex, the latter in the ♂ mere dots; in the ♀ absent, only seen by transparency from the underside. *Underside* similar, paler brown, not glossed with blue; centre of fore wing dark, spots more clearly defined, subterminal and terminal series more or less complete. Antennæ black; head, thorax and abdomen velvety brown, head and thorax speckled with bluish white.

Fig. 14.—*Euplœa klugii.* Variation in shape and marking of fore wing.

Exp. ♂ ♀ 78–110 mm. (3·1–4·35″).

Hab. Bengal, Maldah; Sikhim; Bhutan; Assam; Cachar; Arrakan; Burma; Tenasserim; the Nicobars, to the Malay Peninsula.

There can be no doubt as to the extreme variability of this form,

and I would draw attention to a paper on the subject by the late Mr. de Nicéville in the 'Journal of the Asiatic Society of Bengal,' 1892, pt. ii, p. 243. He shows at great length that many forms have been named and received specific rank which are not even geographical races or subspecies.

The following, however, are short summaries of the points of difference in the most striking varieties, which have all, at one time or another, been considered distinct forms:—

Var. *novaræ*, Felder.—Besides the difference in the shape of the fore wing in the ♂, typically this form is much darker, the gloss on the fore wing is of a deeper blue, and the spots are reduced to a small costal and a subterminal series of spots on the fore wing, and to two or three small spots below the apex on the hind wing.

Vars. *leucogonys* and *vestigiata*, Butler, resemble *novaræ*, but have on the fore wing two or three discal spots and sometimes an incomplete terminal series of dots.

Var. *augusta* ♂, *dharma* ♀, Moore.—"Upperside darker blackish brown than in typical *P. klugii* and of a more brilliant glossy blue, with a bluish-white spot above end of the cell, a similar mark at lower end of the cell, two very slender streaks beyond, a spot between the middle and lower median veinlet (veins 2 and 3)."

Var. *illustris*, Butler, is less glossed with blue on the terminal margin of the fore wing and has no discal or subterminal spots on that wing below vein 4.

Var. *imperialis*, Moore.—Subterminal and terminal spots on fore wing larger than in typical *E. klugii*, with a tendency in the ♂ for the spots to become confluent.

Var. *regalis*, Moore.—Both series of terminal spots complete on fore wing to tornus.

Var. *indigofera*, Moore.—A costal spot, two slender discal streaks and complete subterminal and terminal series of spots on fore wing. On hind wing subterminal series incomplete, terminal complete.

Var. *hamiltoni*, Swinhoe.—Fore wing: subterminal series of spots incomplete, terminal complete. On hind wing both series complete.

The two forms next described were considered by Mr. de Nicéville mere geographical races of *E. klugii*. I have kept them separate purely as a matter of convenience.

41. **Euplœa kollari**, *Felder, Novara Reise, Lep.* ii, 1867, p. 325, ♂; *Moore* (Pademma), *Lep. Ind.* i, 1890–92, p. 124, pl. 47, figs. 2, 2*a*, ♂ ♀.

Isamia rothneyi, *Moore, Ent. Month. Mag.* 1882, xix, p. 34.

Euplœa sinhala, pt., *M. & de N. Butt. Ind.* i, 1882, p. 66, pl. 7, fig. 12, ♂ ♀.

Race sinhala.

Euplœa sinhala, *Moore, A. M. N. H.* (4) xx, 1877, p. 45; *id.* (Isamia), *Lep. Ceyl.* i, 1880, p. 10, pl. 5, fig. 1 ♂; pt., *M. & de N. Butt. Ind.* i, 1882, p. 66, pl. 7, fig. 12, ♂ ♀; *Moore* (Pademma), *Lep. Ind.* i, 1890–92, p. 126, pl. 47, figs. 3, 3*a*, ♂ ♀.

♂ ♀ Shape of wings as in *E. klugii*, but not so variable.

Upperside, ♂ ♀, very dark olive-brown, paling to lighter brown towards the termen; both wings with complete or nearly complete series of subterminal and terminal white spots, the former larger than the latter, in the fore wing decreasing in size towards, and curving inwards opposite, the apex; in the hind wing elongate-oval, much larger than the terminal spots, these latter very regular, two in each interspace in the fore wing, obsolete towards the apex. *Underside* of a paler olive-brown, the spots as on upperside, with the addition in the fore wing of two to four discal spots, that in interspace 2 the largest, and a small costal spot; in the hind wing of one or two discal specks. Antennæ very dark brown; head, thorax and abdomen dark brown, the former two speckled sparsely with white.

Exp. ♂ ♀ 100–104 mm. (3·9–4·1″).

Hab. Peninsular India in a line south of Bombay, but confined to the littoral. Further east it is recorded from Orissa and Bengal.

Race **sinhala**, Moore.—♂ ♀ Differs from the form *kollari* solely in the subterminal and terminal spots on the wings being very much smaller; on the fore wing often obsolescent towards the apex.

Exp. ♂ ♀ 90–100 mm. (3·53–3·95″).

Hab. Confined to Ceylon.

The race seems constant.

42. **Euplœa crassa**, *Butler, P. Z. S.* 1866, p. 278: *M. & de N. Butt. Ind.* i, 1882, p. 63; *Moore* (Pademma), *Lep. Ind.* i, 1890–92, p. 121, pl. 45, figs. 2, 2 *a*, ♂ ♀.

Euplœa erichsoni, *Felder, Novara Reise, Lep.* ii, 1867, p. 324; *M. & de N. Butt. Ind.* i, 1882, p. 63.

Salpinx masoni, *Moore, P. Z. S.* 1878, p. 823, ♂; *M. & de N.* (Euplœa), *Butt. Ind.* i, 1882, p. 64; *Moore* (Pademma), *Lep. Ind.* i, 1890–92, p. 123, pl. 46, fig. 1 ♂.

Pademma macclellandi, pembertoni, uniformis, burmeisteri, & apicalis, *Moore, P. Z. S.* 1883, pp. 308, 309; *id. Lep. Ind.* i, 1890–92, p. 120, pl. 44, figs. 2, 2 *a*, ♂ ♀ (macclellandi), p. 124, pl. 46, figs. 3, 3 *a*, ♂ ♀ (pembertoni), p. 124, pl. 47, fig. 1 ♂ (uniformis), p. 123, pl. 45, figs. 3, 3 *a*, ♂ ♀ (burmeisteri), & p. 123, pl. 46, figs. 2, 2 *a*, ♂ ♀ (apicalis).

♂ ♀. Typically resembles *E. kollari*, Felder, in shape of wings and in having on the upperside only a subterminal and terminal series of white spots on both wings, but the basal portion of the fore wing only, in it and in all its varieties, is glossed with blue, which colour never extends to the termen. The centre of the hind wing also in some specimens bears a faint violescent or blue gloss, while the subterminal spots on the fore wing *increase, not decrease*, in size towards the apex, the spot in interspace 6 being the largest; the spots above it again decrease in size to the costa. The terminal spots on the hind wing are always smaller than in *E. kollari*, and in the type (♀) there are two or three obsolescent elongate discal

spots on the fore wing. Antennæ, head, thorax and abdomen very dark brown, the head and thorax above and below very sparsely speckled with white.

Exp. ♂ ♀ 81–110 mm. (3·2–4·35″).

Hab. Maldah (*de Nicéville*); Cachar; Arrakan; Lower Burma; Tenasserim, extending into Siam, the Malay Peninsula, and Cochin China.

E. crassa is almost as variable as *E. klugii*.

Var. *masoni*, Moore, is slightly darker in colour than typical *crassa*; subterminal series of spots in fore wing very incomplete, commencing in interspace 4.

Exp. ♂ ♀ 92–102 mm. (3·6–4″).

Hab. Recorded from Tenasserim.

Var. *macclellandi*, Moore.—If, as Mr. de Nicéville stated (*t. c.*), *E. crassa* is a mere race of *E. klugii*, then var. *macclellandi* forms the link between the two. I have, however, only seen one specimen, the type, which is now in the collection of the British Museum; the markings on this specimen resemble those on *E. klugii*, but as the blue gloss is confined to the basal portions of the fore wing, I prefer to place *E. macclellandi* as a variety of *E. crassa*.

Exp. ♀ 100 mm. (3·95″).

Hab. Recorded from Nowgong, Assam.

Var. *pembertoni*, Moore.—The subterminal spots near apex of fore wing very large, tinged with purple. Often some discal streaks and spots. Recorded from Lower Burma.

Var. *uniformis*, Moore.—Darker and of a more uniform brown than the typical form, the subterminal and terminal spots very small, often mere dots. Recorded from E. Bengal, Shillong (*Moore*).

Var. *burmeisteri*, Moore.—The subterminal row of spots in the fore wing large, often coalescing with the terminal spots. Recorded from Tenasserim and Cochin China.

Var. *apicalis*, Moore.—"Near to typical *P. crassa*, but of a more greenish-olivaceous colour, contrasting distinctly thereby with the brownish olivaceous of the typical form. Fore wing with a complete row of marginal spots, the submarginal row composed of five apical spots only." (*Moore.*) Recorded from Burma.

43. **Euplœa splendens**, *Butler, P. Z. S.* 1866, p. 272, ♂; *Moore* (Isamia), *Lep. Ind.* i, 1890–92, p. 128, pl. 48, figs. 1, 1 *a*, ♂, 1 *b* ♀, 1 *c* var. ♂.

Euplœa rogenhoferi, *Felder, Novara Reise, Lep.* ii, 1867, p. 325; *M. & de N. Butt. Ind.* i, 1882, p. 60.

Euplœa irawada, *Moore, A. M. N. H.* (4) xx, 1877, p. 45, ♂.

♂. Fore wing as in *E. klugii*, but more elongate, apex more produced, termen distinctly more oblique, almost straight. ♀ Fore wing differs only in the dorsum being straight. ♂ ♀ Hind wing:

dorsal margin straight, terminal and costal margins together very strongly arched. *Upperside*, ♂ ♀, dark velvety brown, the hind wing somewhat paler than the fore wing, the latter entirely, the former in the middle only, glossed with brilliant blue. Fore wing: a spot in cell, a discal series of violaceous spots in interspaces 2–6, 9 and 10, the latter sometimes centred with white, a curved subterminal row of six white spots and a terminal series, sometimes obsolescent, of six or seven white dots. Hind wing with a subterminal and terminal series of white spots, nearly complete but often faint and obsolescent, not reaching the tornus. *Underside* rich umber-brown, darker on the disc in the fore and on the basal portions of the hind wing; the spots as on upperside, but the discal series in fore wing reduced to a violaceous spot in interspace 2 and a small costal spot, the terminal dots more numerous; in the hind wing there are in addition five discal spots beyond the cell. Antennæ, head, thorax and abdomen dark velvety brown, a few white spots on the head and thorax.

Exp. ♂ ♀ 96–112 mm. (3·8–4·4″).

Hab. Eastern borders of Kumaun; Nepal; Sikhim; through Assam, Cachar, and Burma to North Tenasserim.

44. **Euplœa margarita,** *Butler*, *P. Z. S.* 1866, p. 279; *M. & de N. Butt. Ind.* i, 1882, p. 62; *Moore* (Isamia), *Lep. Ind.* i, 1890–92, p. 129, pl. 45, figs. 1, 1 *a*–1 *d*, ♂ ♀

♂ ♀ Closely resembles *E. splendens*, Butler, but on the upperside the brilliant blue gloss never occupies more than the basal two-thirds of the fore wing. On the hind wing it is as in *E. splendens*; the spots are much reduced in number on the fore wing, sometimes entirely absent or obsolescent, when present there is generally a spot at apex of cell and one in interspaces 2, 3 and 10 respectively, with a white dot or so about the tornus. On the hind wing there is a complete subterminal and terminal series of white spots. *Underside* similar to the upperside, but the spots more numerous. Male sex-marks as in *E. splendens*.

Exp. ♂ ♀ 86–104 mm. (3·38–4·1″).

Hab. North Tenasserim southwards to the Malay Peninsula.

45. **Euplœa roepstorfi,** *Moore* (Tiruna), *P. Z. S.* 1883, p. 316, pl. 32, fig. 8 ♂; *id.* (Tiruna) *Lep. Ind.* i, 1890–92, p. 133, pl. 50, fig. 3 ♂

♂. Fore wing as in fig. 9 A (p. 23), but the apex somewhat more produced. Hind wing broadly ovate. Closely resembles *E. andamanensis* in ground-colour and pattern of markings on the wings, but the former is of a more bronze-brown and slightly darker. *Upperside*: fore wing with the following white spots—a minute costal spot, a subterminal sinuous row of 6 large and a terminal row of 8 much smaller spots. Hind wing: a subterminal and a terminal row of spots, the former elongate, the latter smaller and somewhat quadrate. *Underside*: ground-colour and

spots as on the upperside, with the addition in the fore wing of a lunate spot in the apex of the cell and 5 discal spots beyond, the lowest elongate rectangular, the next quadrate, the others minute, the terminal row complete up to the apex of wing. The hind wing has, in addition, a spot in apex of cell and 6 discal minute spots. Antennæ, head, thorax and abdomen darker brown, the head, thorax and abdomen spotted and marked with white.

Exp. ♂ 98 mm. (3·9″).

Hab. Andamans.

The ♀ is unknown. The above description is taken from a solitary specimen of a ♂ in the collection of Mr. H. Druce. I am indebted to Mr. Hamilton Druce for kindly lending me the specimen. The insect seems to be very rare.

Key to the forms of Trepsichrois.

a. Hind wing immaculate.	
a'. Fore wing shot with brilliant blue, discal, subterminal and terminal spots bluish white	*E. mulciber* ♂, p. 45.
b'. Fore wing with less brilliant blue, discal, subterminal and terminal spots pure white	Var. *kalinga* ♂, p. 46.
b. Hind wing streaked with white	*E. mulciber* ♀, p. 45.
c. Hind wing not streaked with white, a line of obscure subterminal dots	Var. *kalinga* ♀, p. 46.

46. **Euplœa mulciber** (Pl. I, fig. 6).

Papilio midamus, pt., *Linn. Mus. Ulr.* 1764, p. 251.

Euplœa et Trepsichrois midamus, *Linn. apud auct.*

Papilio mulciber, *Cramer, Pap. Exot.* ii, 1799, pl. 127, figs. C, D.

Trepsichrois linnæi, *Moore, P. Z. S.* 1883, p. 286, pl. 29, fig. 4; *id. Lep. Ind.* i, 1890–92, p. 100, pl. 35, figs. 1, larva & pupa, 1 *a*, 1 *b*, ♂ ♀.

Euplœa (Trepsichrois) kalinga, *Doherty, J. A. S. B.* 1886, pt. 2, p. 256; *Moore* (Trepsichrois), *Lep. Ind.* i, 1890–92, p. 104.

♂ Fore wing as in fig. 9 B (p. 23), but apex and tornus more broadly rounded, the termen straighter. ♀ Fore wing as in fig. 9 C.—♂ ♀ Hind wing ovate. *Upperside*: in the ♂ dark brown entirely glossed with brilliant blue; the following violescent white spots—a spot in apex of cell, a much curved series of five or six discal spots, a subterminal sinuous row of larger spots and an incomplete terminal series of dots. Hind wing uniform, unmarked except for a large patch of light-brown, densely-set hair-like scales on the outer upper third of the wing. The ♀ is a lighter brown, the fore wing only glossed with blue on the disc; spots white, and more or less similar to those on the fore wing of the ♂, but larger and pure white; in addition a streak in cell and another curved streak in interspace 1 showing through faintly from the underside. Hind wing: narrow white streaks in cell and in the interspaces beyond and a terminal row of

slightly elongate white spots. *Underside*, ♂ ♀, similar to the upperside in each, but the markings broader, larger and more distinct; in the ♂ there are besides a small white spot in apex of cell, two or three discal and incomplete subterminal and terminal series of white dots. Antennæ, head, thorax, and abdomen dark velvety brown, the abdomen glossed with greenish blue above; beneath, the head and thorax spotted, the abdomen transversely banded with white.

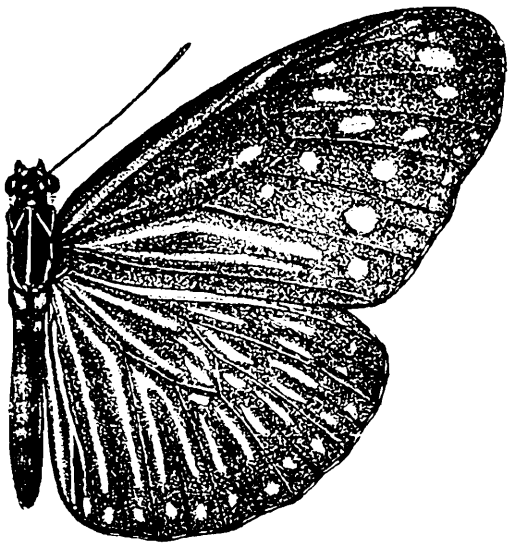

Fig. 15.—*Euplœa mulciber*, ♀. ½.

Exp. ♂ ♀ 88–104 mm. (3·45–4·1″).

Hab. The Himalayas from Simla to Sikhim; Nepal; Assam; Cachar; Upper and Lower Burma; Tenasserim; the Nicobars; extending to Siam, the Malay Peninsula and Borneo.

Larva. "Cylindrical, with four pairs of long fleshy subdorsal filaments which have pink bases and black tips, three pairs being on the anterior segments and the fourth pair on the 12th segment. Body pinkish white with lateral yellowish blotches, the segments each divided by a black line and anteriorly bordered by a narrow transverse pink band and purple-brown stripes; spiracles black; head with a dark red stripe in front and one on each side; fore legs black, middle and hind legs black ringed with pink." (*Moore*, Larva of the Javan form, *E. claudia*.)

Pupa. "Short, thick across the middle; thorax concave behind; abdominal segments dorsally convex, metallic golden-brown with darker brown anterior stripe." (*Moore*.)

Var. *kalinga*, Doherty, found in the hills of Ganjam, Vizagapatam and Jaipur, may be a local race of *E. mulciber*, Cramer, but I have only been able to examine a single ♀ in Mr. Elwes's collection, now in the British Museum. The points of difference are more evident in the ♀, which on the hind wing has only "a line of obscure whitish submarginal dots." The cellular and discal white streaks so prominent in the ♀ of *E. mulciber* are almost entirely lacking, though faint traces of these are visible on the disc but not in the cell of the hind wing, the latter being immaculate.

Subfamily SATYRINÆ.

Egg. "About as high as wide, a little more or a little less, rather small, hard, typically translucent and smooth or with obscure polygonal facets, sometimes subradiate, or even (*Aulocera*) with distinct broadly scalloped anastomosing ribs somewhat as in *Hesperia*. In some species it is covered with calcareous (?) accretions, which do not appear till after some days' exposure to the atmosphere." (*Doherty.*)

Larva. Fusiform or subfusiform, head bifid, often with a pair of long straight processes or horns, anal segment also with a pair of long posteriorly-directed processes; colour generally green, pink, or yellow; body pubescent, the hairs springing from numerous small papillæ.

Pupa. Elongate and somewhat fusiform or short and thick, with the abdomen broadly rounded; very few or generally no tubercles or angles; attached by the tail.

Imago. Wings short and broad, rarely elongate, never narrow, often with the terminal margins scalloped, sinuous, dentate or, in the hind wing, caudate; cells of both wings closed; one or more of the veins of the fore wing, in the majority of the forms, swollen or inflated at base; eyes very often hairy; palpi as a rule compressed, in some strongly compressed, generally with a fringe of stiff porrect or subporrect hairs; body slender.

The *Satyrinæ* are shade-loving insects; most of the forms have comparatively a weak flight, and frequent the undergrowth, long grass, or dense evergreen forests. Many are cryptically coloured on the underside, and their method of suddenly dropping after a short flight, and resting all askew, heightens their likeness to dead or decaying leaves casually blown down. Secondary sex characters and marks are very general throughout the subfamily.

Key to the Genera of the Satyrinæ.

A. Eyes hairy.
  a. Veins 10 and 11 of fore wing free.
    a'. Vein 12 and median vein swollen at base.
      a^2. Club of antennæ gradual.
        a^3. Lower discocellular of fore wing strongly concave ... .. MYCALESIS, p. 49.
        b^3. Lower discocellular of fore wing oblique .. .. PARARGE, p. 112.
      b^2. Club of antennæ spatulate.... SATYRUS, p. 109.
    b' Vein 12 only of fore wing swollen at base.
      a^2 Hind wing generally angulate, very often caudate; upper- and under-sides not similar. LETHE, p. 72.

b^2. Hind wing rounded, never angulate or caudate; upper- and under-sides practically similar.
a^3. Upper apex of cell of fore wing angulate; discocellulars concave. ORINOMA, p. 106.
b^3. Upper apex of cell of fore wing rounded; discocellulars oblique RHAPHICERA, p. 107.
b. Veins 10 and 11 of fore wing not free; veins 8 to 11 branching from 7 RAGADIA, p. 155.

B. Eyes not hairy.
a. Vein 12 of fore wing swollen at base.
a'. Hind wing without a prediscoidal cell.
a^2. Veins 10 and 11 of fore wing free.
a^3. Median vein of fore wing not perceptibly swollen at base.
a^4. Vein 3 of hind wing emitted before apex of cell, 4 at apex.
a^5. Cell of fore wing long, nearly two-thirds length of wing .. .. ERITES, p. 152.
b^5. Cell of fore wing about half or not half length of wing.
a^6. Veins 3 and 4 of hind wing closely approximate at base .. . . ORSOTRICENA, p. 69.
b^6. Veins 3 and 4 of hind wing well separated at base.
a^7. Vein 6 of hind wing much closer to vein 7 than to 5 ... . AGAPETES, p. 108.
b^7. Vein 6 of hind wing equidistant from veins 5 and 7.
a^8. Vein 10 of fore wing from apex of cell .. EREBIA, p. 146.
b^8. Vein 10 of fore wing from well before apex of cell. .... . . ZIPŒTIS, p. 104.
b^4. Veins 3 and 4 of hind wing stalked ... .. CŒLITES, p. 70.
b^3. Median vein of fore wing perceptibly swollen at base.
a^4. Club of antennæ broad spatulate* . . .. NYTHA, p. 113.
b^4. Club of antennæ gradual.
a^5. Veins 6 and 7 of hind wing separate.
a^6. Dorsal margin of hind wing emarginate just above tornus .. .. MANIOLA, p. 118.
b^6. Dorsal margin of hind wing rounded.
a^7. Posterior femora without a fringe of long hair posteriorly .. KARANASA, p. 123.

* Except in a single aberrant form, *N. parisatis*, Kollar, which has the club of the antennæ elongate, crescentic, concave beneath.

b^7. Posterior femora with a fringe of long hair posteriorly	ŒNEIS, p. 128.
b^5. Veins 6 and 7 of hind wing from a point	AULOCERA, p. 125.
b^2. Veins 10 and 11 of fore wing not free; veins 8 to 11 branching from 7	YPTHIMA, p. 130.
b'. Hind wing with a prediscoidal cell	ELYMNIAS, p. 169.
b. Vein 12 of fore wing not swollen at base.	
a' No anastomosis of veins along the costal margin of fore wing.	
a^2. Hind wing rounded	ANADEBIS, p. 165.
b^2. Hind wing not rounded; dentate or caudate at apex of vein 4.	
a^3. Veins 3 and 4 of hind wing from apex of cell	NEORINA, p. 167.
b^3. Vein 3 emitted well before, 4 from apex of cell of hind wing.	
a^4. Vein 1 on fore wing ending on terminal margin ...	MELANITIS, p. 157.
b^4. Vein 1 on fore wing ending on dorsal margin. .. .	CYLLOGENES, p. 162.
b'. Vein 11 of fore wing anastomosing with 12, 10 with 11, 9 with 10	PARANTIRRHŒA, p. 164.

Genus **MYCALESIS***.

Mycalesis, *Hübner, Verz. bek. Schmett.* 1816, p. 55; *M. & de N. Butt. Ind.* i, 1883, p. 102.
Culapa, *Moore, P. Z. S.* 1878, p. 825.
Calysisme & Nisanga, *Moore, Lep. Ceyl.* i, 1880, pp. 20 & 23.
Virapa, Gareris, Sadarga, Suralaya, Pachama, Samanta, Telinga, Kabauda, & Loesa, *Moore, Trans. Ent. Soc.* 1880, pp. 155, 156, 157, 159, 165, 166, 167, 168, 177.
Samundra, *Moore, Lep. Ind.* i, 1892, p. 162.
Myrtilus, *de N. Jour. Bomb. N. H. Soc.* vi, 1891, p. 341.

Type, *M. evadne*, Cramer, from Africa.

Range. Africa; the whole of the Indo-Malayan Region to Australia. Found also in China and Japan.

♂ ♀. Fore wing: costa more or less arched, apex generally rounded, somewhat acute or subacute, rarely slightly produced; termen convex, straight or even slightly concave; tornus generally well marked; dorsum straight in males, sometimes slightly convex towards base; cell short, about half length of wing; discocellulars somewhat variable, upper short, lower in all the Indian forms strongly concave; veins 10 and 11 from before apex of cell, vein 1, median vein, and vein 12 greatly dilated at base. Hind

* I have retained the generic name *Mycalesis* for the Indian forms partly because it is well known and its use for these forms has the sanction of long-established custom, but chiefly because the differences between the typical African and the Indian forms have after all only subgeneric value. In fact, for the purely Indian forms, *M. mineus*, Linn., might very well be regarded as the type.

wing ovate, varying in the length of the dorsum and the less or greater prominence of the tornus; costa and termen more or less arched, the latter generally slightly scalloped; cell short, under half length of wing; vein 3 variable, sometimes emitted from a little before or from apex of cell, sometimes 3 and 4 stalked; origin of vein 7, and consequently length of upper discocellular, variable. Antennæ short, slender, not half length of fore wing; club slight, gradual; eyes in all the Indian forms hairy; palpi moderately long, slender, obliquely porrect, fringed anteriorly, tufted in the middle posteriorly; intermediate and posterior femora scaled, not hairy. Males of all the Indian forms furnished with secondary sexual characters, which can be briefly classified and described as follows:—

Form 1. *Upperside*: a glandular fold near dorsum on fore wing, and a patch of specialized scales near costa on hind wing, both covered by pencils of long hairs. *Underside*: a patch of specialized scales set in a nacreous area near dorsum on fore wing.

Form 2. *Upperside*: no sex-mark on fore wing; sex-mark on hind wing as in Form 1. *Underside*: sex-mark as in Form 1.

Form 3. *Upperside*: no sex-mark on fore wing; one sex-mark on hind wing as in Form 1, with a second similar sex-mark on posterior area of wing. *Underside*: sex-mark as in Form 1.

Key to the forms of Mycalesis.

A. Males with *sex-marks* in Form 1.
  a. Vein 7 of hind wing closer to 8 than to 6.
    a'. Preapical white band on fore wing oblique.
      a^2. No ocellus on upperside of fore wing. — *M. anaxias*, p. 52.
      b^2. Two ocelli on upperside of fore wing.
        a^3. Preapical white band on fore wing narrow, not extended to costa or termen . . . . . — Race *radza*, p. 53.
        b^3. Preapical white band on fore wing broader, extended to costa and termen . . . . . — Var. *manii*, p. 53.
    b' Preapical white band on fore wing absent, or if present nearly vertical, not oblique . . . . . — *M. adamsoni*, p. 54.
  b. Vein 7 of hind wing closer to 6 than to 8.
    a'. A broad oblique preapical white band on fore wing . . . . . — *M. anaxioides*, p. 54.
    b'. No preapical white band on fore wing.
      a^2. Upper discocellular in hind wing not swollen . . . . . — *M. sanatana*, p. 55.
      b^2. Upper discocellular in hind wing swollen . . . . . — *M. charaka*, p. 55.

B. Males with *sex-marks* in Form 2.
  a. Upperside of wings more or less suffused with purple . . . . . — *M. orseis*, p. 56.
  b. Upperside of wings with no trace of purple.
    a'. Veins 3 and 4 in hind wing from a point or shortly stalked.

a^2. Fore wing, tuft of hairs at base overlapping swollen base of vein 12.
  a^3. Posterior three ocelli on underside of hind wing in a straight line . *M. perseus*, p. 57.
  b^3. Posterior four ocelli on underside of hind wing in a straight line.
    a^4. Sex-mark on underside of fore wing small, under 2 mm., black or very dark brown... ... *M. mineus*, p. 58. Race *polydecta*, p. 59.
    b^4. Sex-mark on underside of fore wing longer, over 4 mm., brown, never dark or black.
      a^5. Sex-mark not extending up to transverse white discal band. *M. perseoides*, p. 59.
      b^5. Sex-mark extending up to and touching inner margin of transverse white discal band. *M. subdita*, p. 60.
      c^5. Sex-mark extending beyond inner margin of transverse white discal band.
        a^6. Apex of fore wing slightly produced, more or less subacute... .. . *M. visala*, p. 60.
        b^6. Apex of fore wing not produced, rounded . . . Race *andamana*, p. 60.
    c^4. Sex-mark on underside of fore wing over 4 mm., but grey, not brown, difficult to see against nacreous background .. *M. rama*, p. 61.
b^2. Fore wing, tuft of hairs at base short, not overlying swollen base of vein 12.
  a^3. Median ocellus on upperside of fore wing placed on a large orange-yellow patch ... . *M. oculus*, p. 62.
  b^3. Median ocellus on upperside of fore wing encircled only by a narrow fulvous ring. . *M. adolphei*, p. 61.

b'. Veins 3 and 4 in hind wing separate, 3 from before apex, 4 from apex of cell.
  a^2. Fore wing elongate, apex somewhat produced, termen concave *M. mnasicles*, p. 62.
  b^2. Fore wing subtriangular, apex not produced, rounded, termen convex.
    a^3. One or more ocelli on the upperside of wings.
      a^4. Lower discocellular of fore wing concave or nearly straight.
        a^5. Secondary sex-mark of specialized scales always present on underside of fore wing.
          a^6. Transverse discal band on underside of fore wing showing through on upperside; cilia white.
            a^7. Basal area on underside of fore and hind wings irrorated with transverse pale striæ *M. mestra*, p. 63.

b^7. Basal area on underside of fore and hind wings uniform, not irrorated with striæ. .... .. Race *suaveolens*, p. 63.

b^6. Transverse discal band on underside of fore wing not showing through on upperside; cilia brownish.

a^7. Tuft of long hairs overlapping sex-mark of specialized scales on upperside of hind wing jet-black .... *M. nicotia*, p. 65.

b^7. Tuft of long hairs overlapping sex-mark of specialized scales on upperside of hind wing pale brown .. .. *M. misenus*, p. 66.

b^5. Secondary sex-mark of specialized scales absent on underside of fore wing . *M. heri*, p. 66.

b^4. Lower discocellular of fore wing not concave, bent abruptly inwards in an acute angle in the middle.

a^5. Transverse discal white band on underside of fore wing showing through very conspicuously on upperside . *M. malsara*, p. 64.

b^5. Transverse discal band on underside of fore wing not, or only very faintly showing through on upperside . Race *lepcha*, p. 65.

b^3. No ocelli on upperside of wings .. *M. malsarida*, p. 63.

c'. Veins 3 and 4 in hind wing stalked, well beyond apex of cell.

a^2. Median ocellus on upperside of fore wing broadly bordered with orange-yellow above and on each side .. *M. patnia*, p. 66.

b^2. Median ocellus on upperside of fore wing broadly bordered with pure white above and on each side *M. junonia*, p. 67.

C. Males with *sex-marks* in Form 3.

a. Sex-marks of specialized scales on upperside of hind wing placed at bases of vein 1 and subcostal vein .. *M. mystes*, p. 67.

b. Sex-marks of specialized scales on upperside of hind wing placed one midway on vein 1, the other at base of subcostal vein *M. surkha*, p. 68.

47. **Mycalesis anaxias**, *Hewitson, Exot. Butt.* iii, 1862, p. 86, Mycalesis, pl. 4, figs. 25, 26; *M. & de N. Butt. Ind.* i, 1883, p. 106, pl. 16, fig. 52 ♂; *Moore* (Virapa), *Lep. Ind.* i, 1890–92, p. 159, pl. 55, figs. 1, 1 *a*–1 *c*, ♂ ♀

Race radza.

Mycalesis radza, *Moore, P. Z. S.* 1877, p. 583, pl. 58, fig. 2 ♂ ; *M. & de N. Butt. Ind.* i, 1883, p. 105 ; *Moore* (Virapa), *Lep. Ind.* i, 1890–92, p. 160, pl. 55, figs. 2, 2 *a*, ♂ ♀.

Mycalesis manii, *Doherty, J. A. S. B.* 1886, p. 257, ♀ ; *Moore* (Virapa), *Lep. Ind.* i, 1890–92, p. 161.

Wet-season form.— ♂ ♀ *Upperside* dull vandyke-brown, paler in the ♀ ; subterminal and terminal fine lines on both fore and hind wings fulvescent ; cilia brown. Fore wing with an oblique white preapical short band not quite reaching either the costa or the termen. *Underside* : fore wing : basal area up to the white band, and in a transverse line from lower end of band to dorsum, blackish brown ; terminal margin beyond broadly paler brown ; a white-centred fulvous-ringed black ocellus in interspace 2, and two preapical, smaller similar ocelli, followed by a very sinuous subterminal and a straighter terminal dark brown line. Hind wing : basal two-thirds blackish brown, terminal border broadly paler, bearing normally seven ocelli similar to those on the fore wing, and subterminal and terminal dark brown lines.

Dry-season form.— ♂ ♀. *Upperside* as in the wet-season form. *Underside* differs in the ocelli being more or less obsolescent, and the subterminal and terminal dark lines on both fore and hind wing absent or very faintly indicated ; the terminal margins are broadly rufescent brown, fading inwardly into lilacine, the oblique white bar on the fore wing outwardly diffuse. Antennæ, head, thorax and abdomen dark brown ; the antennæ ochraceous towards apex. Male sex-mark in form 1.

Exp. ♂ ♀ 51–60 mm. (2–2·35″).

Hab. Sikhim, eastwards through the hill-ranges to Assam, Cachar, Burma and Tenasserim. Also in Southern India, the Nilgiris ; Travancore.

Race **radza**, Moore.—Only the ocellated form is known. This resembles the wet-season form of typical *anaxias*, but on the upperside of the fore wing there is a large white-pupilled fulvous-ringed black ocellus in interspace 2, and a smaller similar ocellus just beyond the white preapical bar. On the upperside of the hind wing there is a large similar ocellus in interspace 2. *Underside* uniform brown, the broad pale terminal area on the fore wing barely indicated, the upper of the two preapical ocelli much the larger.

Exp. ♂ ♀ 50–54 mm. (1·95–2·12″).

Hab. The Andamans.

Var. manii, Doherty.—Like the race *radza*, but the preapical, oblique, white band on the fore wing is much broader and longer, nearly touching the costa and termen at each end. *Underside*: fore and hind wings paler brown, the preapical ocelli on fore wing enclosed in the same fulvescent ring. Hind wing "has a broad dull violet band across the disc unmarked with white, its inner border nearly straight."

Exp. ♂ 57 mm. (2·28″).

Hab. The Nicobars.

48. **Mycalesis adamsoni**, *Watson, Jour. Bomb. N. H. Soc.* x, 1896, p. 640, pl. A, fig. 1 ♀.

♂. *Upperside* very dark brown; fore and hind wings with subterminal and terminal pale lines. Fore wing with the termen anteriorly broadly but very obscurely paler, the colour extended obliquely to the costa above the apex, the ocelli of the underside showing very faintly through. Hind wing uniform. *Underside*: basal two-thirds of both fore and hind wings very dark brown, the outer margin of this colour sharply defined, on fore wing slightly oblique from costa to vein 4, thence vertical and sinuous to dorsum; beyond this an obscure broad lilac transverse band, carrying on the fore wing a white-centred, fulvous-ringed, small, black median ocellus and four smaller anterior ocelli, the apical and lower of these mere minute dots; on the hind wing a curved series of seven similar ocelli, the third from the tornus the largest, the rest subequal. Termen of wings beyond the line of ocelli slightly ochraceous, with subterminal and terminal dark lines. Antennæ, head, thorax and abdomen dark brown. Male sex-mark in form 1.— ♀ Very similar; apical and terminal area of fore wing on the upperside distinctly paler, a preapical short white band, not so oblique as in *M. anaxias*, but curving downwards vertically. Another ♀ resembles the ♂ precisely, having no white preapical band.

Exp. ♂ ♀ 54–58 mm. (2·13–2·3″).

Hab. Upper Burma.

49. **Mycalesis anaxioides**, *Marshall, in M. & de N. Butt. Ind.* i, 1883, p. 107; *Moore* (Samundra), *Lep. Ind.* i, 1890–92, p. 162, pl. 55, figs. 3, 3 *a*, ♂ ♀

♂ ♀ *Upperside* vandyke-brown, darkest on the disc of the fore wing; a broad preapical, oblique, slightly arched white band as in *M. anaxias*, and a terminal dark line on both fore and hind wing. In the ♀ there is also a large black white-pupilled fulvescent-ringed ocellus below the terminal or lower end of the white band, and on the hind wing traces of another ocellus near the tornus. *Underside*: ground-colour similar to that in *M. anaxias*, with a dark basal and terminal paler area, the latter bearing in the wet-season form a series of ocelli on both fore and hind wing, four on the fore, seven on the hind wing. In the dry-season form the ocelli are nearly obsolete, represented by mere black dots, and the outer paler border more clearly demarcated, of a lilacine white suffused with brown; outer margin of the preapical white band on the fore wing diffuse. Antennæ, head, thorax and abdomen dull brown, paler beneath; the antennæ somewhat ochraceous. Male sex-mark in form 1.

Exp. ♂ ♀ 58–70 mm. (2·3–2·78″).

Hab. Lower Burma; Tenasserim.

50. **Mycalesis charaka**, *Moore, P. Z. S.* 1874, p. 566; *M. & de N. Butt. Ind.* i, 1883, p. 109; *Moore* (Sadarga), *Lep. Ind.* i, 1890-92, p. 166, pl. 57, figs. 1, 1 *a*–1 *c*, 2, 2 *a*, ♂ ♀.
Sadarga oculata, *Moore, Trans. Ent. Soc.* 1880, p. 158; *M. & de N.* (Mycalesis) *Butt. Ind.* i, 1883, p. 109.

Wet-season form.— ♂ ♀ *Upperside* dull vandyke-brown; the terminal margins narrowly paler; fore and hind wings with a slender terminal dark brown line; fore wing with a large white-centred fulvous-ringed median and a very much smaller similar preapical ocellus. Hind wing uniform. *Underside* paler; terminal half ochraceous brown, paler than basal half, the latter bordered by a straight dark line followed by an ochraceous-white transverse band diffuse on the outer side; fore wing with the two ocelli as on the upperside and a third ocellus in interspace 6. Hind wing normally with seven similar ocelli; third from tornus the largest, fourth very small, sometimes absent; fore and hind wings with sinuous dark brown subterminal and terminal lines. Antennæ, head, thorax and abdomen brown; antennæ annulated with white, club dark brown, ochraceous at apex.

Dry-season form.— ♂ ♀ Differs from the wet-season form only in the ocelli being reduced to mere white-centred black specks, and the subterminal and terminal lines being more evenly curved and forming slender lunules between the veins. Male sex-mark in form 1.

Exp. ♂ ♀ 55–62 mm. (2·15–2·45″).

Hab. N.E. Himalayas, through Assam, Cachar to Burma.

51. **Mycalesis sanatana** (Pl. II, fig. 7), *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 231; *M. & de N. Butt. Ind.* i, 1883, p. 108; *Moore* (Gareris), *Lep. Ind.* i, 1890-92, p. 164, pl. 56, figs. 1–1 *b*, 2–2 *b*, ♂ ♀.
Mycalesis gopa, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 501; *M. & de N. Butt. Ind.* i, 1883, p. 107.

Wet-season form.— ♂ ♀ *Upperside* vandyke-brown, terminal margins of both fore and hind wing narrowly paler, marked with a subterminal dark slender line. Fore wing normally with a large white-centred fulvous-ringed black ocellus in interspace 2, and a smaller similar ocellus in interspace 5, but sometimes the anterior ocellus is absent, or there are one or two additional similar ocelli above and below it. Hind wing uniform. *Underside*: basal two-thirds of both fore and hind wing dark brown, sharply defined and bordered by an outwardly diffuse pinkish transverse band followed by a series of five ocelli on the fore, seven on the hind wing, similar to the ocelli on the upperside, but placed on a light brown background. Succeeding these there are a sinuous transverse and outer subterminal and terminal slender dark brown lines.

Dry-season form.— ♂ ♀ *Upperside* similar to that in the wet-season form, but the pale terminal margins of the wings broader. *Underside*: basal two-thirds of the wings dark, terminal third light umber-brown. Basal portion crossed by two darker brown lines and bounded by a slightly arched line of the same colour, followed by an outwardly diffuse pinkish band, and a series of

ocelli as in the wet-season form, only the ocelli are nearly obsolete or minute. Antennæ, head, thorax and abdomen brown; the antennæ ochraceous at apex. Male sex-mark in form 1.

Exp. ♂ ♀ 48–64 mm. (1·9–2·5″).

Hab. The Himalayas from Kulu to Sikhim; Khási Hills in Assam; the hills in Burma and Tenasserim.

52. **Mycalesis orseis**, *Hewitson, Ex. Butt.* iii, 1864, p. 89, Mycalesis, pl. 6, figs. 36, 37, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 110 footnote; *Moore* (Suralaya), *Lep. Ind.* i, 1890–92, p. 217, pl. 73, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂. *Upperside* brownish purple; fore and hind wings with pale slender subterminal and terminal lines. Fore wing with the ocelli of the underside showing through. Hind wing uniform brown, medially glossed with dull purple. *Underside*: basal two-thirds of fore and hind wings vandyke-brown crossed by a transverse sinuous darker line; outer third of wings much paler, a post-median purplish transverse band diffuse outwardly, bearing a series of white-centred fulvous-ringed black ocelli, five on the fore, seven on the hind wing, the latter placed in a slight curve; on fore wing the posterior ocellus and on hind wing the third from the tornus the largest; beyond the ocelli subterminal zigzag and terminal slightly sinuous slender dark lines. Sex-marks in form 2. Female similar to the ♂, but *upperside* somewhat dull vandyke-brown; underside paler than in the ♂, with a broader transverse purplish band; fore wing with six ocelli. Antennæ, head, thorax and abdomen brown; club of antennæ ochraceous at apex, dark brown below.

Exp. ♂ ♀ 55–58 mm. (2·19–2·3″).

Hab. Recorded only from the Nága Hills and from Tenasserim within our limits; spread through the Malay Peninsula.

The succeeding five or six forms belonging to Moore's genus

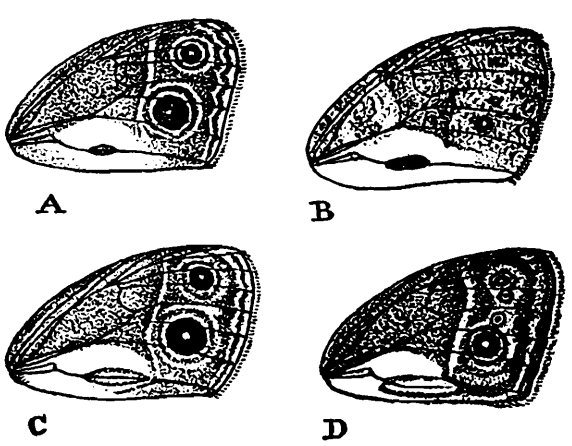

Fig. 16.—Underside fore wings of *Mycalesis*, showing secondary sex-mark of specialized scales. A. *M. perseus*, Fabr. B. *M. mineus*, Linn. C. *M. subdita*, Moore. D. *M. visala*, Moore.

Calysisme are very closely allied. *M. perseus*, I think, can always be recognized in both sexes by the disposition of the ocelli on the

underside of the hind wing, which is constant; but of the others only the males can be separated with any certainty by the shape, size, and colour of the secondary sex-marks on the underside of the fore wing. In the long series of females that I have examined, I have been unable to find a single constant character by which to distinguish one form from the other. Mr. de Nicéville considered it probable that they interbred; in which case it is quite possible that there is only one form, of which the males possess varying secondary sexual characters, that are, however, constant in certain series.

53. **Mycalesis perseus**, *Fabr.* (Papilio) *Syst. Ent.* 1775, p. 488; *M. & de N. Butt. Ind.* i. 1883, p. 120, pt.; *Moore* (Calysisme), *Lep. Ind.* i, 1890–92, p. 174, pl. 59, figs. 1, 1 *a*–1 *d*, & 2, 2 *a*–2 *e*, ♂ ♀.
Mycalesis blasius, *Fabr. Ent. Syst. Suppl.* 1798, p. 426; *Butler, P. Z. S.* 1867, p. 720, fig. 4 ♂; *Moore* (Calysisme), *Lep. Ceyl.* i, 1880, p. 21, pl. 11, figs. 2, 2 *a*, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 115, pl. 16, fig. 55 ♂.
Mycalesis samba, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 233, ♂

Wet-season form.— ♂ ♀ *Upperside* dark to somewhat pale vandyke-brown. Fore wing with a white-centred, fulvous-ringed, black ocellus in interspace 2, and rarely a very small but similar ocellus in interspace 5. Hind wing uniform, occasionally two or three postmedian obscure ocelli present. Fore and hind wings with subterminal and terminal pale lines. *Underside*: the ground-colour, subterminal and terminal lines on the wings as on upper-side, but crossed by a common purplish-white narrow discal fascia. Fore wing with from two to four, hind wing normally with seven ocelli, similar to, but more clearly defined than, the ocelli on the upperside; on both wings the line of ocelli bordered inwardly and outwardly by sinuous purplish-white lines. On the hind wing only the *three* posterior ocelli in a straight line (fig. 17, B), the rest strongly curved outwards. In the ♀ the median or posterior ocellus on the upperside of the fore wing is always larger than in the ♂.

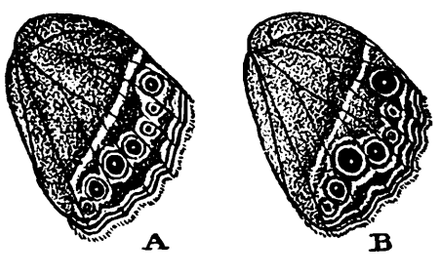

Fig. 17.—Arrangement of ocelli on underside of hind wing in
A. *Mycalesis mineus*, Linn.
B. „ *perseus*, Fabr.

Dry-season form.— ♂ ♀ *Upperside* similar to that in the wet-season form, the median ocellus generally smaller. *Underside* brown, more or less suffused with purple and irrorated with darker brown minute transverse strigæ; the transverse discal band obscure, often merely indicated by black dots at the veins, occasionally bordered outwardly by an ochraceous diffuse band. Ocelli obsolescent, but when present as mere minute dots their arrangement on the hind wing is as in the wet-season form. Antennæ, head, thorax and abdomen brown; antennæ sometimes cinereous white on the sides with the apex black. Male sex-marks in form 2, but

that on the underside of the fore wing small (about 2 mm. long) and black.

Exp. ♂ ♀ 42–54 mm. (1·68–2·1″).

Hab. I have examined specimens from the Himalayas, Kangra to Sikhim and Bhutan; from Bengal, Southern India and Ceylon. This form is fairly common throughout Burma and Tenasserim; it extends to China and far into the Malayan Subregion.

54. **Mycalesis mineus** (Pl. II, fig. 8, wet-season form—underside), *Linn.* (Papilio) *Syst. Nat.* i, 1767, p. 768; *M. & de N. Butt. Ind.* i, 1883, p. 117, pt.; *Moore* (Calysisme), *Lep. Ind.* i, 1890–92, p. 183, pl. 60, figs. 1, 1 *a*–1 *f*, ♂ ♀

Papilio drusia, otrea, et mamerta, *Cramer, Pap. Exot.* i, 1775, pl. 84, figs. C, D, ♀; iv, 1780, pl. 314, figs. A, B, & pl. 326, fig. D, ♀.

Calysisme subfasciata, *Moore, P. Z. S.* 1882, p. 237, pl. 12, fig. 8; *M. & de N.* (Mycalesis, var. of mineus) *Butt. Ind.* i, 1883, p. 122.

Calysisme nicobarica, *Moore, Lep. Ind.* i, 1891, p. 187.

Race polydecta. (Pl. II, fig. 9, dry-season form—underside.)

Papilio polydecta, *Cramer, Pap. Exot.* ii, 1777, pl. 144, figs. E, F, ♀; *Moore* (Calysisme), *Lep. Ind.* i, 1890–92, pp. 180, 181, pl. 61, figs. 1, 1 *a*–1 *h*, & pl. 62, figs. 1, 1 *a*–1 *i*, ♂ ♀.

Papilio justina, *Cramer, Pap. Exot.* iv, 1780, pl. 326, fig. C, ♀.

Calysisme drusia, perseus, et mineus, *Moore, Lep. Ceyl.* i, 1880, p. 20, pl. 11, figs. 3, 3 *a*, ♂; p. 21, pl. 12, figs. 1, 1 *a*, ♂; & p. 22, pl. 11, figs. 4, 4 *a*, 4 *b*, ♂ ♀.

Wet-season form.— ♂ ♀ *Upperside* dark vandyke-brown; fore and hind wings with slender subterminal and terminal pale lines. Fore wing with a single white-centred, fulvous-ringed, black ocellus, generally set in a square pale area, in interspace 2, occasionally a similar smaller ocellus without any pale surrounding area in interspace 5. Hind wing uniform, sometimes with one or two obscure postmedian ocelli. *Underside*: ground-colour similar; fore and hind wings crossed by a transverse dusky-white discal band, well-defined inwardly, diffuse outwardly, followed by a post-discal series of ocelli surrounded by a dusky-yellowish, sometimes purplish-white, line; the ocelli are similar to the ocelli on the upperside, and vary from two to four on the fore and from five to seven (the preapical two being sometimes obsolescent) on the hind wing; of these latter the posterior *four*, not *three* as in *M. perseus*, are in a straight line; finally, beyond the rows of ocelli on both wings there are pale or purplish-white subterminal and terminal sinuous lines.

Dry-season form.— ♂ ♀ *Upperside* similar to that in the wet-season form, but paler. *Underside* from ochraceous brown to dusky brown of a darker shade; basal half of the wings conspicuously darker than the outer portions; the whole surface irrorated with fine brown striæ; sometimes a distinct dark discal band crosses both wings; ocelli nearly obsolete, indicated by minute white specks, the posterior four on the hind wing in a straight line as in the wet-season form. Antennæ, head, thorax and abdomen brown; the club of the antennæ with black and ochraceous marks.

Male sex-mark in form 1 as in *M. perseus*, but the patch of specialized scales on the underside of the fore wing half as large again.

Exp. ♂ ♀ 48–46 mm. (1·9–2·2″).

Hab. The Himalayas at low elevations from Kulu to Sikhim; and eastwards through Assam and Cachar to Burma and Tenasserim; recorded from Bengal.

Var. *subfasciata*, Moore, a common form, has the terminal margins of both fore and hind wing broadly pale.

Var. *nicobarica*, Moore, very closely resembles typical *mineus*, but on the whole is darker, with the transverse discal band on the underside of the wings more brownish white.

Race **polydecta**, Cramer.—♂ ♀ The southern representative of *M. mineus*, which it closely resembles in both seasonal forms. Occasional specimens have the yellow ring encircling the large median ocellus on the upperside of the fore wing very much broader than in any specimen of *M. mineus* that I have seen; others, the females especially, have the transverse discal band on the underside much broader and pure white, not brownish or dusky; others, again, of the dry-season form have the ground-colour on the underside more strongly suffused with purple; but there are no constant characters by which this race may be distinguished from *M. mineus*. The male sex-marks are precisely similar to those of *M. mineus*.

Exp. ♂ ♀ 48–56 mm. (1·9–2·2″).

Hab. Central Provinces southwards to Travancore and in Ceylon. Recorded on the west coast of India up to the latitude of Bombay, and on the east to Calcutta (? true *mineus*).

55. **Mycalesis perseoides**, *Moore* (Calysisme), *Lep. Ind.* i, 1890–92, p. 179, pl. 60, figs. 2–2 *c*, ♂ ♀.
Calysisme intermedia, *Moore, Lep. Ind.* i, 1890–92, p. 187.

♂ ♀ This form closely resembles *M. mineus*, in both wet- and dry-season specimens. As in that form, the disposition of the ocelli on the underside of the hind wing separates it from *M. perseus*. From *M. mineus* it differs in the male sex-mark on the underside of the fore wing, which is longer, broader and ochraceous brown, not black in colour.

Exp. ♂ ♀ 44–56 mm. (1·75–2·2″).

Hab. Typically from Burma and Tenasserim, but the variety noted below from S. India, Mysore.

From Kathlekan, in Mysore, there is in the British Museum Collection a series of what I take to be a variety of this form. The specimens (all males) belong to the dry-season form. They are uniformly smaller than typical *perseoides*, and differ on the upperside of the fore wing in the very broad pale iris surrounding the median ocellus, and on the underside of the same wing in the margin of the darker basal portion of the wing being prominently concave just above the dorsal margin. The male sex-mark on the underside of the fore wing is larger than that of *M. mineus* but resembles it in colour. I have been unable to separate even as a variety *M. intermedia*, Moore, from *M. perseoides*, Moore.

56. **Mycalesis subdita**, *Moore* (Calysisme), *Lep. Ind.* i, 1890-92, p. 194, pl. 65, figs. 1, 1 *a*-1 *h*, ♂ ♀

♂ ♀ Closely resembles in both seasonal forms *M. mineus*. The ♂ can be discriminated by the sex-mark on the underside of the fore wing: this is brown or ochraceous brown as in *M. perseoides*, but very much longer and broader, extending to but not going beyond the transverse band crossing the wings (fig. 16, C.)

Exp. ♂ ♀ 48–60 mm. (1·9–2·35″).

Hab. Ceylon; S. India, Travancore.

57 **Mycalesis visala**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 230; *id.* (Calysisme) *Lep. Ind.* i, 1890-92, p. 189, pl. 63, figs. 1, 1 *a*-1 *h*, ♂ ♀, & pl. 64, figs. 1, 1 *a*-1 *i*, ♂ ♀, larva & pupa.

Mycalesis mineus, pt., *M. & de N. Butt. Ind.* i, 1883, p. 117.

Mycalesis perseus, *var.* visala *et var.* indistans, *M. & de N. Butt. Ind.* i, 1883, p. 121, pl. 16, fig. 52, & p. 122.

Race andamana.

Mycalesis drusia, *Moore, P. Z. S.* 1877, p. 583, pt.

Calysisme andamana, *Moore, Lep. Ind.* i, 1890-92, p. 196, pl. 56, figs. 1, 1 *a*-1 *d*, ♂ ♀.

♂ ♀. In colour and the markings on the wings both seasonal forms of *M. visala* closely resemble those of *M. mineus*. On the whole, however, *M. visala* runs larger, and as a rule both sexes (in the continental form, not in the insular race) can be discriminated from the males and females of allied forms by the shape of the fore wing. This is, as a rule, produced and acute at apex, with the termen below sharply transverse. The males, moreover, have the sex-mark on the underside of the fore wing rather bright ochraceous and very long, extending beyond the transverse bands crossing the wings (fig. 16, D, p. 56).

Exp. ♂ ♀ 52–61 mm. (2·05–2·4″).

Hab. Recorded from Kumaun, Sikhim, Bhutan, Bengal, the Central Provinces, and South India. Eastwards, *M. visala* has been sent from the Nága Hills, and is spread generally through Burma and Tenasserim.

Race **andamana**, Moore.—♂ ♀. Male sex-mark on the underside of the fore wing as in *M. visala*. Shape of wings much more rounded in both seasonal forms of both sexes; in this closely resembling *M. mineus*, but the ground-colour of the wings is darker and the ocelli proportionately larger. Disposition of the ocelli apparently quite constant. *Upperside*: fore wing—two ocelli, the posterior the larger; hind wing—none in the ♂, an obscure one in the ♀ *Underside*: both sexes, fore wing with two, hind wing with seven ocelli; the posterior four of the latter disposed as in *M. mineus*.

Exp. ♂ 52–58 mm. (2·05–2·27″).

Hab. The Andamans.

58. **Mycalesis rama,** *Moore* (Calysisme), *Lep. Ind.* i, 1890–92, p. 196, pl. 57, figs. 3, 3 *a*, ♂.

Wet-season form.— ♂ *Upperside* deep umber-brown, quite different from the dull vandyke-brown of *M. mineus* and allies; subterminal and terminal lines on the wings very indistinct. Fore wing with two white-centred fulvous-ringed ocelli; the posterior much the larger. Hind wing with a small similar ocellus in interspace 2. *Underside* paler and brighter, the basal two-thirds darker than the terminal third, its outer margin sharply defined by a dark brown fine line; apical third somewhat ochraceous, with subterminal and terminal slender brown lines. Fore wing with two, hind wing with seven ocelli, similar to the three on the upperside; on the hind wing the ocelli are placed in a curve, the subtornal two and apical ocelli the largest, the tornal and preapical two very small, somewhat indistinct. Antennæ, head, thorax and abdomen umber-brown; the antennæ bright ochraceous at apex. Sex-mark in form 2, on the underside of the fore wing composed of greyish specialized scales difficult to see against the nacreous background.

Exp. ♂ 56 mm. (2·22″).

Hab. Ceylon.

59. **Mycalesis adolphei,** *Guérin* (Satyrus), *Delessert, Voy. dans l'Inde*, pt. ii, 1843, p. 76; *M. & de N. Butt. Ind.* i, 1883, p. 123; *Moore* (Telinga), *Lep. Ind.* i, 1890–92, p. 210, pl. 71, figs. 1, 1 *a*–1 *c*, ♂ ♀

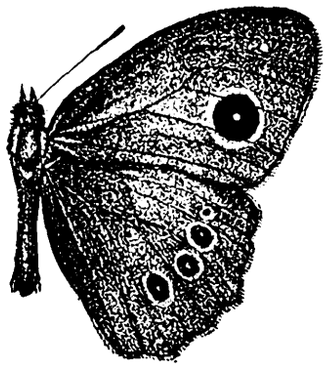

Fig. 18.—*Mycalesis adolphei.*

♂ ♀ *Upperside* dark umber-brown. Fore wing with a large, white-centred, fulvous-ringed black median ocellus and a white-centred preapical much smaller black spot. Hind wing uniform, a postmedian series of from two to four white-centred fulvous-ringed black ocelli, subequal and smaller than the posterior ocellus on the fore wing. *Underside*: ground-colour similar, but irrorated with obscure transverse striæ of a deeper brown; the terminal margins of both fore and hind wings very broadly paler; the dark basal portion of the wings sharply defined by a very dark brown line; a postmedian series on both wings of rather small white-centred fulvous-ringed black ocelli—two on the fore wing, a median and a preapical; seven, placed in a slight curve, on the hind wing. Antennæ, head, thorax and abdomen dark umber-brown, paler beneath. Male sex-mark of form 2, the patch of specialized scales on both fore and hind wing very small; the nacreous area surrounding the specialized scales on the underside of the fore wing very pale brown.

Exp. ♂ ♀ 53–58 mm. (2·1–2·3″).

Hab. S. India; the Nilgiri and Anaimalai Hills.

60. **Mycalesis oculus** (Pl. II, fig. 10), *Marshall, J. A. S. B.* 1880, p. 247; *M. & de N. Butt. Ind.* i, 1883, p. 124, pl. 16, fig. 53 ♀; *Moore* (Telinga), *Lep. Ind.* i, 1890–92, p. 211, pl. 71, figs. 2, 2 *a*–2 *c*, ♂ ♀

♂ ♀ Resembles *M. adolphei*, Guér. *Upperside*: fore wing—median ocellus very much larger, encircled with a much broader ring of rich orange-red, which is conspicuously broad anteriorly and produced upwards towards the costa; ground-colour beyond apex of cell, and of the whole apex and termen broadly, not uniform with that at the base of the wing, but much darker; the preapical ocellus inconspicuous. *Underside* dark ochraceous red or brown, the dark basal portion of both fore and hind wing bordered outwardly by a yellowish band sharply defined on the inner side, diffuse outwardly; median ocellus on fore and subtornal ocellus on hind wing proportionately larger than in *M. adolphei*. Antennæ, head, thorax and abdomen as in *M. adolphei*. Male sex-mark in form 2, but the patch of specialized scales on the underside of the fore wing very small and inconspicuous against the nacreous background, which is very dark; the pencil of hair over the specialized scales on the hind wing very small.

Exp. ♂ ♀ 54–60 mm. (2·13–2·38″).

Hab. S. India; Cochin; Travancore.

61. **Mycalesis mnasicles**, *Hewitson, Ex. Butt.* iii, 1864, Mycalesis, pl. 5, figs. 32, 33, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 126, pl. 16, fig. 51; *Moore* (Culapa), *Lep. Ind.* i, 1890–92, p. 199, pl. 67, figs. 1, 1 *a*, ♂ ♀.

♂ ♀. *Upperside* pale vandyke-brown; base and disc in fore wing and the whole of the hind wing, costal and terminal margins excepted, suffused with bright ochraceous. Fore wing with a remarkably large, white-centred, brightly ochraceous-ringed median, and a very much smaller white-centred subapical ocellar spot, the latter wanting the ochraceous iris. Hind wing with a postmedian fulvous-ringed non-pupilled black spot. *Underside* pale pinkish brown; fore and hind wings crossed by a broad darker band, defined on both sides by a darker brown line, followed on the fore wing by two or three subapical, on the hind wing by a curved series of seven minute white-centred black ocelli; terminal margin slightly darker, bordered inwardly by a zigzag brown line. Antennæ, head, thorax and abdomen dull ochraceous brown; club of the antennæ dark brown, ochraceous at apex. Male sex-mark in form 2.

Exp. ♂ ♀ 70–76 mm. (2·75–2·93″).

Hab. Lower Burma; Tenasserim, extending to the Malayan Subregion.

The largest of the Indian forms, unmistakable on account of its size, and its broad triangular fore wing with a straight termen and enormously large median ocellus.

62. **Mycalesis mestra**, *Hewitson Ex. Butt.* iii, 1862, p. 79, Mycalesis, pl. 1, fig. 2; *M. & de N. Butt. Ind.* i, 1883, p. 124; *Moore* (Pachama), *Lep. Ind.* i, 1890–92, p. 200, pl. 67, figs. 2, 2 *a*, ♂.

Race suaveolens.

Mycalesis suaveolens, *W.-M. & de N. in M. & de N. Butt. Ind.* i, 1883, p. 125; *Moore* (Pachama), *Lep. Ind.* i, 1890–92, p. 201, pl. 67, figs. 3, 3 *a*, 3 *b*.

♂ ♀ *Upperside* very dark vandyke-brown, the cilia conspicuously white, the transverse white discal band of the underside showing through on both fore and hind wing, but very plainly on the latter. Fore wing with a white-centred, fulvous-ringed, median, and a similar but much smaller subapical ocellus, the latter very often absent; broad but faint and ill-defined subterminal and terminal white lines. Hind wing: a subtornal ocellus similar to those on the fore wing and much more conspicuous; subterminal and terminal whitish lines. *Underside*: ground-colour similar; basal half of wings closely irrorated with pale transverse striæ; a conspicuous white discal band, inwardly sharply defined, outwardly diffused, followed by series of ocelli similar to the ocelli on the upperside, a median and two subapical on the fore wing, three subapical and three tornal on the hind wing: the number of these ocelli is variable, sometimes one or more additional ocelli are present, often one or more are lacking on the hind wing; finally, the subterminal and terminal white bands as on the upperside but better defined. Antennæ, head, thorax and abdomen brown; antennæ annulated with white, ochraceous at apex. Male sex-mark in form 2.

Exp. ♂ ♀ 66–78 mm. (2·6–3″).

Hab. Bhutan, Assam, the Khási Hills.

Race **suaveolens**, W.-M. & de N.—Closely resembles *M. mestra*, but differs constantly as follows:—♂ ♀ *Upperside*: ground-colour a brighter, more ruddy brown; cilia white tinged with ochraceous; the discal, subterminal and terminal bands on the underside showing through much more faintly than in *M. mestra*; the number of ocelli very variable. *Underside*: basal area uniform, with no trace of the pale transverse striæ; white discal band narrower, subterminal and terminal bands brownish white.

Exp. ♂ ♀ 74–78 mm. (2·85–3″).

Hab. Described originally from Cachar; extends eastwards to the Chin Hills in Burma and westwards to Sikhim and Bhutan.

63. **Mycalesis malsarida**, *Butler, Cat. Satyr. Brit. Mus.* 1868, p. 134, pl. 3, fig. 14; *M. & de N. Butt. Ind.* i, 1883, p. 127; *Moore* (Kabanda), *Lep. Ind.* i, 1890–92, p. 212, pl. 72, figs. 1, 1 *a*, 1 *b*, ♂.

Wet-season form.—♂ ♀ *Upperside* uniform dark vandyke-brown, slightly paler towards apex of fore wing and with somewhat

obscure subterminal pale lines. *Underside* similar, but shading into purplish towards the apex of the fore and terminal margins of both fore and hind wings; the wings crossed by a common pale purplish transverse band followed by a series of white-centred, fulvous-ringed black ocelli, five on the fore and seven on the hind wing, the series bordered on both sides by slender irregular sinuous purple lines, beyond which are subterminal and terminal paler purple lines. Sometimes one or two of the ocelli are absent. Antennæ, head, thorax and abdomen brown. Male sex-mark in form 2.

Dry-season form.— ♂ ♀ *Upperside* similar to that in the wet-season form but paler. *Underside* more purplish towards terminal margins of the wings; the transverse band narrower, not so well-defined; the ocelli more or less obsolete, reduced to mere specks; subterminal and terminal lines ochraceous. The rest as in the wet-season form.

Exp. ♂ ♀ 50–54 mm. (2–2·12″).

Hab. Assam, Khási and Nága Hills; Cachar.

64. **Mycalesis malsara**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 231; *M. & de N. Butt. Ind.* i, 1883, p. 129; *Moore* (Samanta), *Lep. Ind.* i, 1890–92, p. 202, pl. 68, figs. 1, 1 *a*–1 *c*, ♂ ♀

Samata rudis, *Moore, Trans. Ent. Soc.* 1880, p. 166; *M. & de N.* (Mycalesis) *Butt. Ind.* i, 1883, p. 130.

Race lepcha.

Samanta lepcha, *Moore, Trans. Ent. Soc.* 1880, p. 167, ♂; *M. & de N.* (Mycalesis) *Butt. Ind.* i, 1883, p. 130; *Moore, Lep. Ind.* i, 1890–92, p. 204, pl. 68, figs. 2, 2 *a*, ♂.

Samanta bethami, *Moore, Lep. Ind.* i, 1890–92, p. 205, pl. 68, fig. 4 ♂.

Samanta davisoni, *Moore, Lep. Ind.* i, 1890–92, p. 206, pl. 68, fig. 3 ♂.

Wet-season form.— ♂ ♀. *Upperside* very dark vandyke-brown; cilia whitish brown; the discal transverse white bar on the underside of the wings showing through very clearly, more distinctly on the fore than on the hind wing; followed on both wings by two or three dark pale-ringed, generally non-pupilled ocelli, and subterminal and terminal pale slender lines. *Underside*: ground-colour darker, the discal white bar and terminal slender line as on the upperside, but the former clear and well-defined inwardly, diffuse outwardly; fore wing with four, hind wing with seven white-centred, fulvous-ringed, black ocelli; the rows of ocelli bordered on both sides by narrow crescentic pale purpurescent marks forming somewhat irregular lines; subterminal line similar, lunular. Antennæ, head, thorax and abdomen brown; club of the antennæ ochraceous, marked with black on the inner side. Male sex-mark in form 2.

Dry-season form.— ♂ ♀ *Upperside* similar but paler; the ocelli, especially on the hind wing, obscure or absent; the transverse

white discal band on the wings seen by transmission from the underside narrow and very obscure. *Underside*: basal areas of wings up to the discal white band dark brown in the ♂, ochraceous brown in the ♀; the discal white band very narrow and ochraceous white; the terminal margins beyond purpurescent; ocelli minute; both fore and hind wings irrorated with short, transverse, brown striæ.

Exp. ♂ ♀ 50–56 mm. (1·95–2·2″).

Hab. Sikhim; Assam, the Nága and Khási Hills; hills of Burma and Tenasserim.

Race **lepcha**, Moore.— ♂ ♀. The North-West Himalayan and Southern Indian race of *M. malsara*, closely resembling it in both the wet- and dry-season forms. It differs in having the transverse discal band crossing both wings very much narrower and not showing through at all on the upperside; the ocelli are very much smaller and more obsolescent. Underside in the dry-season form irrorated as in *M. malsara* with short, transverse, dark brown striæ.

Exp. ♂ ♀ 56–58 mm. (2·2–2·28″).

Hab. The Himalayas, Kulu, Kangra, Mussoorie; varieties differing slightly from the typical form are also found in the Central Provinces and the Anaimalai Hills, and have been named *bethami* and *davisoni* respectively, by Moore.

65. **Mycalesis nicotia**, *Hewitson, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 394, pl. 66, fig. 4 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 129; *Elwes, Trans. Ent. Soc.* 1888, p. 306, pl. ix, fig. 5 ♀; *Moore* (Samanta), *Lep. Ind.* i, 1890–92, p. 206, pl. 69, figs. 1, 1 *a*–1 *f*, ♂ ♀.

Mycalesis langi, *de Nicéville, in M. & de N. Butt. Ind.* i, 1883, p. 130.

Wet-season form.— ♂ ♀ *Upperside* vandyke-brown. Fore wing with one very large, white-centred, fulvous-ringed median, and one, more rarely two, similar smaller subapical ocelli. Hind wing with one or two small similar ocelli. Fore and hind wings with subterminal and terminal pale lines. *Underside* pale brown, much paler in ♀ than in ♂; the basal area of the wings irrorated with transverse brown striæ up to a common transverse inwardly sharply-defined discal white band; beyond this, a series of ocelli similar to the ocelli on the upperside, four on the front wing, the median ocellus being the largest, seven on the hind wing, the third from the tornus and the apical ocelli being the largest; terminal margins of wings slightly purpurescent, crossed by an inner and an outer subterminal and a terminal slender dark brown line, the subterminal lines being more or less zigzag and sinuous. Cilia of both fore and hind wing pale. Antennæ, head, thorax and abdomen brown; antennæ ochraceous at apex. Male sex-mark in form 2, the tuft of hair overlying the specialized scales on the upperside of the hind wing black.

Dry-season form.— ♂ ♀ Similar. Differs in the ground-colour of the underside having a more ochraceous tint, the ocelli much

reduced in size or obsolescent, and the inner of the two subterminal lines being more or less obscure and faintly marked.

Exp. ♂ ♀ 62–74 mm. (2·33–2·9″).

Hab. The Himalayas from Mussoorie to Sikhim; Assam, the Khási and Nága Hills; Burma.

66. **Mycalesis misenus**, *de Nicéville, Jour. Bomb. N. H. Soc.* iv, 1889, p. 164, pl. A, fig. 8; *Moore* (Samanta), *Lep. Ind.* i, 1890–92, p. 208, pl. 70, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ Very close to *M. nicotia.* Differs only in the conspicuously darker ground-colour of the underside, in having the tuft of hairs that overlies the sexual patch of specialized scales on the upperside of the hind wing in the ♂ brown not black, and in the sex-mark on the underside of the fore wing being larger and much paler in colour. These differences, slight as they are, seem constant through a series.

Exp. ♂ ♀ 50 mm. (nearly 2″).

Hab. Sikhim; Assam, the Khási Hills.

Only the wet-season ocellated form of this species has been recorded.

67 **Mycalesis heri**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 233; *M. & de N. Butt. Ind.* i, 1883, p. 128; *Moore* (Samanta), *Lep. Ind.* i, 1890-92, p. 208, pl. 70, figs. 2, 2 *a*, 2 *b*, ♂ ♀

Wet-season form.— ♂ ♀ This form closely resembles *M. nicotia*, but the males in all the specimens I have seen entirely want the glandular secondary sexual mark on the underside of the fore wing, and both sexes have from two to four complete ocelli on the upperside of the hind wing. In *M. nicotia* there is generally but one ocellus, when two are present the anterior ocellus is much the smaller; whereas when two ocelli only are present on the hind wing of *M. heri* they are always subequal. As in *M. misenus*, the tuft of hairs covering the sex-mark of specialized scales on the upperside of the hind wing in the males is pale brown, not black.

Dry-season form.— ♂ Mr. Doherty records (J. A. S. B. 1886, p. 115):—"I have also the dry-season form, one ♂ taken at Jhulaghat 2000 feet, lacking the ocelli below, but otherwise similar."

Exp. ♂ ♀ 64–70 mm. (2·45–2·75″).

Hab. Recorded from Kumaun and Bhutan.

68. **Mycalesis patnia** (Pl. II, fig. 11), *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 232; *id.* (Nissanga) *Lep. Ceyl.* i, 1880, p. 23, pl. 12, figs. 2, 2 *a*, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 131; *Moore* (Nissanga), *Lep. Ind.* i, 1890–92, p. 215, pl. 72, figs. 2, 2 *a*–2 *d*, ♂ ♀.

♂ *Upperside* dark umber-brown slightly suffused with ochraceous. Fore and hind wings with bright ochraceous-yellow, slender subterminal and terminal lines; cilia pale brown. Fore wing with a

large median and a much smaller subapical white-centred black ocellus, each with an orange-yellow iris, the upper portion of the iris round the median ocellus very broad, the lower incomplete and a more or less triangular orange-yellow discal patch. Hind wing uniform, with two very small fulvous-ringed black ocelli. *Underside* deep ochraceous yellow, subterminal and terminal lines as on the upperside; fore and hind wing crossed near base by a darker ochraceous-yellow line, followed by a silvery discal band, beyond which there are two ocelli as on the upperside, but each encircled also by an outer silvery ring; and on the hind wing a curved series of seven similar ocelli having a silvery band bordering them on both sides, the third and fourth ocelli from tornus together and the apical ocellus by itself placed on a brighter ochraceous patch encircled with black. Antennæ, head, thorax and abdomen brown, somewhat ochraceous beneath. Sex-mark in form 2.— ♀ Similar, more strongly suffused with ochraceous on the upperside; the orange-yellow patch on the fore wing larger, spreading to the base of the wing; no ocelli on the hind wing. *Underside* as in the ♂, but of a brighter ochraceous yellow; basal area of both fore and hind wing crossed by two darker yellow bands, and the discoidal cell of the fore wing with an interior loop of the same colour.

Exp. ♂ ♀ 42–54 mm. (1·7–2·15″).

Hab. Ceylon.

69. **Mycalesis junonia** (Pl. II, fig. 12), *Butler*, *Cat. Satyr. Brit. Mus.* 1868, p. 146, pl. 3, fig. 4; *M. & de N. Butt. Ind.* i, 1883, p. 132, pl. 16, fig. 57 ♂; *Moore* (Nissanga), *Lep. Ind.* i, 1890–92, p. 216, pl. 73, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ Close to *M. patnia*, but on the upperside of a duller brown; the median ocellus on the fore wing encircled with pure white; no discal patch, or merely faint traces of one. *Underside*: markings similar to those in *M. patnia*, but altogether of a duller and browner shade, without any general ochraceous tint, a large bright ochraceous spot posteriorly on the hind wing in the ♂ The median ocellus on the fore wing broadly encircled with white. Male sex-marks in form 2.

Exp. ♂ ♀ 44–52 mm. (1·75–2·05″).

Hab. The hills of Southern India.

70. **Mycalesis mystes**, *de Nicéville* (subgen. Myrtilus), *Jour. Bomb. N. H. Soc.* vi, 1891, p. 343, pl. F, figs. 1 & 2; *Moore* (Myrtilus), *Lep. Ind.* i, 1890–92, p. 221.

Wet-season form.— ♂ *Upperside* brown, terminal margins broadly paler, the transverse discal white fascia showing through faintly on both fore and hind wing; subterminal and terminal pale yellow slender lines on both wings, more distinct on the hind wing. Fore wing with a single white-centred, pale-ringed, median black ocellus. *Underside*: ground-colour similar, a pure white transverse

discal fascia on both fore and hind wings, followed by a series of ocelli similar to the ocellus on the upperside; fore wing with four ocelli, the anterior three small, all encircled by a single slender yellowish line; hind wing with seven ocelli also encircled by a similar outer line; subterminal and terminal lines as on the upperside.

Dry-season form.— ♂ *Upperside* similar. *Underside* ochraceous, basal area darker than outer portions of wings, and crossed by a still darker brown, transverse, somewhat obscure line followed by a white transverse discal band, and beyond by a series of nearly obsolete ocelli represented by mere silvery specks, encircled by a dark sinuous line. Antennæ, head, thorax and abdomen brown. Sex-mark in form 3, the posterior patch of specialized scales on upperside of hind wing placed near the base of vein 1.

Exp. ♂ 50 mm. (2″).

Hab. Recorded from the Yaw district of Upper Burma.

71. **Mycalesis surkha** (Pl. II, fig. 13), *Marshall, J. A. S. B.* 1882, p. 37, pl. 4, fig. 1; *M. & de N. Butt. Ind.* i, 1883, p. 133; *Moore* (Loesa), *Lep. Ind.* i, 1890–92, p. 219, pl. 73, fig. 3 ♂

Wet-season form. — ♂ *Upperside* bright rufous-brown, the apex of the fore wing somewhat broadly and the terminal margins of both wings more narrowly dusky black. Fore wing with a small black pale-ringed median ocellus; rarely one or two smaller similar subapical ocelli. Hind wing uniform. Both fore and hind wings with subterminal and terminal lines and the cilia brown. *Underside* dark rich umber-brown. Fore and hind wing crossed by a slightly curved purplish band, with slender subterminal and terminal pale lines. Fore wing with two, a median and an apical, hind wing with seven white-centred fulvous-ringed ocelli; the latter placed in a strong outward curve. Antennæ, head, thorax and abdomen bright rufous-brown, paler beneath. Sex-mark in form 3, the posterior patch of specialized scales on the upperside of the hind wing on middle of vein 1 *a*.— ♀ *Upperside* similar to the upperside in the ♂, but paler, the ground-colour not so bright. *Underside* also paler than in the ♂, the transverse band broader; the ocelli bordered by pale irregular lines almost encircling them; the apical ocellus on the fore wing sometimes conjoined with a smaller ocellus above and below it, the subterminal line on both fore and hind wing zigzag, the rest similar.

Dry-season form.— ♂ ♀. Similar, slightly darker; the ocelli more or less reduced in size, but I have not seen any specimen that has them obsolescent or even reduced to specks.

Exp. ♂ ♀ 56–60 mm. (2·2–2·39″).

Hab. Recorded so far only from the Tenasserim Hills.

This form is the representative race of the Javan *M. oroatis*, Hewitson, from which it differs but slightly in the narrower dark margins to the wings.

Genus ORSOTRIŒNA.

Mycalesis, pt., *Hübner, Verz. bek. Schmett.* 1816, p. 55.
Orsotriœna, *Wallengren, Öfv. Kongl. Vet.-Akad. Förh.* xv (1858), p. 79; *Moore, Lep. Ind.* i, 1890–92, p. 168.

Type, *O. meda*, from India.
Range. Indo-Malayan Region.

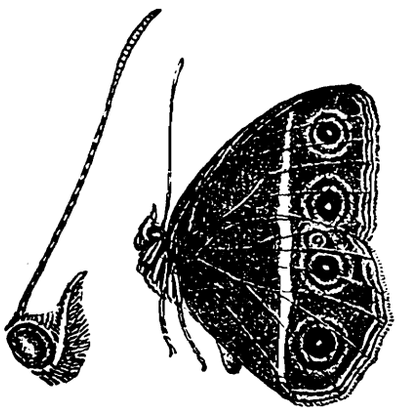

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Fig. 19.—*Orsotriœna meda.* Underside.
a. Head and antenna.

♂ ♀. Fore wing broadly triangular; costa arched; apex rounded; termen and dorsum nearly straight; tornus well-marked; vein 12 swollen only at base, 11 and 10 emitted before apex of cell, lower discocellular bent inwards. Hind wing broadly ovate, costa and termen slightly arched; apex distinct, dorsum nearly straight; vein 4 emitted before lower apex of cell. Head, thorax and abdomen slender; antennæ gradually clavate; palpi erect, third joint rather long cylindrical, bare, basal two with long stiff porrect hairs. ♂ Sex-mark a pencil of long hairs covering a fold on fore wing above vein 1, two recumbent pencils of hair on hind wing covering patch of specialized scales on each side of median vein.

72. **Orsotriœna meda**, *Fabr.* (Papilio) *Syst. Ent.* 1775, p. 488; *M. & de N.* (Mycalesis) *Butt. Ind.* i, 1883, p. 111; *Moore, Lep. Ind.* i, 1890–92, pp. 168 & 169, pl. 58, figs. 1, 1 *a*, 1 *b*, & 2, ♂ ♀.
Papilio hesione, *Cramer, Pap. Exot.* i, 1775, pl. 11, figs. C, D; *Wallengren* (Orsotriœna), *Öfv. Kongl. Vet.-Akad. Förh.* xv, 1858, p. 80.
Mycalesis runeka, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 234; *M. & de N. Butt. Ind.* i, 1883, p. 112, pl. 16, fig. 56 ♂.

Race mandata.

Mycalesis mandata, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 234; *id.* (Orsotriœna) *Lep. Ceyl.* i, 1880, p. 22, pl. 11, figs. 1, 1 *a*; *M. & de N. Butt. Ind.* i, 1883, p. 113; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 267, pl. A, figs. 1, 1 *a*, larva & pupa.
Mycalesis mandosa, *Butler, Cat. Satyr. Brit. Mus.* 1868, p. 139, pl. 3, fig. 9; *M. & de N. Butt. Ind.* i, 1883, p. 113.

Wet-season form.—♂ ♀ *Upperside* uniform vandyke-brown to blackish brown. Fore wing with a terminal, hind wing with subterminal and terminal slender whitish lines. *Underside* darker brown; both wings with distinct subterminal and terminal slender lines as above; a pure white, straight, transverse, narrow, discal band attenuate at both ends, and beyond it a line of white-centred, ochraceous and silvery-ringed black ocelli, two on the fore, three on

the hind wing; the apical ocellus on both wings the smallest, the apical two on hind wing most often enclosed in the same inner and outer rings. Antennæ, head, thorax and abdomen brown; antennæ speckled with white and ochraceous at apex.

Dry-season form.—Differs only in the ocelli and the subterminal and terminal lines, sometimes the transverse white band also, on the underside, being obsolescent.

Exp. ♂ ♀ 44–51 mm. (1·75–2″).

Hab. The Punjab, Oudh, Dehra Dun, Bengal, Sikhim, and the Central Provinces in Continental India; and to the east the Nága Hills, Assam, Cachar, Arrakan, the whole of Burma and Tenasserim, and the Andaman and Nicobar Islands. Found also southwards in the Malayan Subregion.

Race **mandata**, Moore.—Differs from *O. meda* in the white discal band on the underside being very much broader and proportionately more attenuate apically. Often the apical ocellus on the underside of both wings is in the wet-season form smaller than in *O. meda*.

Exp. ♂ ♀ 47–55 mm. (1·85–2·15″).

Hab. Southern India; Ceylon.

Larva. "Spindle-shaped, transversely rugose and rough two long setose spines on the head pointed forward and two central spines. The colour above is rosy-red with a blue dorsal and a white lateral line, below which the underparts are green."

Pupa. "Perpendicularly suspended, slender and regular, except that the head-case is produced into a long beak formed of two thin processes like split straws. Colour whitish brown, with faint striæ of a darker shade. It has much the look of a large grain of barley" (*Davidson & Aitken*). Food-plant, "*Oryza sativa*, Linn." (*de Nicéville*).

Genus **CŒLITES**.

Cœlites, *Boisduval, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1851, p. 367 :*M. & de N. Butt. Ind.* i, 1883, p. 100; *Moore, Lep. Ind.* i, 1890–92, p. 228.

Type, *C. nothis*, Westw., from the "East Indies."

Range. The Indo-Malayan Region.

♂ ♀ Wings comparatively broad. Fore wing triangular, costa evenly arched, apex somewhat produced but rounded; termen in ♂ strongly, in ♀ slightly concave; dorsum straight or slightly concave; cell over half length of wing; upper discocellular short, middle directed obliquely inwards, lower obliquely outwards; veins 10 and 11 from before apex of cell, vein 12 swollen at base. Hind wing very broadly oval, anterior half of termen concave, posterior half and the dorsal margin convex; tornus rounded; cell a little over half length of wing; discocellulars oblique; veins 3 and 4 stalked from a point well beyond apex of cell. Antennæ slender, a little over half length of fore wing, club very

long and gradual; palpi short, anteriorly densely scaled, without porrect hairs; eyes naked; intermediate femora long, longer than the tibiæ, not hairy beneath. The males bear a secondary sex-mark consisting of a glandular patch covered by a tuft of long hairs on the upperside of the hind wing, subapically on vein 1.

Three forms are recorded from India and Burma, of which one, *C. nothis*, the type of the genus, has not, so far as I know, been taken of late years, and may very possibly not come from within our limits.

Key to the forms of Cœlites.

a. Ocelli on underside of hind wing very unequal in size.	
a'. Ground-colour of wings on underside pale dull brown; postmedian transverse fascia on hind wing diffuse, very broad, terminal third of hind wing nearly concolorous with rest of underside	*C. nothis*, p. 71.
b'. Ground-colour of wings on underside dark purplish brown; postmedian transverse fascia on hind wing not diffuse, narrow; terminal third of hind wing brighter purple, contrasting with rest of underside ..	*C. adamsoni*, p. 72.
b. Ocelli on underside of hind wing subequal	*C. binghami*, p. 72.

73. **Cœlites nothis**, *Boisd. in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1851, p. 368, pl. 66, fig. 2 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 101; *Moore, Lep. Ind.* i, 1890–92, p. 229, pl. 75, fig. 2 ♂.

The following is Westwood's description of the ♂—"Wings large, splendidly glossed with purple on the upperside.. On the underside the basal half of the wing is dark brown, the apical half paler, with a pinkish gloss, with several slender brown streaks parallel with the apical margin (termen). The hind wings are much darker brown than the upper, and are marked with five ocelli varying in size, the second and outer one being the largest; they are black with a minute white pupil and a fulvous iris surrounded by a narrow brown circle."

No mention is made of any secondary sex-mark. A single ♀ is in the British Museum Collection. This has the upperside pale dull brown; basal area of both fore and hind wing shot with brilliant purple, both wings with an indistinct pale subterminal line or band. *Underside* similar, paler; basal area of wings dark brown, a postmedian transverse sinuous diffuse broad fascia and more clearly marked subterminal and terminal lines of dark brown on both fore and hind wing; beyond the fascia on the hind wing a curved series of five black ocelli, of which the apical and posterior two are very large, the other two minute; each ocellus with a white pupil, an inner ochraceous and outer brown ring. Antennæ, head, thorax and abdomen dull brown.

Exp. ♀ 80 mm. (3·2″).

Hab. East Indies.

74. **Cœlites adamsoni**, *Moore, Lep. Ind.* i, 1890–92, p. 229, pl. 75, figs. 1, 1 *a*, ♂ ♀.

♂ ♀. This form closely resembles *C. nothis*, Westw., but the ground-colour on both upper and under sides is a rich purple-brown. On the underside the basal dark brown area extends further towards the termen, the postmedian dark brown fascia is very slender, distinct and not diffuse; on the hind wing the row of ocelli is placed on a brown shaded area.

Exp. ♂ ♀ 67–72 mm. (2·64–2·85″).

Hab. So far recorded only from Bhamo, Upper Burma, where several specimens were taken by Col. Adamson in September and October.

75. **Cœlites binghami**, *Moore, Lep. Ind.* i, 1890–92, p. 230, pl. 75, figs. 3, 3 *a*, ♂.

Cœlites epiminthia, *M. & de N.* (*nec Westw.*) *Butt. Ind.* i, 1883, p. 101, pl. 13, fig. 31.

♂. *Upperside* rich purplish-blue; on the fore wing, the costa, the apex broadly, and the termen below the apex narrowly, and on the hind wing the termen narrowly and the anal fold rich hair-brown, slightly tinged with purplish on the apex of the fore wing. *Underside* brown, basal four-fifths of both fore and hind wings darker; a broad oblique, pale purplish, diffuse postmedian fascia, two parallel subterminal lines and a terminal one dark brown; hind wing with a curved row of five small subequal black ocelli; each ocellus minutely white-pupilled and surrounded by an ochraceous iris and an outer dark brown ring. Antennæ, head, thorax and abdomen brown.—♀. *Upperside* similar to that of the ♂, but "having a conspicuous subapical lavender band on the fore wing curving from the costa to the outer margin (termen), along which it continues until it gradually disappears on the outer margin of the hind wing" (*M. & de N.*).

Exp. ♂ ♀ 72–78 mm. (2·85–3″).

Hab. Tenasserim.

A local race of the Malay form *C. epiminthia*, differing in the absence of ocelli from the underside of the fore wing, and in the ocelli on the hind wing being black, not purplish brown.

Genus **LETHE**.

Lethe, *Hübner, Verz. bek. Schmett.* 1816, p. 56.
Zophoessa et Debis, *Dblday. in Dblday., Westw. & Hew. Gen. Di. Lep.* i, 1849, pp. 358 & 362, pl. 61, figs. 1 & 3.
Blanaida, *Kirby, Syn. Cat. Di. Lep., Suppl.* 1877, p. 699.
Hanipha, *Moore, Lep. Ceyl.* i, 1880, p. 18.
Rangbia, Nemetis, Tansima, Dionana, Sinchula, Kerrata, Putlia, et Patala, *Moore, Lep. Ind.* i, 1890–92, pp. 232, 237, 271, 273, 275 285, 287 & 305.

Type, *L. europa*, Fabr., from India.

Range. The Indo-Malayan Region.

The forms of *Lethe* are very numerously represented within our limits. "They are for the most part brown on the upperside, often with a prominent white bar on the fore wing, the underside being always ocellated, often richly variegated" (*de Nicéville*).

♂ ♀ Fore wing triangular, generally short; costa more or less arched, sometimes strongly curved towards the apex; termen straight, concave or oblique, never convex; dorsum straight or slightly convex; cell not quite half length of wing; discocellulars rather variable, upper two sometimes oblique, when the upper apex of the cell becomes rounded; typically, however, upper discocellulars very short, middle longer, somewhat concave, lower long, slightly oblique; veins 10 and 11 from a little before apex of cell; 12 swollen at base. Hind wing oval; termen strongly arched, scalloped, often caudate or dentate at apex of vein 4; cell less than half length of wing; discocellulars very oblique; vein 3 typically from apex of cell, very often from before apex, rarely stalked with 4. Antennæ under half length of fore wing; club distinct but gradual; palpi long, anteriorly fringed with porrect hairs, third joint short, slender, acute at apex; eyes hairy; intermediate and posterior femora scaled, hairy beneath. Males typically without secondary sexual characters, which are present, however, in a large number of the forms. These sex-marks consist of patches of specialized scales with or without overlying tufts of long hair, as in *Mycalesis*, and occur both on fore and hind wings, on fore wing only, or, in one aberrant form, on the hind wing only.

Although a certain amount of structural variation exists in this extensive genus, satisfactory characters for the arrangement of the numerous Indian forms under more than one genus seem to be lacking.

Key to the forms of Lethe.

A. Wings without any secondary sex-marks.
  a. Veins 3 and 4 of hind wing from apex of cell, or stalked.
    a'. ♂ without, ♀ with an oblique discal white band, or series of white spots on fore wing.
      a^2. Some of the ocelli on the underside of the hind wing with their centres disintegrated.
        a^3. Apical ocellus on underside of hind wing largest.
          a^4. Basal half of hind wing on underside brownish black, with a conspicuous pale or purplish transverse straight line.
            a^5. ♂ with two prominent preapical white spots; ♀ with a broad discal oblique white band on upperside of fore wing.. .... *L. europa*, p. 77.
            b^5. ♂ unknown; ♀ with a broad discal oblique bright ochraceous band on upperside of fore wing *L. tamuna*, p. 78.

b^4. Basal half of hind wing on underside mottled and shaded with greyish brown and purple; no distinct transverse line.

a^5. Upperside of fore wing in ♂ uniform, without white spots, in ♀ with oblique white discal band not extending below vein 2 ... *L. drypetis*, p. 79.

b^5. Upperside of fore wing in ♂ with a costal trifid and two preapical white spots, in ♀ with an oblique white discal band extending below vein 2.. ... . *L. rohria*, p. 80.

c^5. Upperside of fore wing in ♂ with a costal and two preapical spots as above, and a fourth white spot in interspace 2; ♀ with an oblique white discal band divided into three large spots. .. .. Race *nilgiriensis*, [p. 81.

b^3. Apical ocellus on underside of hind wing not largest, not larger than subtornal ocellus ... . *L. daretis*, p. 81.

b^2. None of the ocelli on underside of hind wing with their centres disintegrated.

a^3. Irides of ocelli on underside of hind wing pale ochraceous. .. .. *L. insana*, p. 81.

b^3. Irides of ocelli on underside of hind wing silvery purple.

a^4. A subapical transverse series of three ocelli on underside of fore wing.. Var. *dinarbas*, [p. 82.

b^4. A subapical transverse series of four ocelli on underside of fore wing... Var. *brisanda*, [p. 82.

b'. Both sexes with very broad oblique white discal band on upperside of fore wing.

a^2. Of comparatively small size. Expanse 54–64 mm. ..... . *L. confusa*, p. 82.

b^2. Larger. Expanse 84–96 mm.

a^3. Oblique band on upperside of fore wing in both sexes of even width throughout and tinged with ochraceous . *L. margaritæ*, [p. 83.

b^3. Oblique band on upperside of fore wing in ♀ (♂ unknown) narrowing towards dorsum and pure white .. ... *L. naga*, p. 83.

b. Vein 3 of hind wing from before, vein 4 from apex of cell.

a'. Hind wing not caudate.

a^2. Fore wing without an oblique white band on upperside.

a^3. Underside of fore wing with silvery-purple markings.

a^4. Underside of hind wing with ocelli in a regular curved row, none out of line.

a^5. Expanse 54–60 mm.; apical and subtornal ocelli on underside of hind wing largest.

a^5. A postdiscal series of black spots on upperside of hind wing — *L. sidonis*, p. 85.
b^6. No postdiscal series of black spots on upperside of hind wing — *L. vaivarta*, p. 85.
b^5. Expanse under 50 mm.; ocelli on underside of hind wing subequal — *L. nicetella*, p. 86.
b^4. Underside of hind wing with ocelli in an irregular row, subapical two ocelli out of line, nearer margin. — *L. siderea*, p. 86.
b^3. Underside of fore wing with ochraceous white markings.
a^4. Underside of fore wing with an ochraceous white bar across cell — *L. nicetas*, p. 86.
b^4. Underside of fore wing without an ochraceous white bar across cell... — *L. maitrya*, p. 87.
c^3. Underside of fore wing with pure white markings .. .. — *L. visrava*, p. 87.
b^2. Fore wing: both sexes with an oblique broad white discal band on upperside .
a^3. No white preapical spot on upperside of fore wing; two transverse sinuous silvery lines across basal area of hind wing on underside ... .. — *L. verma*, p. 84.
b^3. A prominent white preapical spot on upperside of fore wing; no silvery lines across basal area of hind wing on underside .. .. — *L. masoni*, p. 84.
b'. Hind wing distinctly caudate.
a^2. Ground-colour of underside bright ochraceous . .. . — *L. atkinsonia*, [p. 97.
b^2. Ground-colour of underside dull brown.
a^3. Basal area on underside of hind wing with two transverse, sinuous, slender, whitish lines. .. .. — *L. jalaurida*, p. 98.
b^3. Basal area on underside of hind wing with two comparatively broad, straight, transverse whitish bands .... . — *L. mœlleri*, p. 98.

B. Male secondary sex-marks on both fore and hind wing.
a. Upperside glossed with blue .. — *L. scanda* ♂, p. 88.
b. Upperside not glossed with blue.
a' Subbasal dark line on underside of hind wing nearly straight.
a^2. No ochraceous red on upperside of hind wing.
a^3. Cell of fore wing with a pale ochraceous-white transverse band on underside .. .. — *L. scanda* ♀, p. 88.
b^3. Cell of fore wing without a pale transverse band on underside.
a^4. Ground-colour of underside ferruginous — *L. bhairava*, p. 89.
b^4. Ground-colour of underside pale brown, no tint of ferruginous .. — *L. latiaris*, p. 90.
b^2. Hind wing in ♂ outwardly, in ♀ nearly all ochraceous red on upperside.... .. — *L. minerva*, p. 90.
b'. Subbasal dark line on underside of hind wing zigzag. — *L. gulnihal*, p. 89.

C. Male secondary sex-mark on fore wing only.
a. Sex-mark formed of a longitudinal patch of specialized scales overlapped by a tuft of long hair in interspace 1 .. .. *L. dynsate*, p. 91.
b. Sex-mark a more or less continuous series of patches of specialized scales, crossing wing from dorsal margin to subcostal vein or to base of vein 7.
a'. No ochraceous red on upperside of hind wing.
a^2. Ground-colour on basal two-thirds of wings on underside much darker than on apical third .. .. *L. vindhya*, p. 92.
b^2. Ground-colour on underside of wings more uniform.
a^3. Centres of ocelli on underside of hind wing disintegrated . .. . *L. satyavati*, p. 93.
b^3. Centres of ocelli on underside of hind wing not disintegrated.
a^4. Underside of fore wing with a broad pale bar across cell ... . . *L. serbonis*, p. 93.
b^1. Underside of fore wing without a broad pale bar across cell . .. . . *L. kansa*, p. 92.
b' Hind wing in ♂ outwardly, in ♀ entirely ochraceous red.
a^2. Upperside of fore wing with three conspicuous nearly white spots near apex . *L. sinorix*, p. 94.
b^2. Upperside of fore wing without such spots.
a^3. Discal line or band on underside of hind wing broadly deflected outwards, scarcely angulate between veins 3 and 4 .. . . *L. mekara*, p. 95.
b^3. Discal line or band on underside of hind wing acutely angulate on and produced along and above vein 4.
a^4. Upperside of fore wing in ♂ much darker at base than towards apex. Upperside of hind wing in ♀ uniform brick-red, not darker towards base ... . *L. chandica*, p. 94.
b^1. Upperside of fore wing in ♂ more uniform, not darker at base than apex. Upperside of hind wing in ♀ bright ochraceous red, basal half darker, this shade abruptly defined outwardly .. .. *L. distans*, p. 95.
c. Sex-mark an oblique series of four triangular, more or less separate patches of specialized scales on veins 1 to 4 on upperside of fore wing.
a' Underside of fore wing in ♂ with a transverse subapical series of four or five violaceous spots... .. . . *L. tristigmata*, [p. 96.
b'. Underside of fore wing in ♂ (♀ unknown) without such spots *L. lyncus*, p. 96.

d. Sex-mark a continuous but very obscure, almost obsolete band of specialized scales running obliquely from veins 1 to 4 on upperside of fore wing.
a' Expanse under 65 mm.
*a*². Apex of cell on underside of fore wing inwardly defined by a narrow band of white . .. . *L. baladeva*, p. 99.
*b*². Apex of cell on underside of fore wing not defined by a band of white.
*a*³. A postdiscal transverse series of small conspicuously black ocelli on underside of fore wing .. . .. [p. 99. *L ramadeva*,
*b*³. No postdiscal transverse series of ocelli on underside of fore wing, or series very indistinct [p. 100. *L. andersoni*,
b'. Expanse over 75 mm.
*a*². Upperside of fore wing not spotted.
*a*³. Postdiscal broad band on upperside of hind wing rich brown . ..
*a*¹. Underside ground-colour brown . *L. sura*, p. 100.
*b*¹. Underside ground-colour pale ochraceous ... ... [p. 100. *L. goalpara*,
*b*³. Postdiscal broad band on upperside of hind wing brownish white .. . *L. dura*, p. 101.
*b*². Upperside of fore wing conspicuously spotted.
*a*³. Veins on upperside of fore wing not defined with yellow.
*a*⁴. Dorsal margin on upperside of hind wing broadly uniform brown ... *L. bhadra*, p. 101.
*b*⁴. Dorsal margin and disc on upperside of hind wing bright ochraceous yellow. Seasonal form [*khasiana*, p. 102.
*b*³. Veins 1 to 4 at base and median vein entirely on upperside of fore wing conspicuously defined with yellow .... . *L. pulaha*, p. 102.
e. Sex-mark a large continuous patch of specialized scales from posterior margin to vein 4 extending across median vein into apex of cell.
a'. Underside of wings with a more or less conspicuous transverse greyish-white postdiscal fascia .. .. [p. 103. *L. muirheadi*,
b'. Underside of wings without such fascia *L. yama*, p. 103.

76. **Lethe europa**, *Fabr.* (Papilio) *Syst. Ent.* 1775, p. 500; *M. & de N. Butt. Ind.* i, 1883, p. 149; *Moore, Lep Ind.* i, 1890-92, p. 254, pl. 82, figs. 1–1 *c*, ♂ ♀; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 350.

♂ ♀ Inner third of hind wing covered with long brown hairs. ♂. *Upperside* rich dark brown. Fore wing with the oblique short white discal fascia on the underside showing through, two obscure black spots or ocelli, followed by two prominent white spots, the upper one double, some black markings margined outwardly with pale dusky brown along terminal margins of both fore and hind wing and an obscure subterminal pale line on the

latter. *Underside* very dark blackish brown; the wings crossed subbasally by a slender lilacine-white straight line, followed on fore wing by an oblique short white discal fascia, and on both fore and hind wing by a post-discal series of large black ocelli and a terminal, somewhat ochraceous, narrow band bordered on the inner side by a more or less silvery purple line. The series on both fore and hind wing margined inwardly and outwardly by silvery purple lunular lines, on the fore wing curved inwards, on the hind wing curved outwards; the ocelli on fore wing confluent, black, non-pupilled, on the hind wing black with disintegrate silvery-speckled irregular centres on a brown ground.— ♀ Similar: fore wing on *upperside* with an oblique broad white discal band, hind wing with a postdiscal incomplete series of black spots. *Underside* similar to the underside in the ♂, markings and ocelli larger.

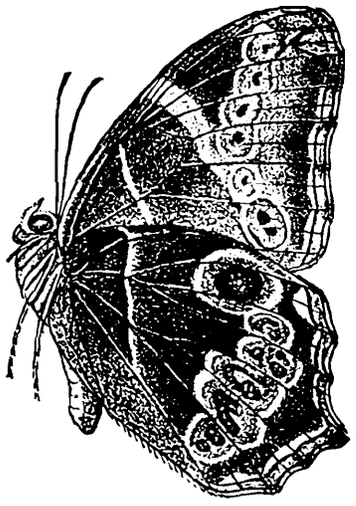

Fig. 20.—*Lethe europa*, ♂

Exp. ♂ ♀ 62–76 mm. (2·45–3″).

Hab. The plains of Northern India; lower hills of the Himalayas; Assam; Burma; Tenasserim; extending to China and the Malay Peninsula.

Larva. Green, paler beneath, fusiform; head with a single short erect horn; body attenuated suddenly from the 11th segment.

Pupa. Uniform pale green, stout, smooth, quite regular, except the head-case which is semidetached, broad and angular, with two sharp points in front (after *Davidson & Aitken*).

77. **Lethe tamuna**, *de Nicéville, P. Z. S.* 1887, p. 449, pl. 39, fig. 6 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 256, pl. 82, fig. 2 ♀

♀ "*Upperside* dull dark fulvous. *Fore wing* with the apical half fuscous, bearing two pure white spots below the costa, placed midway between the apex and the median ochreous band, the upper of the two spots much the smaller, and divided into two portions by the fourth subcostal nervule; below these spots in the upper discoidal interspace is an obscure oval black spot; near the margin are four bright ochreous lunules placed between the veins from the lower discoidal nervule to the inner angle, beyond these lunules in each interspace is a fine ochreous line across the disc of the wing; from the middle of the costa to near the inner angle is a broad bright ochreous band, its inner edge nearly straight and even, its outer edge produced into points between the veins, the lower portion of the band composed of two spots (the lower one very small) in the submedian interspace. *Hind wing* with the ocelli of the underside more or less showing through by transparency; a series of bright ochreous lunules with inner dark

borders placed near the outer margin between the veins, with a darker ochreous line beyond. *Underside* dull brown. *Fore wing* with a whitish subbasal line crossing the middle of the discoidal cell from the subcostal to the submedian nervure; the broad discal band as above, but with its edges more even and wider at its lower end; beyond it are four ill-shaped ocelli with black pupils dotted with white, a pale violet ring, then a brown ring and an outer pale violet ring; the margin marked much as above. *Hind wing* with a subbasal line in continuation of that on the fore wing not reaching the abdominal margin; a discal series of ocelli placed on a violet band which more or less follows their outline; the upper ocellus very large, its centre deep black dotted with white, then a broad rich ochreous ring, outwardly defined with a fuscous ring; the next largest ocellus is in the first median interspace, with two very small equal-sized ocelli in the interspaces above and below it, and two very small and indistinct ocelli divided by the discoidal nervule; the bright ochreous lunules on the margin of the upperside white, almost silvery on the underside." (*de Nicéville.*)

Exp. "♀ $2\frac{1}{8}$ inches" (72 mm.).

Hab. Little Nicobar.

78. **Lethe drypetis** (Pl. II, fig. 16), *Hewitson* (Debis), *Ex. Butt.* iii, 1863, p. 76, Debis, pl. 2, figs. 11, 12, ♀; *Moore, Lep. Ceyl.* i, 1880, p. 17, pl. 8, figs. 1, 1 *a*, 1 *b*, ♂ ♀, pl. 210, figs. 5, 5 *a*, larva & pupa; *M. & de N. Butt. Ind.* i, 1883, p. 150; *Moore, Lep. Ind.* i, 1890-92, p. 257, pl. 83, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva & pupa.

Lethe todara, *Moore, Trans. Ent. Soc.* 1881, p. 305; *M. & de N. Butt. Ind.* i, 1883, p. 151.

♂ *Upperside* very dark vandyke-brown; fore wing uniform; hind wing with a postdiscal series of three or four blind black ocellar spots. *Underside* brown; fore wing below vein 2 and terminal margin paler, a broad band across the cell, the wing medially and at apex suffused with lilac, bearing an incurved postdiscal series of five blind black ocelli. Hind wing: subbasal and discal narrow transverse lilac bands, the former sinuous, the latter angulated on vein 4, and an arched postdiscal series of black fulvous-ringed ocelli, some with disintegrate centres; the wing medially suffused with lilac, the ocelli with lilacine lunules on both sides. Fore and hind wings with slender lilacine subterminal and broader ochraceous terminal lines.—♀. Similar, ground-colour paler; a broad oblique white discal bar and two white preapical spots on the upperside of the fore wing; a large, rectangular, black subterminal mark in interspaces and a white spot above and below it, on the upperside of the hind wing. *Underside* similar to the underside in the ♂, all the markings more prominent, the lilac, ochraceous and brown shades paler; the broad discal bar on fore wing, as on the upperside, joined by a nearly vertical lilacine white band bearing the series of ocelli.

On the hind wing the brown transverse discal band very broadly produced between veins 4 and 5. Antennæ, head, thorax and abdomen brown; antennæ ochraceous at apex.

Exp. ♂ ♀ 64–68 mm. (2·55–2·7″).

Hab. Southern India; Ceylon.

Larva. "Fusiform; head conical, the vertex pointed and projected forward, anal segment pointed and projected hindward. Colour pale green, with paler transverse lines on each segment; a lateral and a sublateral pale-bordered reddish stripe extending the whole length including the anal segment. Feeds on bamboo." (*Moore.*)

Pupa. "Suspended by the tail, broad and truncated anteriorly, abdominal segments dorsally convex, head and vertex both pointed; colour pale green." (*Moore.*)

79. **Lethe rohria**, *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 45; *Awivil.* (Papilio) *Ent. Tidsk.* 1897, p. 142.

Lethe dyrta, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 497, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 152, pl. 10, fig. 22 ♂ ♀; *Moore, Lep. Ind.* i, 1890–92, p. 259, pl. 82, figs. 3, 3 *a*–3 *c*, ♂ ♀.

Race nilgiriensis.

Lethe neelgheriensis, *Guérin* (Satyrus), *Delessert, Voy. dans l'Inde*, pt. 2, 1843, p. 74, pl. 21, figs. 1, 1 *a*, ♂; *Moore, Lep. Ceyl.* i, 1880, p. 16, pl. 7, figs. 1, 1 *a*, ♂ ♀, pl. 210, fig. 4, larva; *M. & de N. Butt. Ind.* i, 1883, p. 153; *Moore, Lep. Ind.* i, 1890–92, p. 261, pl. 84, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva.

♂ ♀ *Upperside* vandyke-brown, slightly darker, especially in the ♀, towards apex of fore wing. ♂ Fore wing: a costal and two preapical spots white. Hind wing: the ocelli of the underside showing through, sometimes forming two or three obscure black spots; two slender subterminal black lines. *Underside* paler, shaded with dark brown. Fore wing: narrow subbasal and outer cellular transverse sinuous white lines; an irregular broad discal and a narrower postdiscal band white, forming a **V**, the latter bearing a series of four blind, dusky-black, fulvous-ringed ocelli; the two preapical white spots as on the upperside, distinct slender subterminal whitish and broader terminal ochraceous lines. Hind wing: a subbasal transverse sinuous white line; a postdiscal arched series of six black ocelli, their centres disintegrated, their inner ring ochraceous, outer brown, and the whole series bordered inwardly and outwardly by lilacine white lines; finally a slender white subterminal and a broader ochraceous terminal line as on the fore wing.—♀. *Upperside* differs in having a broad, oblique, white, discal band on the fore wing and a spot below its posterior end in interspace 1, the inner border of the band bi-emarginate, the outer irregularly sinuous. *Underside* as in the ♂, but the markings more pronounced, the white discal band on fore wing very prominent. Antennæ, head, thorax and abdomen brown; antennæ preapically black, at apex ochraceous.

Exp. ♂ ♀ 62–70 mm. (2·45–2·8″).

Hab. The Himalayas from Kashmir to Sikhim, and Bhutan; Assam; Burma; Tenasserim; extending to China.

There is no doubt that this form, known better under Felder's name, is the true *Papilio rohria* of Fabricius.

Race **nilgiriensis**, Guérin.—♂. Differs only from the ♂ of the typical form in having on the upperside of the fore wing an additional white spot placed terminally in interspace 2; the ♀ differs from the ♀ of the typical form in having on the upperside of the fore wing the discal white band divided into three distinct well-separated white spots, and on the underside in the same band being distinctly narrower.

Exp. ♂ ♀ 64–66 mm. (2·5–2·6″).

Hab. Central and Southern India; recorded on the western side as far north as Mount Abu in Gujerat; Ceylon.

Larva. "Fusiform, elongated; head conical, the vertex being prolonged to an acute point projecting forward and anal segment also prolonged to a point projecting backwards. Colour green, with darker dorsal and lateral stripes and a slight ochreous subdorsal stripe." (*Moore.*) "Feeds on grasses" (*Green*).

80. **Lethe daretis**, *Hewitson* (Debis), *Exot. Butt.* iii, 1863, p. 75, Debis, pl. ii, figs. 7 & 8, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 151; *Moore, Lep. Ind.* i, 1890–92, p. 263, pl. 83, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂ ♀ Differs from *L. rohria* (*L. dyrta*, Felder) in the costa of the fore wing being less strongly arched, in the hind wing being narrower, with a more elongate and slender tail, and in the darker and more uniform colour of the upperside. In markings it differs slightly as follows:—♂ *Upperside*: fore wing—costal and preapical white spots minute and tinged with ochraceous; hind wing with a postdiscal series of five blind black ocelli and a dark subterminal sinuous line beyond. *Underside* differs in being darker and more suffused with purple, especially on the hind wing; also on the hind wing the series of postdiscal ocelli are more uniform in size, the apical not larger than the subtornal ocellus, and their centres are not disintegrated.—♀. *Upperside*: fore wing—the oblique white discal band narrower than in *L. rohria*: the series of black spots on hind wing very prominent, margined inwardly and outwardly with pale ochraceous white. *Underside* more or less resembling the underside in *L. rohria*, but richer in colouring, the ocelli on the hind wing sometimes bipupilled but never disintegrate.

Exp. ♂ ♀ 60–64 mm. (2·35–2·5″).

Hab. Ceylon, 4000–6000 feet.

81. **Lethe insana**, *Kollar* (Satyrus), *Hügel's Kaschmir*, iv, 1844, pt. 2, p. 448, pl. 16, figs. 3, 4, ♀.

Lethe hyrania, *Kollar* (Satyrus), *Hügel's Kaschmir*, iv, 1844, pt. 2, p. 449, pl. 17, figs. 1, 2, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 154; *Moore, Lep. Ind.* i, 1890–92, p. 266, pl. 85, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Debis dinarbas, *Hewitson, Ex. Butt.* iii, 1863, p. 77, Debis, pl. 3, fig. 15; *M. & de N.* (Lethe) *Butt. Ind.* i, 1883, p. 155; *Moore* (Lethe), *Lep. Ind.* i, 1890–92, p. 267, pl. 85, figs. 2, 2 *a*, 2 *b*, ♂ ♀.
Lethe brisanda, *de Nicéville, J. A. S. B.* 1886, p. 249, pl. 11, fig. 13 ♀.

♂. *Upperside* rich vandyke-brown to dark brown. Fore wing with the discal oblique pale band on the underside showing through and two minute ochraceous preapical spots. Hind wing uniform, a postdiscal curved series of four round black spots, the apical spot sometimes elongate, subterminal and terminal slender black lines. *Underside* paler. Fore wing with the basal half darkest; a broad oblique pale discal bar followed by a preapical short narrow band bearing three white-centred obscure small ocelli; apex of wing very pale; two short transverse cellular and a subterminal, inwardly diffuse, narrow band dark brown. Hind wing with subbasal, median, and subterminal slender transverse brown lines, and a curved postdiscal series of black ocelli, each with a minute white centre, inner ochraceous, intermediate brown and outer pale rings.—♀ Differs from the ♂ in having on the upperside of the fore wing a broad oblique white band (narrower and sometimes broken in the varieties *L. dinarbas* and *L. brisanda*) nearly reaching the tornus, and the preapical spots white, not ochraceous. *Underside*: oblique white band on fore wing as on upperside, margined inwardly by an irregular shading and outwardly by a triangle of dark brown, beyond the latter the terminal margin broadly pale yellowish brown, with three small ocelli in vertical order and subterminal and terminal brown lines as in the ♂. Hind wing as in the ♂. Antennæ, head, thorax and abdomen brown; antennæ annulated with white.

Exp. ♂ ♀ 55–62 mm. (2·15–2·42″).

Hab. N.W. and E. Himalayas; Bhutan; the hill-ranges of Assam.

The richer-coloured eastern varieties, *L. dinarbas* and *L. brisanda*, differ only in being darker and in the underside being suffused with lilac.

82. **Lethe confusa**, *Aurivillius, Ent. Tids.* 1897, p. 142.
Debis rohria, *Westwood* (nec *Fabr.*) *in Dbldy., Westw. & Hew. Gen. Di. Lep.* 1851, p. 360.
Lethe rohria, *auct.* (nec *Fabr.*).

♂ ♀. Hind wing dentate at apex of vein 4. *Upperside* vandyke-brown; fore wing crossed by an oblique, slightly curved, discal white band, the margins of the band more even and regular than in the ♀ of *L. rohria*; beyond this are two obliquely placed preapical white spots. Hind wing uniform, ocelli of the underside showing through. *Underside* uniform brown; fore and hind wings with subbasal, subterminal and terminal sinuous lilacine-white lines; fore wing with the oblique discal white bar as on the upperside, followed by a subapical lilacine patch bearing three

small ocelli in vertical order, and with a very short, oblique, white bar joining it to the costa. Hind wing with a sinuous, irregular, angulated discal lilacine-white line and a strongly arched series of black ocelli speckled with white in the centre, with an inner ochraceous, intermediate brown, and outer lilacine ring. Antennæ, head, thorax and abdomen dull brown; antennæ ochraceous at apex.

Exp. ♂ ♀ 54–64 mm. (2·1–2·5″).

Hab. The Himalayas, Simla to Sikhim; Assam; Burma; Tenasserim; extending to Java.

83. **Lethe margaritæ**, *Elwes*, *P. Z. S.* 1882, p. 405, pl. 25, fig. 1 ♂; *M. & de N.* (Neorina) *Butt. Ind.* 1883, i, p. 136, ♂; *Moore* (Dionana), *Lep. Ind.* i, 1890–92, p. 271, pl. 86, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀. Hind wing broadly caudate. ♂. *Upperside* very dark brown, the wings with slender subterminal and terminal sinuous lines and the cilia ochraceous white. Fore wing: a narrow, oblique, ochraceous-white discal band, followed by a postdiscal series of four dark brown, broadly white-ringed spots. Hind wing uniform; a postdiscal series of ochraceous-ringed black spots, the lower one or two pupilled with white. *Underside* slightly paler, fore and hind wings with prominent ochraceous-white discal bands and subterminal and terminal lines; fore wing in addition with a postdiscal transverse series of five black ocelli placed on a white fascia, the ocelli with inner and outer rings of ochraceous and brown; costa suffused with ochraceous white. Hind wing—terminal third ochraceous white suffused with brown, bearing a curved series of black, white-pupilled ocelli, of which the apical ocellus is very large.—♀ Differs from the ♂ in the apex of the fore wing on the upperside being much darker, in the purer white of the discal bands which are also broader, and in having a white, transverse, cellular band on the underside of the fore wing.

Exp. ♂ ♀ 84–96 mm. (3·35–3·8″).

Hab. Recorded hitherto only from Bhutan.

84. **Lethe naga**, *Doherty*, *J. A. S. B.* 1889, p. 123, pl. 10, fig. 4 ♀; *Moore* (Dionana), *Lep. Ind.* i, 1890–92, p. 272, pl. 86, fig. 2 ♀.

♂ Unknown. ♀ Somewhat resembles *L. margaritæ*. Hind wing more rounded, not caudate. *Upperside*: ground-colour much paler, more of an ashy-brown; discal band on fore wing narrower, pure white; the series of ocelli on both fore and hind wing and the subterminal line on the hind wing less distinct. *Underside* paler. Fore wing with the oblique white discal band and transverse postdiscal series of ocelli more or less as in *L. margaritæ*, the former narrower, the latter not superposed on a white fascia; each ocellus pupilled with white, with inner and outer rings of white, and an intermediate ring of brown. Hind wing with a

pale, anteriorly lilacine, irregularly curved discal fascia bordered on both sides by brown lines, followed by a strongly curved postdiscal series of black ocelli, each ocellus white-centred, with an inner ochraceous, intermediate brown and outer lilacine ring. Antennæ, head, thorax and abdomen greyish brown; thorax and abdomen beneath paler.

Exp. ♀ 80 mm. (3·2″).

Hab. Recorded only as yet from Margherita in Assam.

85. **Lethe verma**, *Kollar* (Satyrus), *Hügel's Kaschmir*, iv, 1844, p. 447, pl. 16, figs. 1, 2; *M. & de N. Butt. Ind.* i, 1883, p. 158, pl. 10, fig. 23 ♂; *Moore* (Tansima), *Lep. Ind.* i, 1890–92, p. 273, pl. 86, figs. 3, 3 *a*, 3 *b*, ♂ ♀

♂ ♀ *Upperside* brown. Fore wing with a broad, even, oblique, white discal band, terminating above apex of vein 2 near termen; in the ♀ continued below vein 2. Hind wing with two or three postdiscal small, obscure, white-centred black ocelli; both fore and hind wing with faintly marked, pale subterminal and terminal lines. *Underside*: ground-colour similar. Fore wing with the white, oblique band as on the upperside, followed by two white-centred, ochraceous-ringed, black ocelli. Hind wing with two very irregular, lilacine, sinuous, transverse lines and a strongly arched postdiscal series of white-centred black ocelli, each encircled with an ochraceous, a brown, and a silvery ring. Fore and hind wings with subterminal and terminal pale ochraceous lines. Antennæ, head, thorax and abdomen brown; antennæ ochraceous at apex.

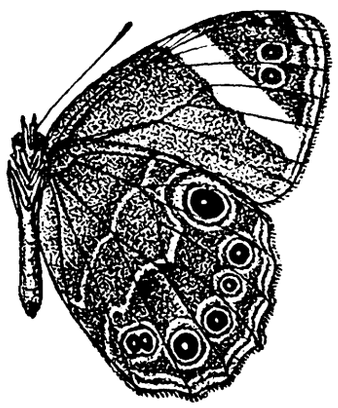

Fig. 21.—*Lethe verma*, ♂. Underside.

Exp. ♂ ♀ 56–64 mm. (2·3–2·5″).

Hab. The Himalayas from Kashmir to Sikhim; Assam; Burma; Tenasserim.

86. **Lethe masoni**, *Elwes* (Debis (Tansima)), *P. Z. S.* 1882, p. 405, pl. 25, fig. 2; *M. & de N. Butt. Ind.* i, 1883, p. 159; *Moore* (Chonala), *Lep. Ind.* ii, 1893–96, p. 15, pl. 97, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀. Closely resembles *L. verma*, but on the upperside the ground-colour is generally darker, the discal oblique white band on fore wing slightly curved not straight; there is a prominent preapical white spot with a black ocellus below and a white speck above it; the cilia are brown. Hind wing: apex narrowly and the cilia down to vein 2 white, remainder of the cilia brown. *Underside* similar to upperside, fore wing with pale slender subterminal and terminal lines. Hind wing: basal area irrorated with greyish-white scales and crossed by two slender, broken, dark brown lines; a postdiscal curved series of rather large, more or

less subequal, white-centred black ocelli, and subterminal and terminal greyish-white lines. Antennæ, head, thorax and abdomen dark brown.

Exp. ♂ ♀ 66–72 mm. (2·63–2·85″).

Hab. Recorded only from Sikhim at present.

87. **Lethe sidonis** (Pl. II, fig. 17), *Hewitson* (Debis), *Ex. Butt.* iii, 1863, p. 77, Debis, pl. 3, fig. 16 ♂ ; *M. & de N. Butt. Ind.* i, 1883, p. 159; *Moore* (Sinchula), *Lep. Ind.* i, 1890–92, p. 276, pl. 87, figs. 1–1 *c*, ♂ ♀.

♂ ♀ *Upperside* umber-brown with a rich silky gloss. Fore wing: the discal fascia on the underside showing through obscurely, and a pale preapical spot, both more distinct in the ♀. Hind wing with a postdiscal series of more or less obscure black spots, dorsal margin pale. Both fore and hind wing with an indistinct subterminal lunular border. Ocelli and border more distinct in the ♀ *Underside* paler, the wings with a subterminal pale lilacine line. Fore wing: an obscure brown band across the cell, a pale, broad, oblique discal, and a similar subapical transverse fascia not reaching the dorsum, the latter two margined anteriorly with white. The fascia better defined in the ♀. The outer fascia in the ♂ with three, in the ♀ with four superposed ocelli. Hind wing: four irregular, sinuous, transverse lilacine lines, the outermost bordered by a zigzag band of dark brown; a postdiscal curved series of white-centred black ocelli, of which the second from the tornus and the apical ocellus are the largest. Each ocellus with an inner ochraceous, intermediate brown, and outer lilacine ring. Dry-season specimens have the underside darker, the markings broader, the ocelli with larger blurred centres. Antennæ, head, thorax and abdomen brown; antennæ ochraceous at apex.

Exp. ♂ ♀ 54–60 mm. (2·13–2·38″).

Hab. Sikhim; Bhutan; Sylhet; Assam, the Nága and Khási Hills.

The form next described is very close to, if not a mere race of *L. sidonis*, but as, according to Mr. Doherty, the genitalia of the two forms differ, I have kept them separate.

88. **Lethe vaivarta**, *Doherty, J. A. S. B.* 1886, p. 115, ♂ ♀; *Moore* (Sinchula), *Lep. Ind.* i, 1890–92, p. 278, pl. 87, figs. 2, 2 *a*–2 *c*, ♂ ♀

♂ ♀ This form differs from *L. sidonis* as follows:—Termen of hind wing nearly entire, not much scalloped. *Upperside* uniform silky umber-brown. Hind wing without trace of postdiscal black spots. *Underside* comparatively darker, more uniform, the markings very obscure. Genitalia of ♂: "Prehensores close to those of *sidonis*. The uncus is more bent down, appearing truncate from above and flattened laterally, while in *sidonis* it appears acute from above and is cylindrical" (*Doherty*).

Exp. ♂ ♀ 55–58 mm. (2·17–2·3″).

Hab. N.W Himalayas, Kulu to Mussoorie.

89. **Lethe nicetella**, *de Nicéville, P. Z. S.* 1887, p. 448, pl. 39, fig. 5 ♂; *Moore* (Sinchula), *Lep. Ind.* i, 1890–92, p. 279, pl. 88, fig. 2 ♂.

♂ ♀ Very close to *L. sidonis*, but constantly smaller. *Upperside* uniform silky umber-brown. Fore wing: ♂ no ochraceous preapical spot; ♀ a medial and a preapical large white spot on costa. Hind wing: the postdiscal series of black spots more distinct and complete. *Underside*: fore wing—the terminal half distinctly paler, contrasting with the dark basal portion; the latter outwardly margined near the costa with ochraceous white; a preapical costal spot as on upperside and the apex broadly ochraceous or ferruginous. Hind wing as in *L. sidonis*, but the ocelli subequal. Antennæ, head, thorax and abdomen as in *L. sidonis*.

Exp. ♂ ♀ 50–53 mm. (2–2·1″).

Hab. Recorded only from Native Sikhim at 7000 feet.

90. **Lethe siderea**, *Marshall, J. A. S. B.* 1880, p. 246; *M. & de N. Butt. Ind.* i, 1883, p. 159; *Elwes, Trans. Ent. Soc.* 1888, p. 315, pl. ix, fig. 3; *Moore* (Sinchula), *Lep. Ind.* i, 1890–92, p. 280, pl. 88, figs. 3, 3 *a*, ♂

♂ *Upperside*: uniform dark greenish bronze, slightly paler and browner along the dorsal fold of the hind wing. *Underside* vandyke-brown; fore wing uniform; both fore and hind wing with a lilacine-white, slender, subterminal line; cilia alternately lilacine and brown. Hind wing: basal two-thirds with transverse, somewhat broken, sinuous, lilacine lines, followed on the outer third by a strongly curved series of black, white-centred, fulvous-ringed ocelli, of which the tornal ocellus is bipupilled, the next to it the largest, the 3rd and the apical subequal, the intervening two smaller. Antennæ brown annulated with white, ochraceous at apex, with a preapical spot jet-black; head, thorax and abdomen brown.

Exp. ♂ 54 mm. (2·15″).

Hab. Native Sikhim at 7000 feet.

The ♀ is unknown.

91. **Lethe nicetas**, *Hewitson* (Debis), *Exot. Butt.* iii, 1863, p. 78, Debis, pl. 3, figs. 17, 18, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 161; *Moore* (Sinchula), *Lep. Ind.* i, 1890–92, p. 282, pl. 88, figs. 4 *a*–4 *c*, ♂ ♀

♂ *Upperside* rich golden brown; cilia brown alternated with white. Fore wing uniform. Hind wing with an arched postdiscal series of five blind black ocelli. *Underside*: fore wing—basal portion to beyond apex of cell brown, margined by a pale, slightly arched, oblique discontinuous discal band, not extending to the tornus; apical portion of wing paler brown, a postdiscal transverse, slightly oblique white band, succeeded by three white-centred, brown, obscure ocelli and a pale subterminal broad line. Hind wing—basal two-thirds dark brown with an irregular outer margin; apical third paler, in strong contrast. Basal area crossed by silvery, plumbeous, irregularly sinuous, transverse lines; the

pale outer area by an arched postdiscal series of six white-centred black ocelli; each ocellus with inner, intermediate and outer rings of ochraceous, brown and silvery respectively. The row of ocelli irregularly bordered with ochraceous inwardly, a subterminal series of indistinct white markings and a terminal brown line.

♀ Very similar, but the fore wing has on the upperside a postdiscal series of yellowish-white spots, single to interspace 3, then forking, the inner branch curving into an oblique streak beyond apex of cell, the outer branch continued as a series of spots to costa. Hind wing with a broad subterminal ochraceous line. *Underside* similar to the underside in the ♂, but all the markings broader. Antennæ brown annulated with white; head, thorax and abdomen brown.

Exp. ♂ ♀ 56–68 mm. (2·2–2·7″).

Hab. The Himalayas from Kulu to Sikhim above 3000 feet.

92. **Lethe maitrya**, *de Nicéville, J. A. S. B.* 1880, p. 245, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 160, pl. 10, fig. 20 ♂; *Moore* (Sinchula), *Lep. Ind.* i, 1890–92, p. 281, pl. 88, figs. 1, 1 *a*, ♂ ♀.

♂ ♀ Like *L. nicetas*, but on the upperside the ground-colour is darker; the ♂ has on the fore wing the transverse fascia from the underside showing through, and a pale preapical costal spot. On the hind wing the series of ocellar markings is very obscure. The ♀ resembles more closely the ♀ of *L. nicetas* on the upperside. Hind wing less dentate at apex of vein 4. *Underside*, both sexes: ground-colour more uniform over the wings than in *L. nicetas*. Fore wing: a short, broad, oblique fascia across the cell. Hind wing: the transverse silvery lines crossing basal area more regular and more whitish than silvery; ocelli brown not black, not bordered inwardly with ochraceous.

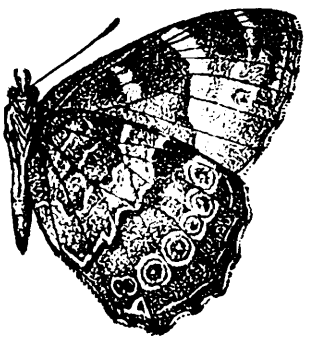

Fig. 22.
Lethe maitrya.
Underside.

Exp. ♂ ♀ 56–66 mm. (2·2–2·6″).

Hab. Himalayas from Simla to Sikhim.

93. **Lethe visrava**, *Moore* (Debis), *P. Z. S.* 1865, p. 768, pl. 41, fig. 4; *M. & de N. Butt. Ind.* i, 1883, p. 161; *Moore* (Sinchula), *Lep. Ind.* i, 1890-92, p. 284, pl. 89, figs. 1, 1 *a*–1 *c*, ♂ ♀
Debis deliades, *Hewitson, Ent. Month. Mag.* ix, 1872, p. 84, ♀; *M. & de N.* (Lethe) *Butt. Ind.* i, 1883, p. 162.

♂ *Upperside* blackish brown; cilia white. Fore wing with the ocelli on the underside showing through and a prominent subterminal white line. Hind wing with a postdiscal series of black blind ocelli, bordered paler inwardly, and broadly with white on the outer side, followed by a row of brown lunular markings,

subterminal white and terminal slender dark lines. *Underside* brown, paler outwardly. Fore wing with a subapical series of three or four white-centred and white-ringed dark ocelli and a subterminal white line. Hind wing: basal two-thirds crossed by interrupted, transverse, sinuous white lines, followed by a post-discal curved series of six white-centred, ochraceous-ringed, black ocelli, each with an outer ring of white, the tornal ocellus bipupilled; the proportions among the ocelli very much as in *L. siderea*. Lastly, a conspicuous subterminal white line.— ♀. *Upperside* white. Fore wing: the cell, a spot below its apex, another more obscure spot below that, a spot near the tornus, the apex broadly and the termen, narrowing somewhat posteriorly, brown. Hind wing: the basal area slightly, six postdiscal round ocellar spots placed in a curve, subterminal and terminal slender lines brown. *Underside* white: fore wing uniform, with ochraceous subterminal and terminal slender lines; hind wing with some marks in the cell and on the disc ochraceous, the ocelli black with white centres and broad ochraceous rings, the termen pale ochraceous, bearing an incomplete subterminal row of ochraceous lunules, followed by a slender white line. Antennæ, head, thorax and abdomen brown; whitish beneath.

Exp. ♂ ♀ 56–62 mm. (2·2–2·44″).

Hab. Sikhim; Bhūtan.

94. **Lethe scanda**, *Moore* (Debis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 218; *M. & de N. Butt. Ind.* i, 1883, p. 139; *Moore* (Rangbia), *Lep. Ind.* i, 1890–92, p. 232, pl. 75, figs. 4, 4 *a*, 4 *b*, ♂ ♀.

♂. *Upperside* deep indigo-blue; fore and hind wing towards termen broadly silvery blue; hind wing with three somewhat obscure dusky black ocelli. *Underside* dark ferruginous; fore and hind wings with subterminal and terminal olivascent brown or yellowish lines; cilia white. Fore wing: basal area, dorsal margin, an oblique transverse band across the cell, and another across the disc olivascent brown; a transverse straight row of four minutely white-pupilled obscure ocelli. Hind wing: basal area to line of ocelli more or less olivascent brown, crossed by two transverse dark lines; beyond these a postdiscal row of black white-pupilled ocelli, each with an inner fulvous and outer silvery purple ring.— ♀ *Upperside* vandyke-brown; fore wing with a yellow, oblique, somewhat obscure discal bar, and three obscure ocelli with a yellow anterior spot beyond. Hind wing with four similar ocelli. *Underside* similar to underside in ♂; fore wing: bands crossing the cell and the disc yellowish white; hind wing: outer of the two basal dark transverse lines bordered with dull yellow.— ♂ ♀ Hind wing: termen broadly but shortly caudate at vein 4. Antennæ brown, ferruginous beneath, with a subapical black spot; head, thorax, and abdomen purplish brown. Male sex-mark: a long narrow patch of opaque scales along vein 1 of fore

wing, and a similar patch of scales overlapped by a tuft of long hairs at base of vein 3 on the hind wing.

Exp. ♂ ♀ 64–68 mm. (2·5–2·78″).

Hab. Sikhim; Bhutan; the Nága Hills.

95. **Lethe bhairava**, *Moore* (Debis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 217; *M. & de N. Butt. Ind.* i, 1883, p. 139; *Moore* (Rangbia), *Lep. Ind.* i, 1890–92, p. 233, pl. 76, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀. *Upperside* deep rich umber-brown, cilia brownish white; fore wing: basal half slightly darker, margin of darker area well-defined, oblique, immediately followed in the ♀ by one or two white spots, and beyond these, in both sexes, by a transverse series of three yellow spots. Hind wing more elongate in the ♀ than in the ♂; in both sexes bearing a postdiscal series of four blind ocelli, each ocellus pale-ringed in ♂, in ♀ encircled by a broad ochraceous ring. *Underside* similar to the underside in *L. scanda*, but ground-colour a lighter, brighter ferruginous; bands across cell and disc of fore wing dark ferruginous, the latter band in the ♀ bordered by a few white spots; postdiscal series of ocelli on hind wing with outer ferruginous, not silvery purple, rings. Antennæ as in *L. scanda*; head, thorax and abdomen brown, thorax with bluish-green pubescence above. Male secondary sex-marks as in *L. scanda*.

Exp. ♂ ♀ 72–78 mm. (2·84–3·08″).

Hab. Sikhim; Bhutan; the Nága Hills.

96. **Lethe gulnihal**, *de Nicéville, P. Z. S.* 1887, p. 450, pl. 39, fig. 7 ♂; *Moore* (Rangbia), *Lep. Ind.* i, 1890–92, p. 234, pl. 76, fig. 2 ♂
Lethe gulnihal, var., *Elwes, P. Z. S.* 1891, p. 263.
Rangbia peguana, *Moore, Lep. Ind.* i, 1892, p. 235.

♂ Resembles *L. bhairava*, but is considerably smaller, with the dorsal margin of fore wing very convex, and on the upperside the ground-colour richer and darker, without spot of any kind. *Underside* golden brown; the basal half of the wings in some specimens darker than the apical half; the lines or bands crossing the wings and the ocelli as in *L. bhairava*, but the former more irregularly sinuous, the latter much smaller.— ♀ Only differs on the upperside from the ♀ of *L. bhairava* in being smaller, and in the ocelli on the hind wing being without any distinct iris. *Underside* bright ochraceous, the basal half slightly darker and more or less sharply demarcated from the brighter apical half of the wings by a transverse discal dark line, which is outwardly oblique on the fore wing and margined by three or four white spots, and inwardly oblique on the hind wing; the transverse basal and median lines as in the ♂; the ocelli ill-defined, smaller, almost obsolete. Antennæ, head, thorax and abdomen brown; the antennæ annulated with white.

Exp. ♂ ♀ 62–71 mm. (2·43–2·83″).
Hab. Bhutan.

Var. *peguana*, Moore, differs in the ♂ being a rich claret-brown above, the ♀ a somewhat paler brown; the transverse lines crossing the wings on the underside are still more sinuous than in *gulnihal*, the two crossing the cell being parallel and not inclined towards each other posteriorly. The white discal spots on fore wing in ♀ absent or only indicated.

97. **Lethe latiaris**, *Hewitson* (Debis), *Exot. Butt.* iii, 1863, p. 74, Debis, pl. 1, fig. 4 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 140; *Moore* (Rangbia), *Lep. Ind.* i, 1890–92, p. 236, pl. 76, figs. 3, 3 *a*, 3 *b*, ♂ ♀.

♂ Hind wing only dentate, not caudate at apex of vein 4. *Upperside* dark vandyke-brown; cilia ochraceous white; in some specimens the subterminal ocelli on the underside of the hind wing showing through on the upperside. *Underside* paler; fore wing with the following markings—two transverse dark lines across the cell, the inner continued to vein 1, an oblique discal line bordered outwardly by faint lilacine, followed by a postdiscal series of four, partially obsolescent, brown-centred and brown-ringed small pale ocelli, the series bordered inwardly and outwardly by faint dark transverse bands. Hind wing: a subbasal straight and a discal sinuous umber-brown narrow band, a curved series of six ocelli, similar to the ocelli on fore wing but pupilled with white; both fore and hind wing with subterminal and terminal slender umber-brown lines, the discocellulars defined with brown.— ♀ similar, but on the upperside of fore wing with an ochraceous preapical spot, and on the underside a broad lilacine border to the oblique discal band, this showing through on the upperside as a more or less distinct ochraceous line. Antennæ ochraceous annulated with white; head, thorax and abdomen brown, paler beneath; the thorax with dark bluish-green pubescence above. Male sex-marks as in *L. scanda.*

Exp. ♂ ♀ 66–70 mm. (2·65–2·8″).
Hab. Sikhim; Assam; Burma; Tenasserim.

98. **Lethe minerva** (Pl. II, fig. 14), *Fabr.* (Papilio) *Syst. Ent.* 1775 p. 493, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 140; *Moore* (Nemetis) *Lep. Ind.* i, 1890–92, p. 237, pl. 77, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ Costa of fore wing strongly curved towards apex; ♂ ♀, termen of hind wing angulate at apex of vein 4. ♂. *Upperside* brown; fore wing anteriorly with an ochraceous tint darkening towards the tornus. Hind wing posteriorly, from apex of cell to termen and up to vein 1, ochraceous red; abdominal fold brown; a curved series of five dark brown spots, the apical two large and diffuse, and a subterminal dark line. *Underside* pale ochraceous brown; fore and hind wings crossed by highly irregular and more or less broken basal and discal lines of ochraceous red, the latter obsolescent on the fore wing; terminal margins of wings

ochraceous red, outlined inwardly by a slender black line; fore wing with a pale, postdiscal, broad band, widening anteriorly and carrying a series of four obscure black ocelli. Hind wing with a curved postdiscal series of six large ochraceous ocelli with disintegrated ochraceous and black centres.— ♀ *Upperside* ochraceous red; apical half of fore wing dark brown, bearing a preapical spot and a broad oblique band of white, the latter posteriorly divided into three conical spots. Hind wing with a curved postdiscal series of dark brown spots, apical two the largest, and a slender subterminal black line. *Underside* similar to the underside in the ♂, but paler, and with the white band as on the upperside. Antennæ, head, thorax and abdomen dull ochraceous brown. Male sex-marks, a patch of specialized dark brown scales below vein 1 on fore wing and in interspace 2 on hind wing, the latter covered with a tuft of long brown hairs.

Exp. ♂ ♀ 66–70 mm. (2·6–2·8″).

Hab. Tenasserim, extending to the Malayan Subregion.

99. **Lethe dynsate**, *Hewitson* (Debis), *Exot. Butt.* iii, 1863, p. 76, Debis, pl. 2, figs. 9, 10, ♀; *Moore* (Hanipha), *Lep. Ceyl.* i, 1880, p. 20, pl. 9, figs. 1, 1 *a*, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 142, ♀; *Moore* (Hanipha), *Lep. Ind.* i, 1890–92, p. 239, pl. 77, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Lethe sihala, *Moore*, *P. Z. S.* 1872, p. 555; *M. & de N. Butt. Ind.* i, 1883, p. 141; *Moore* (Hanipha), *Lep. Ceyl.* i, 1880, p. 19, pl. 8, figs. 2, 2 *a*, 2 *b*, ♂.

♂ ♀. Hind wing shortly and broadly caudate at apex of vein 4. ♂ *Upperside* rich umber-brown, uniform: fore wing with one or two pale preapical, and some faint black subterminal spots. Hind wing with four or five subterminal round, black, blind ocelli or spots. *Underside*: basal half of wings very dark umber-brown: apical half and dorsal margin, broadly, of fore wing pale brown, both fore and hind wing with subterminal and terminal dark brown lines; fore wing: cell and disc crossed by pale fasciæ, followed by an obscure postdiscal series of five ocelli; hind wing with subbasal and discal dark brown lines, the latter angulated on vein 4, succeeded by a more clearly defined curved series of seven white-centred and fulvous-ringed black ocelli.— ♀ *Upperside*: fore wing with a broad white oblique band from middle of costa to vein 1; a partially obsolescent broad ochraceous streak and a quadrate white spot beyond it in interspace 1, a preapical series of black spots with white spots beyond the anterior two. Hind wing lighter brown, terminal half blotched with ochraceous white, bearing a series of five black ocelli, upper two diffuse, merging into one; a subterminal and terminal dark brown line. *Underside* similar to the underside in the ♂, shaded with lilacine white, the spots or ocelli on the fore wing on a pale transverse band, each with a brown outer ring; hind wing with six black, white-centred, fulvous-ringed complete ocelli; both fore and hind wing with a subbasal dark brown line. In both

sexes the antennæ, head, thorax and abdomen brown; antennæ ochraceous at apex. Male sex-marks, a specialized patch of scales covered by a tuft of long hairs in interspace 1 on the fore wing.

Exp. ♂ ♀ 60–70 mm. (2·35–2·75″).

Hab. Ceylon.

100. **Lethe kansa**, *Moore* (Debis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 220; *M. & de N. Butt. Ind.* i, 1883, p. 145; *Moore* (Debis), *Lep. Ind.* i, 1890–92, p. 241, pl. 78, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ Conspicuously caudate at apex of vein 4 of hind wing. ♂ *Upperside* brown, with an olivascent-green, sometimes ochraceous-red, tint in certain lights. Fore wing uniform, with three somewhat obscure subapical spots in vertical order. Hind wing with a curved series of five black partially fulvous-ringed ocelli, the second and fourth the largest, the third minute; subterminal and terminal dark lines, with an intermediate ochraceous line. *Underside* pale vinaceous brown; fore and hind wings crossed by subbasal and discal maroon-brown narrow bands, followed by a row of ocelli, five on the fore, six on the hind wing, and subterminal and terminal dark lines, margined inwardly with lilacine; apex of fore wing lilacine white, the ocelli pale and obscure; on the hind wing the ocelli black with white centres, and rings of ochraceous yellow, brown, and lilacine white; finally, a conspicuous small white triangular spot near the tornus.—♀. Differs only from the ♂ in having, on the upper and under sides of the fore wing, a distinct, transverse, discal, irregularly sinuous dark line, outwardly bordered by white spots. Antennæ, head, thorax and abdomen brown, beneath somewhat ochraceous. Male sex-marks as noted in the key to the forms.

Exp. ♂ ♀ 72 mm. (2·85″).

Hab. Sikhim; Manipur; Assam; Burma; Tenasserim.

101. **Lethe vindhya** (Pl. II, fig. 15), *Felder* (Debis), *Wien. ent. Monats.* iii, 1859, p. 402, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 146; *Moore* (Debis), *Lep. Ind.* i, 1890-92, p. 250, pl. 81, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Lethe alberta, *Butler, A. M. N. H.* (4) viii, 1871, p. 283, ♂.

Debis dolopes, *Hew. Ent. Month. Mag.* ix, 1872, p. 85.

♂ ♀ Resembles *L. kansa*, but the wings are comparatively broader in proportion to length; termen of hind wing less broad, but more produced at apex of vein 4. *Upperside* dark umber-brown, sometimes suffused with ochraceous, but never olivascent; fore and hind wings with their basal halves distinctly and abruptly darker than their apical halves; in ♂ no indication of the three subapical pale spots always present on the fore wing in *L. kansa*; in ♀ these spots sometimes indicated; hind wing: the postdiscal series of fulvous-encircled black spots larger. *Underside* much darker than in *L. kansa*, the basal two-thirds in striking contrast to the paler purple-tinted terminal third; the subbasal and discal lines and the ocelli as in *L. kansa*, but the former two broadly

bordered outwardly with purple, the apex of the fore wing purplish. Antennæ ochraceous brown annulated with white; head, thorax and abdomen umber-brown; the abdomen whitish beneath. In the dry-season specimens the ground-colour is paler, the ocelli less distinct.

Exp. ♂ ♀ 72–86 mm. (2·9–3·45″).

Hab. Sikhim; Bhutan; Assam; Arrakan; Burma and Tenasserim. Confined apparently to the hill-ranges.

102. **Lethe satyavati**, *de Nicéville, J. A. S. B.* 1880, p. 246, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 154, ♀; *Moore* (Debis), *Lep. Ind.* ii, 1893–96, p. 246, pl. 80, figs. 2, 2 *a*, ♀.

♀ "*Upperside* dull brown, paler towards the margins. *Fore wing* with an indistinct submarginal darker line. *Hind wing* with a submarginal series of four rounded spots darker than the ground-colour, placed one in each interspace above the first median nervule; two marginal darker lines defined inwardly by paler lines than the ground-colour. *Underside* pale brown with no ochreous tint, and washed with lilac especially on the outer half. Both wings crossed by a prominent brown, nearly straight, subbasal line outwardly margined with lilac. *Fore wing* with an irregular discal transverse brown line; a bar in the cell within the subbasal line; five indistinct submarginal ocelli encircled with lilac and brown on a lilac ground; and a yellowish marginal line edged on both sides with dusky, within which is a brown waved band on the lilac ground between the ocelli and the margin. *Hind wing* with a discal, very much angled, dark brown line, within which is a very distinct lilac litura above the third median nervule and just beyond the apex of the cell; the submarginal ocelli large, the upper one distinctly pupilled with white, and all of them profusely speckled with white; the usual marginal markings." (*de Nicéville.*)

"*Exp.* ♀ 2·7 inches" (69 mm.).

Hab. Two specimens taken by the late Professor J. Wood-Masòn at Sibságar in Assam, and now in the Indian Museum, Calcutta, are, I believe, unique.

103. **Lethe serbonis**, *Hewitson* (Debis), *Ent. Month. Mag.* xiii, 1876, p. 151; *M. & de N. Butt. Ind.* i, 1883, p. 155; *Moore* (Debis), *Lep. Ind.* i, 1890–92, p. 252, pl. 80, figs. 3, 3 *a*, 3 *b*, ♂ ♀.

♂ ♀ Shortly and broadly caudate at apex of vein 4 in hind wing. *Upperside* rich umber-brown; fore and hind wings with slender subterminal and terminal dark lines. Fore wing ♂ uniform; ♀ with a transverse pale postdiscal fascia and a pale preapical spot. Hind wing with a slightly curved line of five black ocelli, the subtornal white-pupilled, the rest blind. *Underside* similar but paler; both fore and hind wings crossed by darker sinuous lines as follows—two medially and one preapically across cell of fore wing, a pale conspicuous band between the median and preapical lines in the cell; the intermediate line prolonged across the hind wing and dividing into two below the subcostal vein; a

much broader discal band, in the ♀ bordered outwardly by pale yellow on the anterior portion of the fore wing, followed by a broad, somewhat diffuse dark band, and subterminal and terminal slender lines. Finally, a postdiscal row of somewhat obscure black ocelli, two or three on the fore, six on the hind wing; the ocelli white-pupilled, with an inner and an outer ring of pale brown and an intermediate darker ring. Antennæ, head, thorax and abdomen brown. Male sex-marks as in *L. kansa*.

Exp. ♂ ♀ 62–68 mm. (2·5–2·75″).

Hab. Sikhim.

104. **Lethe sinorix**, *Hewits.* (Debis), *Exot. Butt.* iii, 1863, p. 78, Debis, pl. 3, figs. 19, 20, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 144; *Moore* (Debis), *Lep. Ind.* i, 1890–92, p. 243, pl. 78, figs. 3, 3 *a*, 3 *b*, ♂ ♀

♂ ♀ Resembles *L. kansa*, from which it differs as follows:— *Upperside.* ♂. Fore wing: a very distinct transverse discal dark line, the three preapical white spots larger and more conspicuous. Hind wing: the postmedian black spots placed on a broad band of rich ochraceous red. ♀. Ground-colour on both wings ochraceous red, rarely olivascent brown. Fore wing: the preapical white spots and transverse discal white band more distinctly marked, very often the whole basal half of the wing ochraceous red. Hind wing: the curved series of postdiscal black spots as in the ♂, placed on an ochraceous-red ground, which colour spreads inwards almost to the base of the wing. *Underside*, ♂ ♀: similar to the underside of the ♂ ♀ of *L. kansa*, but of a lighter vinaceous tint. Male sex-marks as in *L. kansa*.

Exp. ♂ ♀ 78 mm. (3·1″).

Hab. Sikhim (rare); Bhutan; Assam, Khási Hills; Burma.

105. **Lethe chandica**, *Moore* (Debis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 219; *M. & de N. Butt. Ind.* i, 1883, p. 149; *Moore* (Debis), *Lep. Ind.* i, 1890–92, p. 247, pl. 79, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀. Termen of hind wing scalloped, broadly dentate at apex of vein 4. ♂ *Upperside*: fore and hind wings velvety brownish black, darkest on the basal half; cilia conspicuously white alternated with brown; hind wing shaded with ochraceous red posteriorly, sometimes entirely dark brown, the ocelli of the underside often showing through. *Underside* pale greyish ochraceous brown, base and disc of wings shaded with pale purple and crossed by irregularly sinuous subbasal and discal maroon-brown fasciæ, the latter angulate at vein 4 on the hind wing, the space enclosed in the angle dark brown; fore wing with an almost straight series of four to six pale ocelli; hind wing with a curved series of six better-defined but somewhat irregularly-shaped ocelli, their centres disintegrated; both wings with slender subterminal and terminal dark lines.

♀ *Upperside* dull ochraceous red; apical half of fore wing brown, broadly paler towards termen, and crossed obliquely by a

broad angulated white bar ending posteriorly in a detached white spot; a small preapical white spot and a row of more or less obscure brown ocelli on a pale or whitish ground. Hind wing with a curved series of black spots, of which the subapical spot is the largest; subterminal and terminal lines and anal fold brown. *Underside* similar to the underside in the ♂, but the transverse fasciæ broader, the discal fascia broadly margined on the inner side with dark brown; the oblique white bar as on the upperside. Antennæ, head, thorax and abdomen brown, in the ♀ shaded with ochraceous red.

Exp. ♂ ♀ 70–74 mm. (2·75–2·9″).

Hab. Sikhim and eastwards in the hill-ranges of Assam, Burma, and Tenasserim.

106. **Lethe distans**, *Butler, Trans. Ent. Soc.* 1870, p. 488; *M. & de N. Butt. Ind.* i, 1883, p. 148; *Moore* (Debis), *Lep. Ind.* i, 1890-92, p. 248, pl. 80, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ *Upperside* bright or ochraceous brown, the apical half of the hind wing orange-red; fore wing with one or two pale preapical spots; hind wing with a postdiscal curved row of five black spots, of which the upper two are much the larger. *Underside* very similar to the underside in *L. chandica*, with a similar series of ocelli having disintegrated centres on the hind wing; but the ground-colour of both wings is more of an ochraceous yellow, and the basal and discal shadings of purple more brownish.

♀. Very similar to the ♀ of *L. chandica*, but the ground-colour on the upperside deeper, more of an orange-red, the apical half of the fore wing a darker brown, and the white discal bar formed of an oblique, short, broad fascia and two detached white spots bent inwards at an angle to it. On the underside the colouring is similar to that in *L. chandica*, but clearer and more striking.

Exp. ♂ ♀ 72–80 mm. (2·85–3·2″).

Hab. Recorded from Sikhim, Bhutan, and Burma.

107. **Lethe mekara**, *Moore* (Debis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 219; *M. & de N. Butt. Ind.* i, 1883, p. 148, pl. 11, fig. 24, ♂ ♀; *Moore* (Debis), *Lep. Ind.* i, 1890–92, p. 244, pl. 79, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ Differs from *L. chandica* as follows:— ♂ *Upperside* umber-brown with a silky gloss, never so dark as in *L. chandica*; hind wing with a posterior subterminal ochraceous-red patch bearing a series of four black blind ocelli and a subterminal rather obscure dark brown sinuous line. ♀ Differs from ♀ of *L. chandica* in the absence of the ocelli on the upperside of the fore wing and in the oblique discal white band being narrower, shorter, with *two* triangular white spots at an angle below its lower end. *Underside*, ♂ ♀: the subbasal and discal dark transverse lines less sinuous than in *L. chandica*; the discal line on the hind wing only very slightly angulated, never produced towards the line of

ocelli, as it is in *L. chandica*. Head, thorax and abdomen brown. Antennæ light brown, ochraceous at apex.

Exp. ♂ ♀ 62–74 mm. (2·4–2·9″).

Hab. Sikhim; Assam; Burma and Tenasserim; extending to the Malay Peninsula, Sumatra and Borneo.

108. **Lethe tristigmata**, *Elwes, P. Z. S.* 1887, p. 444; *id. Trans. Ent. Soc.* 1888, p. 318, pl. viii, fig. 1; *Moore* (Kerrata), *Lep. Ind.* i, 1890-92, p. 286, pl. 89, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂ ♀ Hind wing shortly caudate at apex of vein 4. *Upperside* umber-brown with a rich satiny gloss. Fore wing: cell crossed by two dusky brown bars, an oblique dark brown sinuous discal band, a row of (in ♂ four, in ♀ five) small pale postdiscal spots, a subterminal transverse brown shading followed by a comparatively broad pale margin. Hind wing: a transverse, discal, sinuous dark line, a curved postdiscal series of (in ♂ five, in ♀ six) blind, dark brown ocelli, a transverse subterminal dark brown shading followed by slender inner and outer terminal dark lines. *Underside*: ♂ much paler, somewhat of an ochraceous brown: ♀ very bright ochraceous brown, almost yellow; basal half of both fore and hind wings darker, bounded by a prominent, sinuous, transverse dark brown band; two short dark brown bars across cell in fore wing, enclosed space whitish, postdiscal pale spots as on the upperside, and a subterminal ochraceous band margined inwardly and outwardly by slender dark brown lines. Hind wing: a subbasal transverse curved, narrow, dark brown band; an arched postdiscal series of six black, white-centred, fulvous-ringed ocelli, the upper four with outer silvery white rings; a subterminal lilacine-white line, followed by an ochraceous narrow terminal band, margined on both sides by slender dark brown lines as on fore wing. In the ♀ the markings are the same but much brighter in colour. Antennæ, head, thorax and abdomen ochraceous brown; antennæ bright ochraceous at apex. Male sex-marks, a series of four outwardly angular spots clothed with black scales, from vein 1 to base of vein 4 on the upperside of the fore wing.

Exp. ♂ ♀ 58–64 mm. (2·3–2·7″).

Hab. Recorded only from Sikhim above 8000 feet.

109. **Lethe lyncus**, *de Nicéville, J. A. S. B.* 1897, p. 544, ♂, pl. 1, fig. 8 ♂.

♂ "*Upperside*: both wings hair-brown with a strong silky ochraceous bronzy gloss, a submarginal deep brown fascia. Fore wing crossed by two dark brown bars, . . a discal irregular dark brown band from the costa to the submedian nervure (vein 1), . . . a short subapical pale ochreous bar within the submarginal fascia.

Hind wing with an indistinct irregular discal dark brown fascia, beyond which are five round dark brown spots decreasing in size from anteriorly backwards. *Underside*: both wings shining pale ochreous, with the markings darker ochreous. Fore wing has

the two discoidal bars as on the upperside, . the space between them yellow, the discal fascia is broader and more prominent than above, its outer edge sharply defined, the discal area beyond is yellow, becoming darker till it is almost lost in the submarginal fascia; the subapical spots as on the upperside, three in number, and white, the margin is somewhat broadly pale bisected by a narrow straight brown line. Hind wing: . a basal irregular dark fascia outwardly defined by a narrow yellow line, beyond which is a dark line from the costa to the submedian nervure (vein 1) .; a dark fusiform bar defines the discocellular nervules; a broad, highly irregular discal fascia from the costa to the abdominal margin; a submarginal series of six black ocelli with white pupils, yellow iris, outer dark ring, with an outermost pale violet ring, the anal ocellus twinned, all the ocelli of nearly equal size, . the margin bears a somewhat broad ochreous line defined on both sides by a dark brown thread, inwardly again with a pale violet line, somewhat dilated at the anal angle. Cilia cinereous throughout."

Exp. "♂ 2·2".

Hab. "Sikhim" (*de Nicéville*).

This form, unknown to me, seems very like a pale variety of *L. tristigmata*, Elwes. Only two specimens, both males, seem to have been procured in Native Sikhim, at 10,000 feet elevation.

110. **Lethe atkinsonia** (Pl. II, fig. 19), *Hewitson* (Zophoessa), *Ent. Month. Mag.* xiii, 1876, p. 151 ♂; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 166; *Moore* (Zophoessa), *Lep. Ind.* i, 1890–92, p. 295, pl. 92, figs. 1, 1 *a*, ♂.

♂ Wings shaped as in *L. baladeva*. *Upperside* ochraceous brown; cilia ochraceous. Fore wing: basal area of interspaces 1 and 2 diffusely ochraceous; cell crossed by an ochraceous, short, broad band bordered on both sides with dark brown; beyond apex of cell irregular zigzag macular, discal and postdiscal bands, the former slightly oblique, reaching from costa to dorsum, the latter shorter, transverse. Hind wing: a postdiscal curved series of black spots superposed on a bright ochraceous band with sinuous margins bordered with dark brown on both sides and an obscure ochraceous subterminal sinuous line. *Underside* paler, the markings on fore wing similar but bright yellow, the discal band broad and continuous, posteriorly diffuse along its outer margin; the postdiscal band obscure, with two or three irregular white spots; an outer somewhat diffuse brown band from tornus not reaching apex and a subterminal dark line. Hind wing posteriorly broadly irrorated with brown scales, basal and subbasal dark ochraceous-brown bands followed by a short, broad, oblique discal band yellow, a postdiscal sinuous dark brown band, a curved series of subequal ocelli superposed on a pale band darkening towards the tornus, and finally a subterminal silvery and terminal ochraceous line. Antennæ, head, thorax and abdomen brown; pale ochraceous beneath.

Exp. ♂ 58–61 mm. (2·28–2·4").

Hab. Sikhim above 7000 feet; Bhutan.

111. **Lethe jalaurida**, *de Nicéville* (Zophoessa), *J. A. S. B.* 1880, p. 245; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 166, pl. 10, fig. 19 ♂; *Elwes, Trans. Ent. Soc.* 1888, p. 320, pl. 8, fig. 4; *Moore* (Zophoessa), *Lep. Ind.* i, 1890–92, p. 296, pl. 92, figs. 2, 2*a*, ♂.

Zophoessa elwesi, *Moore, Lep. Ind.* i, 1890–92, p. 298, pl. 92, fig. 3 ♂

♂ ♀. Shape of wings as in *L. baladeva*. *Upperside* rich vandyke-brown with a silky gloss and in certain lights a reddish-coppery sheen; cilia brown alternated with white. Fore wing with a transverse broad bar in cell, and a discal zigzag macular band ochraceous white, the cellular bar lined inwardly and outwardly, and the discal band inwardly with diffuse dark brownish black; a short preapical bar or spot, ending below in three small spots, ochraceous white; a broad, inwardly diffuse, brownish-black subterminal band. Hind wing: a postdiscal sinuous dusky-black band, followed by a curved row of five round black spots superposed on a broad pale band; finally, a subterminal dark sublunular band. *Underside* paler and more ochraceous, marked with dark brown. Fore wing: the cellular discal and preapical ochraceous-white bands as on the upperside, but clearer and more prominent; the preapical band with three or four superposed half obsolescent small ocelli; apex and termen of wing bright ochraceous. Hind wing with a basal, a subbasal, a short median, and a discal transverse zigzag white line, the last broadening above vein 3 into an oblique broad band; a postdiscal curved row of black ocelli, each ocellus with a blue centre, an inner ochraceous and an outer brown ring, followed by a subterminal irregular sinuous white and a broader terminal ochraceous line. Antennæ, head, thorax and abdomen brown; pale ochraceous beneath.

Exp. ♂ ♀ 54–58 mm. (2·1–2·3″).

Hab. The Himalayas from Kulu to Sikhim; Western China.

Moore has separated the Eastern form as *Z. elwesi*, but a series of specimens in the British Museum Collection from the N.W. Himalayas and from Sikhim show little or no variation.

112. **Lethe mœlleri**, *Elwes* (Zophoessa), *P. Z. S.* 1887, p. 445; *Elwes, Trans. Ent. Soc.* 1888, p. 321, pl. 8, fig. 3; *Moore* (Zophoessa), *Lep. Ind.* i, 1890–92, p. 298, pl. 92, figs. 4, 4*a*, ♂.

♂ Closely resembles *L. jalaurida*, but is a sufficiently distinct and constant form. On the upperside, the fore wing lacks the transverse, cellular, ochraceous-white band, while the dusky black lining to the discal band is more angularly sinuous. On the underside, the ocelli on the fore wing are entirely obsolescent, the upper half of the basal portion of the hind wing is crossed by two oblique broad bands of white bordered inwardly (the outer band outwardly also) with dark brown, and the apical four ocelli outwardly with white.

Exp. ♂ 52–56 mm. (2·15–2·25″).

Hab. Sikhim at 10,000 feet.

I have not seen a ♀ of this form.

113. **Lethe baladeva**, *Moore* (Zophoessa), *P. Z. S.* 1865, p. 769, pl. 41, fig. 5 ♂; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 167; *Moore* (Putlia), *Lep. Ind.* i, 1890–92, p. 288, pl. 90, figs. 1, 1 *a*, ♂ ♀

♂ ♀. Costa of fore wing very slightly arched, hind wing caudate at apex of veins 2 and 4. ♂ *Upperside* brown, the markings on the underside showing through by transparency, clearly, however, only on the hind wing, where the postdiscal row of ocelli appear as non-pupilled round black spots, and the subterminal pale line is fairly well defined. *Underside* ochraceous brown; dorsal margin of fore wing broadly pale brown. Fore wing with the following markings:—base and apex of cell and a broad transverse band across it, an oblique broad discal and a subterminal band, ochraceous white; a transverse silvery white postdiscal band followed by a series of five minute, white-pupilled, broadly ochraceous-ringed, black ocelli, outwardly margined by an ochraceous transverse line; finally, beyond the subterminal band a bright ochraceous terminal line. Hind wing: a prominent silvery-white band from costa to median vein across apex of cell, another postdiscal similar band with its outer margin sinuous between veins 2 and 6, some oblique streaks and marks, subterminal and slender terminal lines ochraceous white; a postdiscal strongly arched series of silvery-centred, ochraceous-ringed, black ocelli and two prominent reddish ochraceous marks at tornus.

♀ Very similar: all the markings similar; those of the underside of the fore wing seen by transparency on the upperside well defined and prominent. Antennæ, head, thorax and abdomen brown; the antennæ ochraceous at apex.

Exp. ♂ ♀ 62–65 mm. (2·49–2·6″).

Hab. The Himalayas from Kumaun to Sikhim above 7000 feet, extending to Tibet.

This is an aberrant form, differing from the very closely allied *L. ramadeva* and *L. andersoni* in the ♂ being furnished with a secondary sex-mark of a patch of dark specialized scales at base of subcostal vein of the hind wing.

114. **Lethe ramadeva**, *de Nicéville* (Zophoessa), *Proc. A. S. B.* 1887, p. 147; *Elwes, Trans. Ent. Soc.* 1888, p. 320, pl. 9, fig. 2; *Moore* (Putlia), *Lep. Ind.* i, 1890–92, p. 289, pl. 90, figs. 3, 3 *a*, ♂ ♀.

♂ ♀ The form of the wings identical with that of *L. baladeva*. The ♂ can be recognized by the entire absence of the sexual patch of specialized scales on the upperside of the hind wing. In colour and disposition of markings the two forms are closely alike. The chief differences lie on the underside. Cell in fore wing in *L. ramadeva* with the white markings at base and apex, the bands on the hind wing much broader, whiter, not at all or only slightly tinged with ochraceous; the ochraceous subbasal and other streaks, present in *L. baladeva*, entirely wanting.

Exp. ♂ ♀ 60–62 mm. (2·35–2·41″).

Hab. Sikhim at high elevations.

115. **Lethe andersoni**, *Atkinson* (Zophoessa), *P. Z. S.* 1871, p. 215, pl. 12, fig. 3; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 168; *Moore* (Putlia), *Lep. Ind.* i, 1890-92, p. 290, pl. 90, figs. 2, 2 *a*, ♂.

♂ ♀ The form of the wings identical with that of *L. baladeva*, from which the males, like the males of *L. ramadeva*, can be recognized by the absence of the sexual patch on the upperside of the hind wing. *Underside*: ground-colour much brighter ochraceous than in *L. baladeva*, all the markings pure white, not tinged with ochraceous. Fore wing: the cellular, discal, and postdiscal transverse bands much as in *L. ramadeva*, followed by a series of obscure pale ocelli and a very slender lunular white line, the subterminal band reduced to a mere slender streak close to the terminal line. Hind wing as in *L. ramadeva*, without the ochraceous subbasal streak; the other markings as in *L. baladeva*, only broader and more clearly defined.

Exp. ♂ ♀ 60–68 mm. (2·35–2·7″).

Hab. Recorded from Bhamo in Upper Burma, extending into Yunnan.

116. **Lethe goalpara** (Pl. II, fig. 18), *Moore* (Zophoessa), *P. Z. S.* 1865, p. 768; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 165; *Moore* (Zophoessa), *Lep. Ind.* i, 1890–92, p. 294, pl. 91, figs. 4, 4 *a*, ♂.

♂ *Upperside*: closely resembles *L. sura*, but of a much lighter brown, showing the dark discal and subterminal bands on the fore wing, and postdiscal and subterminal bands on the hind wing far more plainly, the postdiscal series of spots on the hind wing similar but the spots smaller. *Underside* pale ochraceous, the dark, transverse, cellular, discal and subterminal bands on fore wing much narrower than in *L. sura*, the ocelli entirely wanting or reduced to a single obscure pale ocellus in interspace 5. Hind wing: the basal area not crossed as in *L. sura* by zigzag purplish lines, but by a subbasal, irregular, obscure dark band and a single sinuous line dividing into two at upper apex of cell, only a little darker than the ground-colour. The row of ocelli and the markings bordering it on both sides similar to but paler than in *L. sura*.

Exp. ♂ 80 mm. (3·15″).

Hab. The Himalayas from Simla to Sikhim; Assam.

117. **Lethe sura**, *Doubleday* (Zophoessa), *in Dblday., Westw. & Hewits. Gen. Di. Lep.* ii, 1851, p. 362, pl. 61, fig. 1 ♀; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 164; *Moore* (Zophoessa), *Lep. Ind.* i, 1890–92, p. 291, pl. 91, figs. 1, 1 *a*, ♂ ♀.

♂. *Upperside* dark vandyke-brown; cilia brown alternated with white. Fore wing: a faint preapical costal ochraceous spot, an obscure broad irregular discal fascia and subterminal submacular band darker brown. Hind wing with a postdiscal irregularly sinuous band, and a subterminal band of the same shade, the intervening area paler, with a curved series of five round black spots. *Underside* glossy brown. Fore wing with the following markings:—two narrow bands across the cell, a sharply

defined discal and an inwardly diffuse subterminal band dark brown; a silvery streak between the two dark bands across the cell, a trifid preapical white spot, traces of three obscure ocelli in vertical order below it, and an obscure terminal brown line. Hind wing: basal portion to apex of cell crossed by broken and irregular silvery-white lines and bands, followed by a broad angulated discal band, a postdiscal curved series of round black ocelli, a subterminal silvery and a terminal ochraceous line. The ocelli white-centred, with an inner ochraceous, an intermediate brown, and an outer silvery ring.— ♀. *Upperside*: differs from the upperside in the ♂ in the outer third of the fore wing and the pale postdiscal band on the hind wing being lighter in colour. The underside also differs by the whole ground-colour being paler. Antennæ, head, thorax and abdomen dark brown, paler beneath; antennæ annulated with white.

Exp. ♂ ♀ 80–96 mm. (3·15–3·8″).

Hab. Sikhim; Assam; Upper Burma.

118. **Lethe dura**, *Marshall* (Zophoessa), *J. A. S. B.* 1882, p. 38, pl. 4, fig. 2 ♂; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 165; *Moore* (Zophoessa), *Lep. Ind.* i, 1890–92, p. 293, pl. 91, fig. 2 ♂
Zophoessa gammiei, *Moore, Lep. Ind.* i, 1890–92, p. 294, pl. 91, fig. 3 ♂

♂ ♀ This form ought probably to be placed as a mere race of *L. sura*. It differs on the upperside in the broad terminal margin of the fore wing, and still broader margin of the hind wing, being much paler. In Bhutan specimens in my collection this latter area is a sort of brownish white, with the series of black spots and subterminal and terminal dark bands conspicuous. *Underside* differs in being much paler; the postdiscal series of ocelli outwardly broadly bordered with silvery white.

Exp. ♂ ♀ 75–80 mm. (3·3″).

Hab. Sikhim; Bhutan; Burma, the Karen Hills; Tenasserim.

119. **Lethe bhadra**, *Moore* (Lasiommata), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 227; *M. & de N.* (Neope) *Butt. Ind.* i, 1883, p. 171; *Moore* (Blanaida), *Lep. Ind.* i, 1890–92, p. 300, pl. 93, figs. 1 *1a*, 1 *b*, ♂ ♀.
Neope khasiana, *Moore, Trans. Ent. Soc.* 1881, p. 306; *M. & de N. Butt. Ind.* i, 1883, p. 172; *Moore* (Blanaida), *Lep. Ind.* i, 1890–92, p. 302, pl. 93, fig. 2 ♂.

♂ ♀ Hind wing broadly caudate at apex of vein 4. *Upperside* blackish brown; base of fore and anterior half of hind wing clothed with long soft ochraceous hairs. Fore wing: a streak with a spot beyond it in interspace 1, two oblique streaks in cell and three oblique lines of spots beyond decreasing in number to apex, white. Hind wing: posterior half strongly suffused with ochraceous, a small patch on the discocellulars and some spots beyond in the interspaces brighter ochraceous, those in interspaces 2, 3 and 4 interrupted by obscure round black ocellar marks. Cilia of

both wings white alternated with brown. *Underside* similar, the spots and markings somewhat blurred; both fore and hind wing shaded with purple and ochraceous; the hind wing with a strongly-curved postdiscal series of nine ocelli, the tornal ocellus geminate. Antennæ ochraceous; head, thorax and abdomen brown.

The Seasonal form *khasiana*, Moore, differs in having on the upperside the ground-colour of the hind wing bright ochraceous, the apex of the cell, the costal and the anterior half of the terminal margin broadly, and a curved postdiscal series of six ocellar marks blackish brown.

Exp. ♂ ♀ 86–100 mm. (3·4–4″).

Hab. Sikhim; Assam, the Nága and Khási Hills; Upper Burma, Ruby Mines and East Pegu Hills.

120. **Lethe pulaha**, *Moore* (Lasiommata), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 227; *M. & de N.* (Neope) *Butt. Ind.* i, 1883, p. 170, pl. 11, fig. 25; *Moore* (Blanaida), *Lep. Ind.* i, 1890–92, p. 303, pl. 94, fig. 1 ♂.

Race pulahoides.

Blanaida pulahoides, *Moore*, *Lep. Ind.* i, 1890–92, p. 304, pl. 94, fig. 2 ♂.

♂ ♀ Hind wing more shortly caudate than in *L. bhadra*. *Upperside* dark brown; base of fore and posterior half of hind wing clothed with long, soft, paler brown hairs. Fore wing: basal halves of veins 1 and 2, median vein and discocellulars entirely ochraceous white; irregular discal and subterminal curved transverse rows of ochraceous-white spots from costa to interspace 2, between the rows a similar spot in interspace 4 and two very short streaks in interspace 1. Hind wing: basal half uniform, outer half with two transverse rows anteriorly of spots similar to those on the fore wing. Cilia brown alternated with white. *Underside* somewhat similar. Fore wing: basal half of interspaces 1 and 2, some spots and streaks in cell, and the posterior spots of the discal and subterminal series bright ochraceous; apex mottled with purple, white, and dark brown. Hind wing richly blotched and mottled with purple irrorated with brown scales, and dark umber-brown sinuous bands and lines; one or two black, white-centred, ochraceous-ringed ocelli on fore wing, and a strongly curved postdiscal series of similar ocelli on the hind wing. Antennæ brown, annulated with white, club ferruginous; head, thorax and abdomen brown, paler beneath. The male differs only in being somewhat paler in colour and larger.

Exp. ♂ ♀ 70–88 mm. (2·8–3·15″).

Hab. The Himalayas from Chamba to Sikhim; Assam, the Nága and Khási Hills; Burma, East Pegu.

Race **pulahoides**, Moore.—The Eastern forms can only rank as a distinct race. They have been separated by Moore as *pulahoides*. Typically they differ in the spots being larger and more prominent, and in the lining to basal portions of veins 1, 2 and median vein of the fore wing being broader.

121. **Lethe muirheadi,** *Felder* (Lasiommata), *Wien. ent. Monatsch.* 1862, p. 28.
Debis segonax, *Hewitson, Ex. Butt.* iii, 1862, p. 74, Debis, pl. i, fig. 5.
Neope bhima, *Marshall, J. A. S. B.* 1880, p. 246; *M. & de N. Butt. Ind.* i, 1883, p. 172, pl. 11, fig. 26 ♀; *Moore* (Patala), *Lep. Ind.* i, 1890–92, p. 308, pl. 94, figs. 5, 5 *a*, ♂ ♀.

♂ ♀ Very like the pale North-west Himalayan form of *L. yama*. *Upperside* differs as follows: fore wing with one or two of the ocelli always present, and beyond them ochraceous-white shading; in ♀ the ocelli four or five, very distinct and large, bordered outwardly as in the ♂ with ochraceous. Hind wing: the ocelli more distinct. *Underside* much paler ochraceous grey speckled with brown scales; cell of fore wing crossed by three zigzag bands, the intermediate the broadest, bearing four spots of ochraceous grey; discal, transverse, sinuous, brown band outwardly margined with ochraceous grey; ocelli distinct, with irides of ochraceous grey on a brown ground; subterminal and terminal sinuous lines brown, distinct. Hind wing: three brown spots near base, followed by three very irregular, sinuous, transverse brown lines, the intermediate line broad and not extending below vein 6; ocelli oval, larger, the series more sinuous than in *L. yama*, placed on a brown ground, bordered on both sides by ochraceous grey, followed by subterminal and terminal lunular brown lines.

Exp. ♂ ♀ 74–92 mm. (2·9–3·65″).

Hab. Burma, extending to China.

122. **Lethe yama,** *Moore* (Zophoessa), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 221, ♂ ♀; *M. & de N.* (Zophoessa) *Butt. Ind.* i, 1883, p. 169, pl. 10, fig. 21 ♂; *Moore* (Patala), *Lep. Ind.* i, 1890–92, p. 306, pl. 94, fig. 3 ♂.
Patala yamoides, *Moore, Lep. Ind.* i, 1890–92, p. 307, pl. 94, fig. 4 ♂.

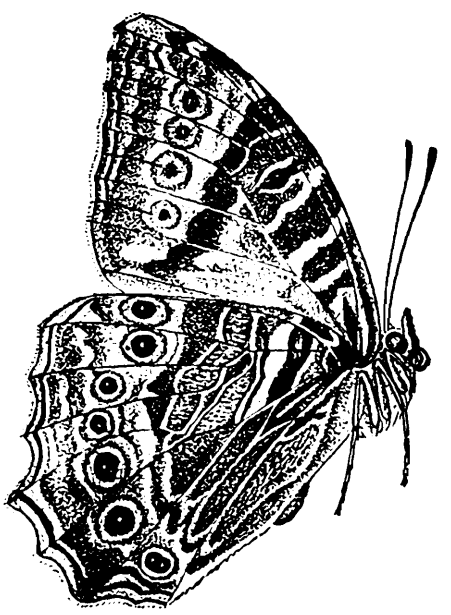

Fig. 23.—*Lethe yama*, ♂. Underside.

♂ ♀ Hind wing: termen scalloped; angles at apices of veins 2 and 4 more produced than the others. *Upperside* pale to dark vandyke-brown; cilia conspicuously white, the apices of the veins brown. Fore wing with discal and subterminal bands faintly darker; an obscure postdiscal row of two or three dark ocelli, more numerous and better defined in the ♀; costa marked narrowly with two white median and two preapical short streaks. Hind wing: a postdiscal series of dark ocelli with their irides obscure brown, and a subterminal faint dark brown band. *Underside* paler; fore wing: the cell with four narrow greyish-white transverse bars, a discal and a postdiscal

dark brown band, the former typically slightly oblique, submacular, the latter parallel with termen, obscure, posteriorly bearing a row of broadly pale-ringed ocelli, margined on both sides with greyish-white irrorated with brown scales; costa as on upperside, posterior area of wing pale brown; subterminal and terminal lines dark brown. Hind wing: basal half variegated by transverse medially pale brown bands, bordered on both sides by slender ochraceous lines; the whole area irrorated with brown scales; a discal transverse sinuous fascia followed by a curved row of black ocelli, and dark brown subterminal and terminal lines. Antennæ ochraceous brown; head, thorax and abdomen pale brown. ♂ sex-mark, a short, broad, not very distinct, discal band of dark brown specialized scales on fore wing.

Exp. ♂ ♀ 70–90 mm. (2·75–3·55″).

Hab. The Himalayas, Kulu, Mussoorie, Bhutan; (not recorded from Sikhim); Assam, the Khási Hills; Burma, the Chin Hills and the Ruby Mines district.

The Eastern form has been separated by Moore as "*yamoides*"; it is larger, with all the markings richer and darker in colour.

Genus **ZIPŒTIS.**

Zipœtis, *Hewitson, Exot. Butt.* iii, 1863, p. 100 (Satyridæ: Hypocysta & Zipœtis); *M. & de N. Butt. Ind.* i, 1883, p. 248; *Moore, Lep. Ind.* ii, 1893–96, p. 108.

Type, *Z. saitis*, Hewitson, from the Nilgiris.

Range. Southern India; Sikhim and eastwards to the Khási and Nága Hills; Upper Burma, and as far south as Taungoo.

♂ ♀ Wings comparatively broad. Fore wing: costa widely arched, apex broadly rounded, termen very convex, dorsum straight; cell broad, in length very little over half length of wing; discocellulars: upper minute, middle slightly curved inwards, lower oblique convex; vein 5 closer to 6 than to 4, 6 and 7 from a point or very closely approximate, 10 and 11 from before apex of cell, 12 inflated at base to nearly half its length. Hind wing broadly pear-shaped; termen somewhat scalloped, perceptibly angulated at apex of veins 2, 3, 4 and 6; dorsum comparatively short, not emarginate, tornus rounded; cell comparatively both broad and long, over half length of wing; discocellulars oblique; vein 3 from before apex of cell, vein 6 closer to 7 than to 5. Antennæ slender, less than half length of fore wing, club very long and gradual; palpi moderately long, with stiff hairs anteriorly, third joint short and stout; eyes naked; intermediate and posterior femora scaled, not hairy.

Key to the forms of Zipœtis.

a. Upperside of fore and hind wings crossed by broad white bands ..... *Z. saitis*, p. 105.

b. Upperside of fore and hind wings not crossed or marked with white bands *Z. scylax*, p. 105.

123. **Zipœtis saitis**, *Hewitson, Exot. Butt.* iii, 1863, Satyridæ: Hypocista & Zipœtis, pl. fig. 6; *M. & de N. Butt. Ind.* i, 1883, p. 249, pl. 17, fig. 58 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 108, pl. 119, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* in fresh specimens velvet-black, or brown to light brown in the ♀. Fore wing with a broad, oblique, snow-white band from middle of costa to near apex of interspace 1, inwardly emarginate in its lower third. Hind wing with a similar broad white postdiscal band parallel to the posterior two-thirds of the terminal margin, the outer margin of the band emarginate between the veins. *Underside* similar, ground-colour paler; the white bands as on the upperside; both fore and hind wings with a subterminal sinuous pale line. Hind wing with a row of five ocelli enclosed in a common silvery narrow band, on the inner side of the white band; each ocellus with a white centre, an inner ring of ochraceous, and an outer ring of blackish brown; the ocelli at each end of the row the smallest, the preapical very large and bipupilled. Antennæ ochraceous red; head, thorax and abdomen dark brown.

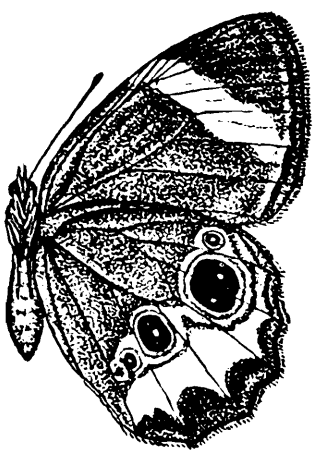

Fig. 24.
Zipœtis saitis, ♀.
Underside.

Exp. ♂ ♀ 64–74 mm. (2·55–2·9″).

Hab. Southern India; the Nilgiris, Anaimalais; Cochin and Travancore.

124. **Zipœtis scylax**, *Hewitson, Exot. Butt.* iii, 1863, Satyridæ: Hypocista & Zipœtis, pl. fig. 7; *M. & de N. Butt. Ind.* i, 1883, p. 249, pl. 17, fig. 62 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 109, pl. 119, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀ *Upperside* dark velvety brown, paling towards apex and terminal margins of wings. Fore and hind wings with very pale, conspicuous, subterminal and terminal lines. *Underside*: ground-colour similar, paler; cilia very pale brownish white; subterminal and terminal lines as on upperside, only broader. Fore wing with a postdiscal row of five more or less subequal, small, fulvous-ringed, white-pupilled ocelli beginning in interspace 2, bordered inwardly by a sinuous silvery line and outwardly by a broader pale band. Hind wing with a row of ocelli enclosed in a common silvery band very similar to that on the underside of hind wing of *Z. saitis*. Antennæ, head, thorax and abdomen as in *Z. saitis*.

Exp. ♂ ♀ 51–58 mm. (2–2·3″).

Hab. Sikhim, through the hill-ranges of Assam to Upper Burma. Recorded as far south as the hills west of Taungoo.

Genus **ORINOMA.**

Orinoma, *Gray, Lep. Ins. Nepal*, 1846, p. 14; *M. & de N. Butt. Ind.* i, 1883, p. 173; *Moore, Lep. Ind.* ii, 1893–96, p. 1.

Type, *O. damaris*, Gray, from India.

Range. The Himalayas, Assam, Burma, and Tenasserim.

♂ ♀. Wings comparatively long and narrow. Fore wing: costa widely arched; termen slightly convex, oblique; dorsum straight; apex and tornus rounded; discoidal cell slightly over half length of wing; upper and lower apices angulate; upper and middle discocellulars short, inclined inwards, lower long, deeply angulated inwards in the middle; veins 4 and 5 nearly parallel, 10 and 11 before apex of cell, 12 slightly inflated at base, median vein normal. Hind wing pear-shaped; termen strongly arched, slightly scalloped; vein 3 from just before apex of cell, 4 from apex, strongly arched upwards, 6 closer to 7 than to 5. Antennæ filiform, less than half length of fore wing, club long and gradual; palpi normal, third joint long, not fringed with porrect hairs anteriorly; eyes hairy; femora and tibiæ slender, the former with longish hair posteriorly.

125. **Orinoma damaris**, *Gray, Lep. Ins. Nep.* 1846, p. 14, pl. 7, figs. 2, 2 *a*; *M. & de N. Butt. Ind.* i, 1883, p. 174, pl. 13, fig. 32 ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 1, pl. 95, figs. 1, 1 *a*, ♂ ♀.

♂ ♀ *Upperside* dusky black. Fore wing: basal half of cell rich ochreous red, with a spot of black in the middle of its anterior and posterior margins, apical half of cell black, with a pale diffuse centre in its anterior half and a broad greenish-white streak in its lower half; interspace 1 greenish white, divided by fine black oblique lines into three short streaks and a terminal spot; interspaces 2–7 with two series of discal short streaks and two series of subterminal quadrate spots greenish white. Hind wing: the cell with a broad, transversely divided streak, the interspaces beyond with a series of streaks and spots greenish white, the outer subterminal row of spots obsolescent. *Underside* similar, the markings more distinct. Cilia of both wings alternately black and white. Antennæ black; head, thorax and abdomen above dark grey, the thorax in front with orange hairs; abdomen beneath white, with fine black lines.

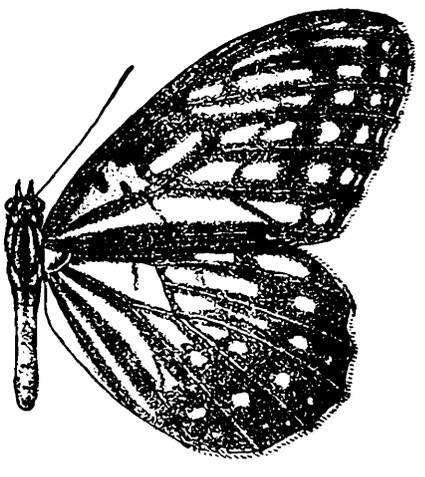

Fig. 25.—*Orinoma damaris*, ♂.

Exp. ♂ ♀ 72–85 mm. (2·8–3·3″).

Hab. The Himalayas from Kangra to Sikhim above 2000 feet; Bhutan; Assam, the Khási Hills; Upper Burma, Ruby Mines; Tenasserim.

Genus **RHAPHICERA.**

Lasiommata, pt., *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 385.
Rhaphicera, *Butler, A. M. N. H.* (3) xix, 1867, p. 164.

Type, *R. satricus*, Doubleday, from Sikhim.
Range. The N.W and E. Himalayas; East Tibet.

♂ ♀ Wings comparatively short and broad. Fore wing triangular, costa arched; termen convex; dorsum straight; apex very slightly rounded; cell about half length of wing; discocellulars oblique, in a line, upper and middle about equal; vein 3 slightly bent upwards, 10 and 11 from before apex of cell, 12 inflated at base, subcostal and median normal. Hind wing oval, costa slightly scalloped and perceptibly produced at apex of vein 4; cell short, less than half length of wing; discocellulars very oblique, lower and middle subequal, upper much shorter; vein 3 from before apex of cell. Antennæ not half length of fore wing, slender, club long and gradual; palpi with long porrect hairs anteriorly; eyes very hairy; intermediate femora slightly hairy posteriorly.

Key to the forms of Rhaphicera.

a. Hind wing posteriorly not irrorated with fuscous scales on upperside .. .. *R. satricus*, p. 107.
b. Hind wing posteriorly strongly irrorated with fuscous scales on upperside *R. moorei*, p. 108.

126. **Rhaphicera satricus** (Pl. III, fig. 20), *Doubleday* (Lasiommata), *in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 387, pl. 64, fig. 4 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 175; *Moore, Lep. Ind.* ii, 1893–96, p. 3, pl. 95, figs. 2, 2 *a*, ♂.

♂ ♀ *Upperside* dark orange-yellow; cilia fulvous. Fore wing: dorsum and median vein bordered with black; two bands, the outer the broader, across the cell, an oblique, irregular, still broader band beyond the cell continued as a transverse line widened at the veins to vein 2, quadrate spots in interspaces 2 and 5, a short oblique bar from the costa to the latter spot, the apex and termen down to vein 3 broadly, thence narrowly to tornus, black; costa dusky black. Hind wing: the dorsum broadly dusky black; an oblique short bar from apex of cell towards apex of wing, a postdiscal curved series of four large spots and subterminal and terminal slender lines black. *Underside* paler, very similar. Fore wing: the black border to dorsum, to termen and to apex replaced by an incomplete subterminal and a complete terminal black line, the quadrate spots formed into white-centred ocelli. Hind wing: the oblique black bar absent; a slender black line from costa curving round the apex of the cell to vein 2, the black spots formed into white-centred ocelli. Antennæ black; head, thorax and abdomen dusky brown.
Exp. ♂ ♀ 64–68 mm. (2·55–2·7″).
Hab. Sikhim; Bhutan; the Nága Hills.

127. **Rhaphicera moorei**, *Butler, A. M. N. H.* (3) xix, 1867, p. 164, pl. 4, fig. 4 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 176, pl. 15, fig. 38 ♂; *Moore, Lep. Ind.* ii, 1893-96, p. 4, pl. 95, figs. 3, 3 *a*, ♂ ♀

♂ ♀. This form may be simply a local race of *R. satricus*, which it resembles very closely. The differences are the following:—Ground-colour: upperside ochraceous dusky yellow, not rich orange, the black markings proportionately more extensive, giving the insect an appearance of being dusky black spotted with yellow; bases of fore and hind wings and the posterior half of the latter thickly sprinkled with dusky brown scales. *Underside* dull ochraceous yellow, the markings as in *R. satricus*, but the cell of the hind wing crossed by two or three slender oblique black lines. Antennæ, head, thorax and abdomen dull brown.

Fig. 26. *Rhaphicera moorei.*

Exp. ♂ ♀ 48–60 mm. (1·9–2·35″).

Hab. N.W. Himalayas to the borders of Sikhim.

Genus **AGAPETES.**

Arge, *Hübner* (*nec Schrank*), *Verz. bek. Schmett.* 1816, p. 60.
Agapetes, *Bilberg* (*teste Scudder*), *Enum. Ins.* 1820, p. 78.
Melanargia, *Meigen, Eur. Schmett.* i, 1829, p. 97.

Type, *A. galathea*, from Britain and Europe generally.

Range. Palæarctic Region. Within our limits the mountainous country on the extreme western frontier of Burma.

♂ ♀. Fore wing: costa widely arched; termen convex; dorsum straight; apex distinct, not rounded; cell over half length of wing; upper discocellular minute, middle and lower concave; vein 5 closer to 6 than to 4, 6 and 7 from a point or closely approximate, 10 and 11 from before apex of cell, 12 inflated at base. Hind wing broadly oval; cell short, less than half length of wing; discocellulars very oblique; vein 3 from well before, 4 from apex of cell, latter slightly curved upwards, 6 about equidistant from 5 and 7. Antennæ stout, about half length of fore wing; club gradual, slightly compressed; palpi porrect, fringed with hairs anteriorly to apex, third joint long; intermediate femora scaled, not hairy, grooved beneath.

128. **Agapetes halimede**, *Ménétries* (Arge), *Bull. Acad. Petr.* xvii, 1859, p. 216; *Leech* (Melanargia), *Butt. China*, i, 1892–94, p. 59, pl. 11, fig. 7 ♂ (*var.* montana).

♂ ♀ *Upperside*—fore wing: the cell, basal half of interspaces 2 and 3, two-thirds of the costa narrowly, a curved series of elongate spots in the interspaces from costa beyond apex of cell to near tornus, and three obliquely-placed preapical streaks white; the dorsum, termen and apex broadly, and an irregular oblique discal band black. Hind wing white; a short transverse

band above apex of cell, a large spot at apex of wing, a broad postdiscal band from apex of vein 1 to apex of vein 5, and subterminal and terminal lines black; a zigzag line joins the black apical spot to the obliquely-placed postdiscal band. *Underside* somewhat similar. Fore wing: the apex creamy white, bordered internally by a broad dusky black oblique band; termen with pre-subterminal, subterminal, and terminal black lines. Hind wing creamy white, the black marks as on upperside, but diffuse and dusky, the postdiscal oblique band with three or four, the preapical spot with two lilac-centred, ochraceous-ringed, dusky black ocelli, beyond a pre-subterminal series of white lunules defined inwardly by a black line, and subterminal and terminal black lines as on the upperside. Antennæ, head, thorax and abdomen dusky black; abdomen whitish beneath.

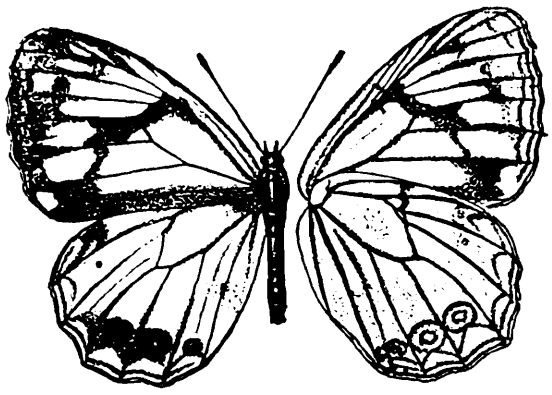

Fig. 27.—*Agapetes halimede*, ♂.

Exp. ♂ ♀ 64–71 mm. (2·5–2·85″).

Hab. Recorded from Western China and Amurland. Occurs in Eastern Tibet, and within our limits a few specimens were procured by Mr. W H. Craddock, of the Burma Forest Department, on the extreme eastern frontier of Upper Burma.

Genus **SATYRUS** *.

Satyrus, *Latr. Consid. Gén.* 1810, pp. 355 & 440.
Lasiommata, *Westwood, Brit. Butt.* 1840, p. 65; *Moore, Lep. Ind.* ii, 1893–96, p. 5.
Amecera, *Butler, A. M. N. H.* (3) xix, 1867, p. 162; *M. & de N. Butt. Ind.* i, 1882, p. 178; *Moore* (*nec Butler*), *Lep. Ind.* ii, 1893–96, p. 12.

Type, *S. mœra*, Linn., from Europe. *S. megœra* and *S. mœra* are "les satyrs" of old French authors; these fix the type for the genus.

Range. Palæarctic Region. Within our limits the Himalayas at high elevations.

♂ ♀ Fore wing subtriangular, costa strongly arched towards apex; apex broadly rounded; termen straight or slightly convex, tornus rounded, dorsum straight; median vein and vein 12 inflated at base; cell less than half length of wing; upper discocellular short but distinct, middle inclined obliquely inwards, lower twice length of middle, inclined obliquely outwards; vein 10 from just before

* According to the strict rules of priority this name is preoccupied by *Satyra*, Meigen (1803), for a genus of *Diptera*; but the latter name is not, I believe, now in use, so I have retained *Satyrus* as it is well-known.

apex of cell. Hind wing oval, termen slightly scalloped; cell less than half length of wing; discocellulars sinuous; veins 3 and 4 from or after apex of cell, vein 6 equally distant from 5 and 7. Club of antennæ spatulate, with two carinæ on the underside. Eyes hairy; palpi compressed, fringed with long porrect hairs to apex, third joint moderately long; intermediate femora fringed with hair beneath. Male sex-mark, when present, consists of a more or less conspicuous oblique band of raised, densely packed, specialized scales on the upperside of the fore wing.

Key to the forms of Satyrus.

a. ♂ with secondary sex-mark on fore wing.
  a'. Fore wing with a broad postdiscal patch of ochraceous orange on upperside .. *S. menava*, p. 111.
  b' Fore wing with a postdiscal series of more or less rectangular ochraceous orange spots on upperside .. .. *S. schakra*, p. 110.
b. ♂ without secondary sex-mark on fore wing . *S. mœrula*, p. 111.

129. **Satyrus schakra**, *Kollar, Hügel's Kaschmir*, iv, 2, 1844, p. 446, pl. 15, figs. 3, 4, ♂; *Butler* (Amecera), *A. M. N. H.* (3) xix, 1867, p. 163; *M. & de N.* (Amecera), *Butt. Ind.* i, 1883, p. 179, pl. 15, figs. 45, 46, ♂ ♀; *Moore* (Lasiommata), *Lep. Ind.* ii, 1893–96, p. 7, pl. 96, figs. 1, 1 *a*, ♂ ♀

♂ ♀. Sexes differing slightly. ♂ *Upperside* silky, pale vandyke-brown; cilia of both wings whitish. Fore wing with a transverse row of four large orange spots, the apical one the largest, bearing a black, white-pupilled ocellus; beyond the row of orange spots a subterminal dark brown line. Hind wing uniform, but bearing a postdiscal row of from three to six black, white-pupilled, orange-ringed ocelli. *Underside* very pale greyish white; fore wing: disc orange, outwardly defined by a dark line, two lines across the discoidal cell, and a sinuous discal oblique line beyond its apex not extending to the tornus, orange-brown; subterminal and terminal dark lines; a subapical ocellus, as on the upperside, but with the outer ring paler, and a much smaller ocellus beyond it towards apex of wing. Hind wing: the basal half crossed by two sinuous curved slender lines, a shorter line crossing the cell only, and another short line defining the discocellular nervules, orange-brown; the curved row of ocelli as on the upperside, but each ocellus with rings of pale ochraceous and of brown, alternately two of each; lastly, a subterminal and a terminal brown line. Antennæ brown; head and thorax studded with long dark grey pubescence; abdomen pale brown. Sex-mark present.

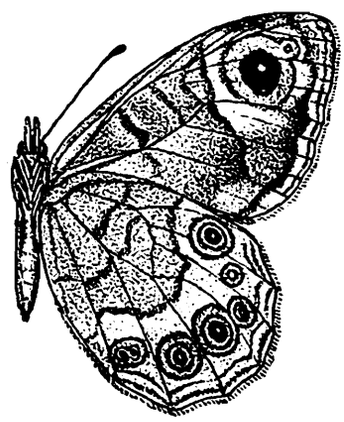

Fig. 28.—*Satyrus schakra*. Underside.

♀. Similar. *Upperside*, the orange spot bearing the ocellus on

the fore wing inwardly bordered by a broad, pale, short line; the raised band of specialized scales absent.

Exp. ♂ ♀ 56–58 mm. (2·25–2·3″).

Hab. The Himalayas eastwards to Sikhim.

130. **Satyrus mærula,** *Felder* (Lasiommata), *Novara Reise, Lep. Rhop.* 1867, p. 496 ♂; *M. & de N.* (Amecera) *Butt. Ind.* i, 1883, p. 180; *Moore* (Lasiommata), *Lep. Ind.* ii, 1893–96, p. 8, pl. 96, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Lasiommata laurion, *de N. Jour. Bomb. N. H. Soc.* x (1895), p. 15, pl. R, figs. 5, 6, ♂ ♀.

♂ ♀ Almost identical in ground-colour and markings with *S. schakra*, but the ♂ entirely lacks the secondary sex-mark, while the yellow on the disc of the fore wing on the underside is slightly more extended, in both sexes encroaching on the dull pale brown of the cell.

Exp. ♂ ♀ 56–58 mm. (2·25–2·3″).

Hab. Kashmir; Dalhousie; Pangi; Gonas Pass, N.W Himalayas.

131. **Satyrus menava,** *Moore* (Lasiommata), *P. Z. S.* 1865, p. 499, pl. 30, fig. 3 ♂; *Butler* (Amecera), *A. M. N. H.* (3) xix, 1867, p. 163; *M. & de N.* (Amecera) *Butt. Ind.* i, 1883, p. 180; *Moore* (Lasiommata), *Lep. Ind.* ii, 1893–96, p. 9, pl. 96, figs. 4, 4 *a*, ♂ ♀

Lasiommata mæroides, *Felder, Nov. Reise, Lep. Rhop.* 1867, p. 496, pl. 69, fig. 1 ♀.

♂ *Upperside* very dark ochraceous brown, the dark bands or lines on the underside showing through by transparency; cilia white, black at the apices of the veins. Fore wing with a subapical black, white-centred, yellow-ringed ocellus, and a much smaller but similar ocellus nearer the apex. Hind wing uniform, the lower outer area near the tornus with two, sometimes three, ocelli similar to those on the fore wing, the subtornal one the largest, the next to it above, when present, minute.

♀. *Upperside* similar to the upperside in *S. schakra*, but the transverse yellow postdiscal band on the fore wing much broader above, more continuous, generally diminishing to a point towards the dorsum, not broken into quadrate spots. Hind wing with only two or three ocelli, similar to the ocelli on the hind wing of the ♂. *Underside* of both sexes very similar to the underside in the sexes of *S. schakra*, but the orange-yellow on the disc of the fore wing spreads into the cell, the inner dark brown line crossing the cell is bordered on both sides with white, and the whole of the apex of the cell is white. Hind wing: ground-colour more uniform all over, irrorated with greyish scales. Antennæ, head, thorax and abdomen pale brown; the antennæ ringed with white, the abdomen whitish below. Male sex-mark present.

Exp. ♂ ♀ 54–56 mm. (2·15–2·25″).

Hab. N.W Himalayas; Kashmir; Chitral.

A. mæroides, Felder, seems to me to be only a casual variety of *A. menava*.

Genus **PARARGE.**

Pararge, *Hübner, Verz. bek. Schmett.* 1816, p. 59.

Type, *P. egeria*, Cramer, from Europe.

Range. Palæarctic Region. In India, the Himalayas.

♂ ♀ Fore wing triangular, the apex subtruncate, rounded; termen below apex slightly concave; costa slightly arched; dorsum nearly straight; cell longer than half length of wing; upper discocellular inclined obliquely outwards, middle twice as long as upper, inclined obliquely inwards, lower very long, inclined obliquely outwards; veins 1 to 5 nearly parallel. Hind wing oval, termen scalloped; cell nearly half length of wing; discocellulars subequal, very oblique; veins 3 and 4 from apex of cell, latter arched upwards. Antennæ not quite half length of fore wing, club gradual, broadly grooved on underside; palpi porrect, compressed, third joint long, fringed with long hair anteriorly; eyes hairy; intermediate femora with long hair beneath.

132. **Pararge cashmirensis**, *Moore, P. Z. S.* 1874, p. 265, pl. 43, fig. 3 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 177; *Moore* (Amecera), *Lep. Ind.* ii, 1893–96, p. 12, pl. 97, figs. 1, 1 *a*, ♂ ♀.

♂. *Upperside* ochraceous yellow. Fore wing: a band along the discocellulars, the apical third of the costa, and the termen broadly dusky black; a black spot towards apex of interspace 3, and one, sometimes two, preapical spots or ill-formed ocelli joining the black terminal border. Hind wing ochraceous brown, with the apex and termen broadly dusky black; a postdiscal series of three or four black spots or ocelli surrounded by rich ochraceous yellow. *Underside*: fore wing pale yellow; cell crossed by three sinuous lines, a band along the discocellulars, and a curved, sinuous, short, discal transverse line dusky black; termen and ocelli as on the upperside, but much paler; tornal area darker. Hind wing: basal half thickly suffused with dark brown scales; a subbasal, sinuous, transverse, slender line; termen broadly pale brown with a dark marginal line; area between dark base and pale terminal border distinctly whitish, irrorated with greyish scales and defined on both sides by dark sinuous lines; a postdiscal curved series of six or seven black, white-centred, yellow-ringed ocelli, the apical ocellus bordered inwardly with white, the third shifted out of line inwards. Cilia white alternated with brown. Antennæ, head, thorax and abdomen ochraceous brown, paler beneath; the antennæ annulated with white towards the base.

♀ Similar, the band along the discocellulars broader, and beyond it the costa white for a short distance on both upper and under sides.

Exp. ♂ ♀ 64–68 mm. (2·55–2·7″).

Hab. Kashmir.

A local race of *P. eversmanni*, Eversmann, from Central Asia.

Genus **NYTHA.**

Nytha, *Billberg, Enum. Ins.* 1820, p. 77 (*teste Scudder*).
Hipparchia, pt., *M. & de N.* (*nec Fabr.*) *Butt. Ind.* i, 1883, p. 182.

Type, *N. hermione*, Linn., from Central and Southern Europe.
Range. Palæarctic Region. In India, the Himalayas, Kashmir, Baluchistan.

♂ ♀. Fore wing broadly triangular, costa slightly arched, termen and dorsum straight or very slightly convex, apex somewhat produced, tornus rounded; discoidal cell long, well over half length of wing; upper discocellular minute, middle comparatively long, arched inwards, lower longest, outwardly convex; veins 10 and 11 from before apex of cell; vein 12 and median vein greatly inflated at base. Hind wing broadly oval, termen slightly scalloped; cell well over half length of wing; middle discocellular longest, curved inwards; vein 3 from well before apex of cell, 4 from apex, 6 closer to 7 than to 5. Antennæ comparatively short, not half length of fore wing; club abrupt, broadly spatulate (except in the aberrant form *parysatis*, Kollar); palpi with long porrect hairs anteriorly to apex; third joint short; eyes naked; intermediate femora with long hair beneath.— ♂ Secondary sex-marks present or absent; when present variable as to size and position, but always of specialized, somewhat densely-packed scales on the fore wing.

Nytha is very close to *Satyrus*, but can be distinguished from that genus by the difference in neuration of the hind wing, by the very broadly spatulate form of the club of the antennæ, and by the non-hairy eyes. The forms here enumerated under *Nytha* cannot be placed under *Hipparchia*, as that genus has the antennæ pointed at apex according to Fabricius' diagnosis.

Key to the forms of Nytha.

A. Club of antennæ short, broad, spatulate, not pointed at apex.
  a. A broad, continuous, postdiscal ochraceous band on upperside of fore wing.
    a' ♂ Secondary sex-mark of jet-black specialized scales in a broad short streak in middle of cell on upperside of fore wing . . . . . *N. thelephassa*, p. 114.
    b' ♂. Secondary sex-marks of brown specialized scales placed on both sides of median vein on upperside of fore wing.
      a^2. Ground-colour of wings dark brown; a subtornal round black spot on hind wing . . . . . *N. baldiva*, p. 114.
      b^2. Ground-colour of wings paler brown; no subtornal black spot on hind wing . . . . . Race *lehana*, p. 115.

b. A more or less whitish or fulvous series of postdiscal streaks or rectangular spots on upperside of fore wing.
a'. Cell of fore wing on upperside wholly brown.
a². Ocelli on upperside of fore wing of equal size ... . *N. diffusa*, p. 115.
b². Ocelli on upperside of fore wing unequal, lower ocellus much the largest .. .. *N. persephone*, p. 115.
b' Basal half of cell on upperside of fore wing white .. .. *N. shandura*, p. 116.
B. Club of antennæ long, crescentic, somewhat concave beneath and pointed at apex *N. parisatis*, p. 117.

133. **Nytha thelephassa,** *Hübner* (Eumenis), *Samml. Ex. Schmett.* ii, 1820–26, pl. 85, figs. 1–4, ♂ ♀; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 187; *Moore* (Eumenis), *Lep. Ind.* ii, 1893–96, p. 20.

♂. *Upperside* pale brown; cilia white alternated with brown; wings crossed by a postdiscal broad ochraceous band, the outer margin of which is defined by a dark line, inner margin on fore wing indented at vein 4, on hind wing somewhat diffuse; within the band there are two white-centred black ocelli, with two intermediate white spots, on the fore wing, and a very small subtornal white-centred black ocellus, with one or two white specks above it, on the hind wing. *Underside* pale greyish white, irrorated with numerous black and dark grey striæ; inferior apical half of cell, the disc, and ocellar area on the fore wing ochraceous. Hind wing: a postdiscal irregular, curved, transverse band, paler than the rest of the wing, and more or less defined on both sides by broken zigzag black lines. Ocelli on both fore and hind wing as on the upperside. Sex-mark a conspicuous broad jet-black streak about middle, rather towards apex of cell, on upperside of the fore wing. Antennæ, head, thorax and abdomen greyish brown; abdomen beneath white.

♀ Very similar, the ochraceous transverse band crossing the wings broader, the indentation of its inner margin at vein 4 on the fore wing deeper.

Exp. ♂ ♀ 62–68 mm. (2·45–2·7″).

Hab. S. Russia, through Persia to Afghanistan. Within our limits recorded from Quetta in Baluchistan.

134. **Nytha baldiva,** *Moore* (Lasiommata), *P. Z. S.* 1865, p. 499, pl. 30, fig. 4; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 188; *Moore* (Eumenis), *Lep. Ind.* ii, 1893–96, p. 18, pl. 98, figs. 1, 1 *a*, ♂ ♀

Race lehana.

Hipparchia lehana, *Moore, A. M. N. H.* (5) i, 1878, p. 227; *id. Yarkand Miss., Lep.* 1879, p. 1, pl i, fig. 4 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 188, pl. 16, fig. 48 ♀; *Moore* (Eumenis), *Lep. Ind.* ii, 1893–96, p. 19, pl. 98, figs. 2, 2 *a*, ♂ ♀

♂ ♀ This form so closely resembles *N. thelephassa* that, but for the remarkable difference in the ♂ secondary sex-mark, it might be mistaken for a rather dark variety of that insect. The ground-colour on the *upperside* and on the basal half of the hind wing on the *underside* is much darker, and the two white dots lying between the ocelli on the upperside of the fore wing are rarely present. The secondary sex-mark in the ♂ is a dark band of scales concolorous with the ground-colour and placed on either side of the median vein on the upperside of the fore wing.

Exp. ♂ ♀ 60–65 mm. (2·4–2·6″).

Hab. N.W Himalayas, Spiti, Kunawar.

Race **lehana**, Moore.—Differs from typical *N. baldiva* as follows:—Ground-colour paler, the ochraceous postdiscal band crossing the wings very much broader, and the black subtornal spot within the ochraceous band on the upperside of the hind wing absent. Male secondary sex-mark as in *N. baldiva*.

Exp. ♂ ♀ 62–68 mm. (2·45–2·7″).

Hab. Ladák, Hunza, Chitral.

135. **Nytha diffusa**, *Butler* (Hipparchia), *P. Z. S.* 1880, p. 147 ♂; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 186; *Moore* (Eumenis), *Lep. Ind.* ii, 1893-96, p. 18.

♂ *Upperside* dusky-brown, a subterminal, indistinct, darker line on both fore and hind wing; cilia white, brown at the apices of the veins. Fore wing broad, dusky-fulvous, short streaks in middle of interspaces 1 to 5, the streaks in second and fifth bearing each a white-centred black ocellus. Hind wing with postdiscal broad similar streaks not reaching termen in interspaces 2 to 6, these streaks palest inwardly, that in 2 bearing a small white-centred ocellus near its apex. *Underside*: fore wing—basal portion to apex of cell ochraceous yellow; remainder not reaching costa and termen paler; costa, apex broadly and termen irrorated with brown and white scales which extend into the cell; discocellulars defined by a short brown line; ocelli as on upperside. Hind wing: basal half darkened by a dense powdering of ochraceous and black scales, the highly sinuous outer border of the dark portion abruptly defined by a broad irregular white band, beyond which the wing darkens to the termen. Antennæ, head, thorax and abdomen brown.

Exp. ♂ 54–64 mm. (2·1–2·51″).

Hab. N.W Himalayas.

Recorded from the basin of the Ravi by Mr. A. Graham-Young. It is simply a rather dark form of the European "grayling" (*Nytha semele*).

136. **Nytha persephone**, *Hübner* (Papilio), *Eur. Schmett.* ii, 1805, pl. 115, figs. 589, 590, & pl. 140, figs. 710, 711; *Moore* (Philareta), *Lep. Ind.* ii, 1893-96, p. 23.
Hipparchia anthe, *M. & de N. Butt. Ind.* i, 1883, p. 192.

♂ ♀ *Upperside* greyish brown, paler towards the base of the

wings. Fore wing: apex of cell and the area a little beyond it very dark brown; a discal series of broad streaks and spots white, those in interspaces 2 and 5 medially interrupted by round black spots, inner portion of upper streak prolonged to costa. Hind wing: a broad discal, outwardly diffuse, curved band, not extended to the dorsum, white, a black spot beyond it in interspace 2. *Underside*: fore wing—the series of white streaks and the two round black spots as on the upperside, but the streaks broader, forming a continuous band, bordered on each side by a sinuous dark line; wing medially ochraceous, costa, apex and termen mottled black and greyish white, dorsum broadly dark brown except on the white band. Hind wing much mottled with grey and black striæ, some transverse black marks near base, followed by two sinuous dark angulated lines. Both wings with terminal dark lines and the cilia dusky greyish white and dark brown alternately. Antennæ, head, thorax and abdomen greyish brown; club of antennæ black, abdomen beneath whitish. Male without any secondary sex-mark.

Exp. ♂ ♀ 66–80 mm. (2·6–3·15″).

Hab. Within our limits recorded from Chaman, in Baluchistan, extending through Persia to Southern Russia.

137. **Nytha shandura**, *Marshall* (Hipparchia), *J. A. S. B.* 1882, p. 38, pl. 4, fig. 3 ♀; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 191; *Moore* (Chazara), *Lep. Ind.* ii, 1893–96, p. 21, pl. 98, figs. 3, 3 *a*, ♂ ♀.

♂ ♀ *Upperside* dusky black; cilia white, dusky black at the apices of the veins. Fore wing: basal half of cell and an outwardly curved discal series of broad streaks in the interspaces white, the streaks in interspaces 2 and 5 completely interrupted in the middle by black, white-centred ocelli. Hind wing: apex of cell and an outwardly curved, diffuse, broad, discal band white. *Underside*: fore wing—cell white, crossed subapically by a black bar; discal series of streaks and the ocelli as on the upperside, but the former broader and longer, confluent; a subterminal, somewhat indistinct lunular, and a more distinct terminal black line; apex and costa irrorated with greyish and black scales. Hind wing dusky greyish brown, the apex of cell and discal band, as on upperside, white, the greyish area much irrorated with brownish scales and the white with dusky black scales, giving altogether a mottled appearance. Antennæ, head, thorax and abdomen dark greyish brown; legs and abdomen beneath whitish. Male sex-mark a broad band of specialized black scales from lower apex of cell to dorsum.

Exp. ♂ ♀ 58–66 mm. (2·3–2·6″).

Hab. Northern Kashmir.

This is simply a race of *N. heidenreichi*, Lederer, from the Altai Mountains in Central Asia.

138. **Nytha parisatis,** *Kollar* (Satyrus), *Denkschr. Akad. Wien, Math.-nat. Ch.* i, 1849, p. 52; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 184, pl. 16, fig. 47 ♀; *Moore, Lep. Ind.* ii, 1893-96, p. 24, figs. 4, 4 *a*, ♂ ♀.

♂. *Upperside* dark vandyke-brown; costa preapically, lower half of termen on fore wing narrowly and termen of hind wing more broadly bluish grey, crossed by the dark veins and touched with brown at the apices of the latter; fore wing with a preapical black spot pupilled with white, another plain black spot in interspace 2, and two intermediate white dots; hind wing with a subanal white-centred black spot. *Underside* pale sepia-brown, irrorated with numerous white striæ, the discal and tornal area only of the fore wing without striæ; both wings crossed by a highly sinuous, broad, white discal band, inwardly defined

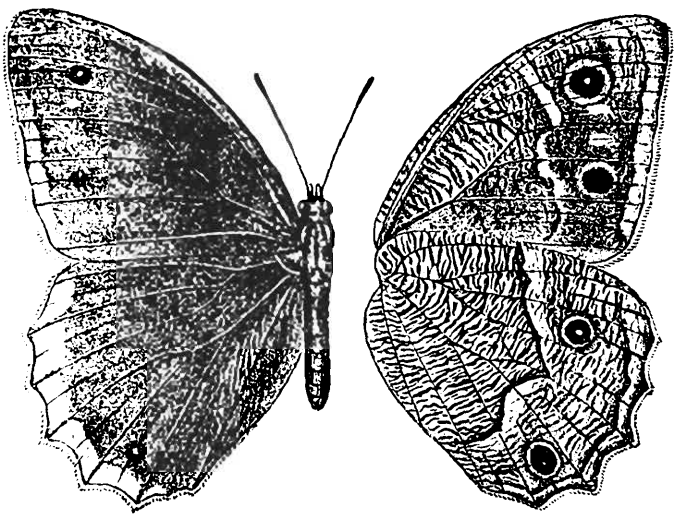

Fig. 29.—*Nytha parisatis*, ♂.

by a dark brown line, subterminal and terminal narrow brown bands; the round black spots as on the upperside, but more distinct and ringed with yellow; hind wing with an additional ocellus in interspace 5. Antennæ, head, thorax and abdomen concolorous with the wings above, paler below. Sex-mark a large dark brown patch of specialized scales on basal half of fore wing.

♀ Similar, the greyish-white marginal borders broader.

Exp. ♂ ♀ 76–82 mm. (3·02–3·25″).

Hab. N.W Himalayas, Baluchistan, extending into Afghanistan and S. Persia.

This form is somewhat aberrant: the club of the antennæ is not spatulate, but crescentic and concave beneath; the colouring also is of a different character from the rest of the group.

Genus **MANIOLA.**

Maniola, *Schrank, Fauna Boica*, ii, 1801 (1), pp. 152, 170.
Epinephele, *Hübner* (nec *Bloch-Schneid.*), *Verz. bek. Schmett.* 1816, p. 59.
Chortobius, *Guénée, in Dbldav's List of Brit. Butt. & Moths*, ed. 2, 1859, p. 2.

Type, *M. jurtina*, Linn., from Europe.

Range. Palæarctic Region. In India, N.W Himalayas, Ladák, Kashmir, Baluchistan.

♂ ♀ Fore wing triangular, costa arched, termen straight or slightly convex, dorsum straight, apex distinct, tornus rounded; cell under half length of wing, broad; vein 1 thickened, median vein and 12 greatly inflated at base; upper discocellular minute, middle strongly curved inwards, lower outwardly oblique; veins 2–6 equidistant, subparallel. Hind wing ovate, costa and termen in a regular arch; dorsum very long, straight, slightly emarginate towards apex; tornus well-marked; cell elongate, well over half length of wing; vein 3 from before apex of cell, 6 equidistant from 5 and 7. Antennæ about half length of fore wing, with a long gradual club; palpi normal, third joint comparatively long, hairy anteriorly to the apex; eyes naked; intermediate tarsi long, hairy beneath. Male secondary sex-mark a band of specialized dark scales placed obliquely below cell on upperside of fore wing, in one section; entirely absent in the other section.

Key to the forms of Maniola.

A. Males with secondary sex-mark of specialized scales on the fore wing.
  a. Fore wing: ground-colour of upperside ochraceous.
    a' Hind wing: underside with white-ringed black spots or ocelli — *M. davendra*, p. 119.
    b' Hind wing: underside without spots or ocelli — *M. narica*, p. 120.
  b. Fore wing: upperside ground-colour greyish brown.
    a'. ♂. Fore wing: black preapical ocellus on upperside with broad orange zone. ♀. Basal area of fore wing and hind wing outwardly not sharply defined — *M. cheena*, p. 120.
    b'. ♂ Fore wing: black preapical ocellus on upperside with a narrow pale ring. ♀ Basal area of fore and hind wing outwardly sharply defined — *M. interposita*, p. 121.
B. Males without secondary sex-mark of specialized scales on fore wing.
  a. Fore wing: ground-colour of upperside ochraceous.
    a'. Ochraceous yellow on upperside of fore wing not shaded or overlaid with brown — *M. pulchella*, p. 121.

b'. Ochraceous yellow on upperside of fore wing shaded or overlaid with brown.	
*a*². Fore wing with a diffused transverse discal brown band on upperside	Race *pulchra*, p. 122.
*b*². Fore wing without such band ..	Var. *neoza*, p. 122.
b. Fore wing: ground-colour of upperside greyish brown.	
a'. Underside of fore wing without a prominent transverse discal dark line	*M. cœnonympha*, p. 122.
b'. Underside of fore wing with a more or less distinct transverse discal dark line	Var. *maiza*, p. 123. Var. *goolmurga*, p. 123.

139. **Maniola davendra**, *Moore* (Epinephele), *P. Z. S.* 1865, p. 502, pl. 30, fig. 7, ♂ ♀; *M. & de N.* (Epinephele) *Butt. Ind.* i, 1883, p. 201, pl. 15, fig. 39 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 45, pl. 103, figs. 1, 1 *a*, ♂ ♀.

Epinephele roxane, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 491, pl. 69, figs. 12, 13, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 202.

Maniola latistigma, brevistigma, et tenuistigma, *Moore, Lep. Ind.* ii, 1893–96, pp. 46, 47, & 48, pl. 103, figs. 2 & 2 *a*, 3 & 3 *a*, and 4 & 4 *a*, ♂ ♀

♂. *Upperside*: fore wing orange-yellow, margins somewhat broadly greyish brown sharply defined; the sex-mark brown, very prominent; a round, black preapical spot; cilia greyish. Hind wing uniform greyish brown, with obscure subterminal dark line; cilia white; termen strongly scalloped. *Underside* similar to the upperside, but on the fore wing the margins are paler brown and not so sharply defined, the orange-yellow on the basal half is bordered by a curved, transverse, somewhat obscure pale band, and on the terminal half by a dark zigzag line, beyond which the termen is narrowly pale; a preapical, white-centred, yellow-ringed, black ocellus with a slender brown outer ring; finally an anticiliary black line. Hind wing paler than on the upperside; a strongly curved, median, narrow white band margined inwardly with ferruginous; three black, white-ringed spots, first near apex of interspace 1, second more inwards in interspace 2, third smaller in interspace 5; beyond these an obscure subterminal, whitish, narrow band and an anticiliary black line. Antennæ brown ringed with white; head, thorax and abdomen greyish brown.

♀ *Upperside* differs from the ♂ in having a curved dark sinuous discal band crossing both wings, sometimes obscure on the hind wing; the basal area within this band is greyish brown on the fore wing, with a shading of yellow outwardly. *Underside* similar to that of the ♂, the transverse band more clearly defined.

Exp. ♂ ♀ 56–60 mm. (2·2–2·38″).

Hab. N.W Himalayas, Spiti, Kunawar, Ladák; Dras and Indus Valley; Baluchistan. Recorded also by Felder from Kumaun.

Var. *latistigma*, Moore, has the secondary sex-mark in the ♂ very broad, and in typical specimens of the variety the underside altogether paler; var. *brevistigma*, Moore, has the sex-mark very short; and var. *tenuistigma*, Moore, the same very narrow. The size of the insect, the shades of the ground-colour of the wings, the distinctness of the transverse discal band, the presence or absence of ocelli are all variable characters, as variable as the size of the secondary sex-marks on the wings of the males.

140. **Maniola narica**, *Hübner* (Papilio), *Eur. Schmett.* ii, 1805, pl. 139, figs. 704–707; *M. & de N.* (Epinephele), *Butt. Ind.* i, 1883, p. 204; *Moore, Lep. Ind.* ii, 1893–96, p. 48.

♂ ♀ Very closely resembles on the upperside small specimens of *M. davendra*, Moore; but on the *underside* there is no transverse band on the fore wing; the preapical ocellus is broadly bordered with very pale yellow on the inner side, the colour being continued to the costa in a short oblique streak; the costal and terminal margins and apex of wing white, thickly irrorated with minute brown scales. Hind wing pale greyish white, thickly irrorated with reddish-brown scales that form irregular discal and subterminal obscure bands, with the outer margins defined by curved, highly sinuous dark lines; ocelli entirely absent.

Exp. ♂ ♀ 47–52 mm. (1·88–2·03″).

Hab. Within our limits, taken at Chaman on the Afghan frontier. Found in S. Russia; W Asia; Afghanistan.

141. **Maniola cheena**, *Moore* (Epinephele), *P. Z. S.* 1865, p. 501, pl. 30, fig. 6, ♂ ♀; *M. & de N.* (Epinephele) *Butt. Ind.* i, 1883, p. 205; *Moore, Lep. Ind.* ii, 1893–96, p. 50, pl. 104, figs. 1, 1 *a*, ♂ ♀.

Maniola kashmirica, *Moore, Lep. Ind.* ii, 1893–96, p. 51, pl. 104, figs. 2, 2 *a*, ♂ ♀.

♂. *Upperside* umber-brown; cilia brown, tipped with grey. Fore wing with a preapical black ocellus having a minute fulvous centre and broad orange zone; in some specimens a similar but much smaller ocellus in interspace 2. Hind wing uniform. *Underside*: fore wing dull orange, the costa, the apex broadly, the terminal and dorsal margins greyish brown, a discal sinuous and a subterminal straighter transverse dark line; the preapical ocellus as on the upperside, but ringed with yellow. Hind wing greyish brown with delicate transverse brown striæ, crossed by a zigzag curved discal and an obscure subterminal sinuous dark line, the tornal area with one or two minute black yellow-ringed ocelli.

♀. *Upperside* similar, but fore wing with a large postdiscal area orange, bearing a round black spot in interspace 2, a smaller black spot in interspace 3, and a preapical ocellus as in the ♂. *Underside* also similar to that in the ♂, but on the fore wing with the round black spot in interspace 2 as on the upperside, only with a zone of yellow.

Exp. ♂ ♀ 56–62 mm. (2·25–2·5″).

Hab. N.W. Himalayas; Kashmir.

Var. *kashmirica*, Moore, differs only in both sexes being smaller (*exp.* ♂ ♀ 44–54 mm.) and the zone round the preapica locellus on the upperside of the fore wing in the ♂ being much narrower, often ill-defined.

142. **Maniola interposita**, *Erschoff* (Epinephele), *Fedtschenko, Reise Turkest., Lep.* 1874, p. 22, pl. 2, fig. 16 ♀; *M. & de N.* (Epinephele), *Butt. Ind.* i, 1883, p. 206; *Moore, Lep. Ind.* ii, 1893–96, p. 49.

♂ *Upperside* greyish brown, with a powdering of glittering, somewhat copper-coloured scales, visible only in certain lights; cilia silvery grey. Fore wing with a small round black preapical spot surrounded by a pale ring. Hind wing uniform; termen somewhat prominently scalloped. *Underside* much as in *M. cheena*, but the ground-colour paler and the transverse sinuous lines crossing the hind wing obscure.

♀ *Upperside* brown; basal half, or more, of both fore and hind wing dark, this area with a curved angulated sinuous border sharply defined, margined by a pale broken discal transverse fascia; preapical round black spot on the fore wing as in the ♂ surrounded by a pale yellowish ring; and on both fore and hind wing an obscure subterminal dark band. *Underside* as in *M. cheena*, but paler.

Exp. ♂ ♀ 50–54 mm. (1·95–2·13″).

Hab. Within our limits recorded from Chaman in Baluchistan. Spread through Afghanistan and Turkestan.

143. **Maniola pulchella**, *Felder* (Epinephele), *Novara Reise, Lep. Rhop.* 1867, p. 490, pl. 69, fig. 16 ♂; *M. & de N.* (Epinephele) *Butt. Ind.* i, 1883, p. 208, pl. 15, fig. 40 ♂ (*left-hand half only*); *Moore* (Chortobius), *Lep. Ind.* ii, 1893–96, p. 54, pl. 105, figs. 1, 1 *a*, ♂ ♀.

Race pulchra.

Epinephele pulchra, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 491 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 209; *Moore* (Chortobius), *Lep. Ind.* ii, 1893–96, p. 52, pl. 104, figs. 3, 3 *a*, ♂ ♀.

Epinephele neoza, *Lang, Ent. Month. Mag.* 1868, p. 35; *M. & de N. Butt. Ind.* i, 1883, p. 209; *Moore* (Chortobius), *Lep. Ind.* ii, 1893–96, p. 53, pl. 104, figs. 4, 4 *a*, ♀.

♂. *Upperside*: fore wing ochraceous yellow; costa, termen and dorsum broadly greyish brown; a preapical round black spot or non-pupilled ocellus. Hind wing uniform greyish brown; termen very slightly scalloped. Cilia of both fore and hind wing paler greyish brown. *Underside* similar, the greyish-brown margins of the fore and the ground-colour of the hind wing of a paler tint than on the upperside and irrorated with dark brown specks and striæ, the latter forming on the disc of the hind wing a transverse broken obscure zigzag angulated line; the preapical ocellus on the fore wing white-centred and surrounded by a broad zone of yellow paler than the ground-colour.

♀ Similar, slightly larger; upperside of fore wing generally with an additional round black spot near tornus. Antennæ, head, thorax and abdomen pale greyish brown.

Exp. ♂ ♀ 42–48 mm. (1·75–1·9″).

Hab. N.W. Himalayas; Kashmir; Chitral; Ladák.

Race **pulchra**, Felder, is a larger insect. ♂ *Upperside*: the ochre-yellow ground-colour of the fore wing overlaid with brown, which forms a more or less diffuse dark band across the wing, the preapical round black spot as in typical *pulchella*. Hind wing similar to hind wing of *pulchella*. *Underside* as in *pulchella*, but the greyish-brown colour darker and the margins formed by it on the fore wing broader; obscure discal and subterminal brown sinuous lines on the fore wing; the zone of yellow round the preapical ocellus more distinct than in *pulchella*.— ♀ resembles the ♂, but the ochraceous yellow on the upperside of fore wing is of a brighter tint, and occasionally, as in *pulchella*, there is an additional black spot. *Underside*: the transverse discal and subterminal brown lines generally more distinct.

Exp. ♂ ♀ 46–51 mm. (1·8–2″).

Hab. N.W Himalayas; Chitral; Kashmir; Ladák; the Ganges Valley, Dalhousie.

Var. *neoza*, Lang, has a larger extent of ochre-yellow on the fore wing than typical *pulchra*, and the transverse discal line is absent.

144. **Maniola cœnonympha**, *Felder* (Epinephele), *Novara Reise*, *Lep. Rhop.* 1867, p. 492, pl. 69, figs. 14, 15, ♀; *M. & de N.* (Epinephele), *Butt. Ind.* i. 1883, p. 210, ♂ ♀; *Moore* (Chortobius), *Lep. Ind.* ii, 1893–96, p. 54, pl. 105, fig. 2 ♀.

Epinephele maiza, *Lang*, *Ent. Month. Mag.* v, 1868, p. 36 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 211, pl. 15, fig. 41 ♀; *Moore* (Chortobius), *Lep. Ind.* ii, 1893–96, p. 55, pl. 105, figs. 3, 3 *a*, 3 *b*, ♂ ♀

Epinephele goolmurga, *Lang*, *Ent. Month. Mag.* v, 1868, p. 36 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 212; *Moore* (Chortobius), *Lep. Ind.* ii, 1893–96, p. 56, pl. 105, figs. 4, 4 *a*, ♂ ♀.

♂ *Upperside* brown, uniform, with a powdering of shining cupreous scales seen only in certain lights; cilia brown; in some specimens a faintly indicated round black preapical spot on the fore wing, surrounded by a narrow pale ring. *Underside*: fore wing deep ochraceous orange, the costa, apex, termen and dorsum broadly overlaid with brown, the discocellulars and a short streak from the costa beyond brown, the preapical spot as on the upperside. Hind wing: basal half dark brown, apical half brown with a deep ochraceous tint; a comparatively large ochraceous spot near base; an angulated discal band of six or seven detached whitish unequal spots, and beyond it two minute ochraceous-ringed black ocelli, in interspaces 2 and 5 respectively.

♀ Similar: *upperside* paler brown, cilia whitish; fore wing with two postdiscal broadly white- or ochraceous-ringed black ocelli. Hind wing with the discal band of spots of the underside showing through. *Underside* as in the ♂, but the ochraceous

colour on the fore wing paler, the ground-colour of the hind wing brown, darker basally. Fore wing with a discal and a subterminal dark brown line, the former bordered outwardly near the costa by a short white streak, the ocelli as on the upperside. Hind wing as in the ♂. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 39–46 mm. (1·53-1·7″).

Hab. Ladák; Kashmir.

Var. *maiza*, Lang, differs chiefly in both ♂ and ♀ having a transverse discal brown line on the underside of the fore wing. Var. *goolmurga*, Lang, differs in the brown on the costa, termen and dorsum being narrower. The shade of ground-colour, the ocelli, and the spots composing the transverse discal band on the hind wing are variable characters.

Genus **KARANASA**.

Karanasa, *Moore, Lep. Ind.* ii, 1893, p. 38.
Kanetisa, *Moore, Lep. Ind.* ii, 1893, p. 42.

Type, *K. huebneri*, Felder, from Ladák.

Range. Kashmir, Baltistan, Ladák, N.W Himalayas, Baluchstan.

♂ ♀ Fore wing subtriangular, costa slightly arched, termen straight or slightly convex, dorsum straight, tornus rounded; discoidal cell long, over half length of wing; upper discocellular minute, middle angulated inwards, lower outwardly convex; veins 2 to 6 parallel, equidistant, 10 and 11 from before upper apex of cell; vein 12 inflated at base, median vein barely thickened. Hind wing ovate, termen slightly scalloped, discoidal cell about half length of wing; vein 3 from well before, 4 from apex of cell, 6 slightly closer to 7 than to 5. Antennæ slightly over half length of fore wing; club very long and gradual, deeply grooved beneath; palpi fringed with long hair, third joint short; eyes naked; intermediate femora longer than tibiæ, with long hair beneath. Male sex-mark, an oblique, somewhat narrow and generally rather indistinct band of specialized scales, below median nervure on upperside of fore wing.

Key to the forms of Karanasa.

a. Wings with a broad, transverse ochraceous or orange band on upperside.
  a'. Fore wing: termen strongly convex. Expanse 48–55 mm.
    a². Basal half of both fore and hind wing vandyke-brown . . . . . *K. huebneri*, p. 124. (Typical.)
    b². Basal half of both fore and hind wing ochraceous, more or less shaded with brown . . . . . Var. *modesta*, p. 124.
  b' Fore wing: termen straight. Expanse 60–64 mm. . . . . Var. *leechi*, p. 124.
b. Wings uniform brown, without an ochraceous or orange band on upperside . . . . . *K. digna*, p. 125.
K. pimpla, p. 124.

145. **Karanasa huebneri,** *Felder* (Satyrus), *Novara Reise, Lep. Rhop.* 1867, p. 494, pl. 69, figs. 8, 9, ♀ ; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 189; *Moore, Lep. Ind.* ii, 1893–96, p. 39, pl. 101, figs. 3, 3 *a*, ♂ ♀

Hipparchia cadesia, *Moore, P. Z. S.* 1874, p. 565, pl. 66, fig. 7 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 190.

Karanasa leechii et modesta, *Moore, Lep. Ind.* ii, 1893–96, p. 41, pl. 101, figs. 4, 4 *a*, ♂ ♀, and pl. 102, figs. 1, 1 *a*, ♂ ♀

♂ *Upperside* pale vandyke-brown; cilia white alternated with brown; a broad postdiscal bright ochraceous band not reaching the costal or dorsal margin on either fore or hind wing; on the fore wing this band bears an upper and a lower round black spot and has its inner margin angulated; on the hind wings it is somewhat crescentic in shape, and on both fore and hind wing it is outwardly defined by a zigzag dark line. *Underside*: fore wing ochraceous, with the spots as on the upperside, the ground-colour paler round the upper spot; a subterminal dark zigzag line and the costal and terminal margins greyish brown. Hind wing thickly irrorated with white, grey, and brown scales, the last forming a broad, curved, median transverse band bordered inwardly by a curved, outwardly by a zigzag, dark line; beyond this is a postdiscal zigzag, highly curved similar line; veins conspicuously pale. Antennæ, head, thorax and abdomen greyish brown.

♀. Similar, but much paler. *Upperside*: the whole fore wing up to the dark terminal margin suffused with ochraceous. Hind wing: the ochraceous transverse band much broader, diffuse inwardly.

Exp. ♂ ♀ 48–55 mm. (1·9–2·2″).

Hab. N.W Himalayas; Ladák; Kashmir.

Var. *leechi*, Moore, is paler on the upperside, and has comparatively longer wings. Var. *modesta*, Moore, on the contrary, is a very dark form, the ochraceous band contrasting strongly with the dark bases and margins of the wings; in many specimens there is an additional spot on the upperside of the fore wing joining on to the upper spot from the interspace below.

146. **Karanasa pimpla,** *Felder* (Satyrus), *Novara Reise, Lep. Rhop.* 1867, p. 494, pl. 69, figs. 10, 11, ♀; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 185; *Moore* (Kanetisa), *Lep. Ind.* ii, 1893–96, p. 43, pl. 102, figs. 3, 3 *a*, ♂ ♀.

♂ ♀ *Upperside* glossy dark brown, with, in some lights, a reddish-bronze tint on the fore wing; cilia white alternated with brown. Fore wing with a comparatively large preapical round black spot, often minutely pupilled with white. *Underside* pale greyish brown; fore wing with the spot as on the upperside, but set in a broad pale zone; cell and disc ochraceous; costa and termen thickly set with brown, white, and grey scales, dorsal margin broadly dark brown. Hind wing: ground-colour as in *K. huebneri*; basal area with some short, transverse, dark brown irregular lines; median and subterminal more continuous zigzag

lines reddish brown. Antennæ, head, thorax and abdomen brown, paler beneath.

Exp. ♂ ♀ 58–62 mm. (2·38–2·45″).

Hab. N.W. Himalayas; Baluchistan; Ladák.

147. **Karanasa digna**, *Marshall* (Hipparchia), *J. A. S. B.* 1882, p. 67 ♀; *M. & de N.* (Hipparchia) *Butt. Ind.* i, 1883, p. 189; *Moore* (Kanetisa), *Lep. Ind.* ii, 1893–96, p. 42, pl. 102, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ Resembles *K. pimpla*, Felder, but on the upperside both fore and hind wings are crossed by a postdiscal broad orange band which encircles anteriorly the preapical round black spot; the lower spot is absent. On the underside there is a distinct median sinuous band of dark scales, more or less defined inwardly and outwardly by dark brown lines, and a subterminal zigzag brown line shaded inwardly with dark scales.

Exp. ♂ ♀ 60–64 mm. (2·38–2·52″).

Hab. Kashmir; Chitral.

Genus **AULOCERA.**

Oreas, *Hübner* (*nec Desmarest*), *Tentamen*, 1816, p. 1.
Aulocera, *Butler*, *Ent. Month. Mag.* iv, 1867, p. 121, fig. 1.

Type, *A. brahminus*, from Kashmir.

Range. The Himalayas; Tibet; Western China.

♂ ♀ Wings in the typical form rather narrow, in others comparatively broad. Fore wing: costa arched; termen convex or straight, never concave; dorsum straight; cell slightly over half length of wing; upper discocellular minute, middle moderately long, straight, lower twice length of middle, angulated obtusely outwards; vein 4 from lower apex of cell, 5 and 6 apart, subparallel, 10 from just before upper apex of cell; vein 12 greatly, median vein slightly swollen at base. Hind wing ovate; termen moderately arched, scalloped; vein 3 from well before, 4 from apex of cell, 5 and 6 well apart, 6 and 7 closely approximate. Antennæ under half length of fore wing; club gradual, slightly flattened; eyes naked; palpi strongly compressed, fringed with long porrect hairs; intermediate femora longer than tibiæ, with long hair at base; tibiæ strongly spinose.

Key to the forms of Aulocera.

A. Termen of fore wing convex.
  a. Expanse 64–67 mm. White transverse band across wings narrow, of uneven width, not reaching dorsal margin of hind wing ... . *A. brahminus*, p. 126.
  b. Expanse 68–75 mm. White transverse band across wings very broad, of even width, reaching dorsal margin of hind wing *A. saraswati*, p. 128.

B. Termen of fore wing straight.
  a. Expanse 80–87 mm. White transverse band across wings very broad, of even width, reaching dorsal margin of hind wing .... *A. padma*, p. 127.
  b. Expanse 72–76 mm. White transverse band across wings comparatively narrow, of uneven width, not reaching dorsal margin of hind wing *A. swaha*, p. 126.

148. **Aulocera brahminus**, *Blanchard* (Satyrus), *Jacquemont, Voy. dans l'Inde*, iv, 1844, *Ins.* p. 22, pl. 2, fig. 4 ♂ (*nec* figs. 5 & 6); *M. & de N. Butt. Ind.* i, 1883, p. 198, pl. 16, fig. 49 ♂; *Moore, Lep. Ind.* ii, 1893-96, p. 27, pl. 99, figs. 1, 1 *a*, ♂ ♀
Aulocera brahminoides, *Moore, Lep. Ind.* ii, 1893-96, p. 29, pl. 29, figs. 2, 2 *a*, ♀.
Aulocera scylla, *Butler, Ent. Month. Mag.* iv, 1867, p. 122.

♂ ♀ *Upperside* black with, in certain lights, a bronzy sheen; a postdiscal oblique band of white spots in the interspaces crossing both wings, slightly excurved on hind wing, interrupted preapically on the fore wing by a large round black spot, this spot with a white spot on its inner, upper, and outer margins; one or two short white streaks continue the inner white spot to the costa, prominently so in the ♀; on the fore wing the upper three or four spots of the band are well separated and are outwardly conical; on the hind wing the spots form a continuous band not quite reaching the dorsum; cilia alternately black and white. *Underside* fuscous bronzy brown; costa and apex broadly, sometimes upper half of termen, also of fore wing and the whole of the hind wing, irrorated with minute specks and striæ of white: the lower basal half of hind wing darker; the white transverse band of spots and black preapical spot as on the upperside; one or two minute white spots beyond the white band and a postdiscal lunular, somewhat irregularly curved black band on the hind wing; the margins of both wings defined by a black line. Antennæ, head, thorax and abdomen dark brown.

Exp. ♂ ♀ 64–67 mm. (2·53–2·65″).

Hab. N.W Himalayas; Kulu, Kashmir; Sikhim; Sylhet.

Var. *brahminoides*, Moore, is the deeper and richer coloured Eastern form, found in Native Sikhim and the Chumbi Valley. It is glossed with purple at the apex of the fore wing and apices of the veins of the hind wing on the underside. Var. *scylla*, Butler, differs from *brahmina* only in having the transverse band on the wings much narrower and in some specimens obsolescent towards the dorsal margin of the hind wing.

149. **Aulocera swaha**, *Kollar* (Satyrus), *Hügel's Kaschmir*, iv, 1844, 2, p. 444, pl. 14, figs. 1 & 2; *M. & de N. Butt. Ind.* i, 1883, p. 197; *Moore, Lep. Ind.* ii, 1893-96, p. 33, pl. 100, figs. 2, 2 *a*, ♂ ♀

♂ ♀ Differs from *A. brahmina* as follows:—*Upperside*: discal

white band crossing both wings broader, not excurved on the hind wing, tinged with creamy yellow; preapical black spot on fore wing less distinct, the white spot on its inner margin not continued to the costa. *Underside*: the irrorations of transverse greyish-white striæ less numerous on the fore wing; the lower basal area of the hind wing tinged with green; the lunular black postdiscal band straighter, somewhat diffuse; beyond it a broad band of greyish-white striæ; the marginal black lines obscure on both wings.

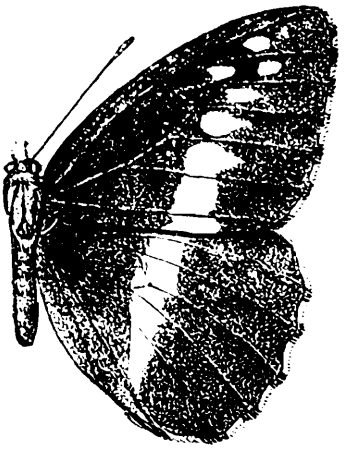

Fig. 30.
Aulocera swaha, ♂.

Exp. ♂ ♀ 72–76 mm. (2·9–3″).

Hab. The Himalayas from Kashmir to East Kumaun.

Larva. There seems to be some doubt as to the true larva of this, the commonest of the *Auloceras*. Mr. Grahame Young (*fide* Moore) says, "probably black, but so thickly covered with bright yellow hairs that it is impossible to see what its ground-colour really is." Mr. Mackinnon, on the contrary (Journ. Bomb. N. H. Soc. 1897–98, p. 218), says the larva is brown, with "a rough hairless skin." The food-plant is said by Mr. Grahame Young to be the wild blue iris; by Mr. Mackinnon, "different grasses."

150. Aulocera padma, *Kollar* (Satyrus), *Hügel's Kaschmir*, iv, 1844, p. 445, pl. 15, figs. 1 & 2 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 196; *Moore, Lep. Ind.* ii, 1893–96, p. 32, pl. 100, figs. 1, 1 *a*, ♂ ♀.

Aulocera loha, *Doherty, J. A. S. B.* 1886, p. 118; *Moore, Lep. Ind.* ii, 1893–96, p. 30, pl. 99, figs. 4, 4 *a*, ♂ ♀.

Aulocera chumbica, *Moore, Lep. Ind.* ii, 1893–96, p. 30, pl. 99, figs. 3, 3 *a*, ♂ ♀.

Fig. 31.—*Aulocera padma*, ♂.

♂ ♀ Differs from *A. brahminus* as follows:—Larger. *Upperside* black or dark brown without any bronzy sheen, the discal band crossing both wings very much broader, not tinged with cream-colour as in *A. swaha*; the free spots in the band on fore wing more or less oval and pointed outwardly, the black preapical spot not prominent, the white spot on the inner margin of the preapical spot continued to the costa only in the ♀ *Underside* silky brown, the discal band sharply defined on its inner border, diffuse outwardly; fore wing with a dark brown, broad, subterminal band; the basal area of the hind wing very dark, the

greyish-white striæ very delicate and fine; these striæ tinged with purplish beyond the discal band; the postdiscal black transverse band broad, consisting of a series of irregular subtriangular blotches.

Exp. ♂ ♀ 80–87 mm. (3·2–3·45″).

Hab. Himalayas; Kulu to Sikhim.

It is with some hesitation I identify *A. loha* as only a variety of *A. padma*, but the points of difference pointed out by Mr. Doherty are eminently variable. Mr. Doherty says: "♂ distinguished by the divergent white spots from the median band to the costa; the ♀ by the band of the hind wing below being narrow, well-defined, and ochreous. The insect is darker than *padma*, the apex of both wings glossed with lilac below, and the base of the hind wing greenish."

Var. *chumbica*, Moore, of which there is a series in the British Museum Collection, is smaller than var. *loha*, with the band on the hind wing narrower than in *loha* and still narrower than in typical *A. padma*.

151. **Aulocera saraswati,** *Kollar* (Satyrus), *Hügel's Kaschmir*, iv, 1844, 2, p. 445, pl. 14, figs. 3 & 4 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 200; *Moore, Lep. Ind.* ii, 1893–96, p. 35, pl. 100, figs. 3, 3*a*, ♂ ♀

♂ ♀. Can be discriminated at a glance from *A. brahminus*, *swaha*, *padma*, &c., by the proportionately much shorter and broader wings, the fore wing having the costa more strongly arched and the apex and tornus much more rounded. The discal white band is very broad and of nearly even width throughout; in the ♀ the white spot on the inner margin of the black preapical spot is elongate and large, in the ♂ minute. *Underside* very strongly washed with ochraceous, and with numerous fine black striæ except on the discal and postdiscal bands, the former inwardly margined by a slender dark brown line; the latter very distinct, black, and somewhat diffuse at the edges, very broad towards the dorsal margin of the fore wing.

Exp. ♂ ♀ 68–75 mm. (2·75–3″).

Hab. Himalayas from Kashmir to Nepal.

Genus ŒNEIS.

Œneis, *Hübner, Verz. bek. Schmett.* 1816, p. 58.
Chionobas, *Boisduval, Icones Hist. Lép.* i, 1832, p. 182.
Parœneis, *Moore, Lep. Ind.* ii, 1893–96, p. 36.

Type, *Œ. norna*, Thunberg, from Northern Europe.

Range. Palæarctic and Nearctic Regions. Within our limits at high elevations in the Himalayas.

♂ ♀ Fore wing triangular, costa widely arched, termen slightly convex, dorsum straight; apex typically produced, in the Indian forms rounded; tornus rounded; discoidal cell well over

half length of wing; veins 6 and 7 closely approximate, upper discocellular therefore minute, middle strongly concave, lower oblique; veins 10 and 11 from before apex of cell, 12 very slightly swollen at base. Hind wing oval, costa somewhat straight; termen very slightly scalloped; dorsum long; apex and tornus rounded; discoidal cell well over half length of wing; discocellulars long, middle discocellular concave in its upper portion; vein 3 from well before apex of cell, 4 from apex, 6 closer to 7 than to 5. Antennæ short, less than half length of fore wing; club gradual, flattened on the underside, blunt at apex, proportionately thicker and shorter in the Indian forms; palpi short, with long hairs to apex; head and body very hairy; eyes naked; intermediate femora with long floccus of hair posteriorly. Male sex-mark an oblique broad streak of dark specialized scales below cell in the fore wing. This mark is entirely absent in the Indian forms.

Key to the forms of Œneis.

a. Upperside ochraceous lightly shaded with brown . . . . . *Œ. pumilus*, p. 129.

b. Upperside ochraceous red deeply overlaid with dark brown . . . . . Race *sikhimensis*, p. 129.

152. **Œneis pumilus**, *Felder* (Chionobas), *Novara Reise, Lep. Rhop.* p. 490, pl. 69, figs. 6, 7, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 238, pl. 15, fig. 37 ♂; *Moore* (Parœneis), *Lep. Ind.* ii, 1893–96, p. 37, pl. 101, figs. 1, 1 *a*, ♂ ♀.

Race sikhimensis. (Pl. III, fig. 21.)

Œneis palæarcticus, var. sikkimensis, *Staudinger, Stettin ent. Zeit.* 1889, p. 21.

Parœneis sikkimensis, *Moore, Lep. Ind.* ii, 1893–96, p. 38, pl. 101, figs. 2, 2 *a*, ♂.

♂ ♀. *Upperside* ochraceous, slightly shaded with brown darkening towards termen; fore and hind wings each with a curved discal transverse band of yellow spots in the interspaces, broadening on the fore wing round a preapical dusky spot, on the hind wing the third spot shifted a little inwards. Cilia white, alternated with brown. *Underside*: fore wing ochraceous, hoary along the costa and on apex, with transverse dark striæ which extend into the cell; discal band as on the upperside, but with dark brownish-orange borders to the spots. Hind wing with the discal band as above but yellowish white, its inner margin zigzag; a pale subbasal patch near the costa and the veins hoary; rest of the wing greyish white, thickly set with dark brown specks and striæ. Antennæ ochraceous; head, thorax and abdomen dusky brown.

Exp. ♂ ♀ 42–52 mm. (1·68–2·15″).

Hab. Tibet and, within our limits, high elevations in the Himalayas.

Race **sikhimensis**, Staudinger, differs on the upperside by the ground-colour being ochraceous red deeply overlaid with dark

brown; the discal bands of spots are pale ochraceous with paler centres, the band on the fore wing anteriorly widens as in the typical form, surrounding a dusky spot, but the spot is often white-centred. *Underside* as in the typical form, but much darker, especially the hind wing, more thickly irrorated with brown scales; these in the fore wing form irregular, short, narrow transverse marks in the cell; the discal bands white on both fore and hind wing.

Exp. ♂ ♀ 42–50 mm. (1·68–2·00″).

Hab. Sikhim at high elevations; the Chumbi Valley.

Genus **YPTHIMA.**

Ypthima, *Hübner, Verz. bek. Schmett.* 1816, p. 63; *M. & de N. Butt. Ind.* i, 1883, p. 212; *Moore*, pt., *Lep. Ind.* ii, 1893–96, p. 75.
Thymipa, Kolasa, Nadiria, Pandima, Lohana, et Dallacha, *Moore, Lep. Ind.* ii, 1893–96, pp. 58, 82, 85, 86, 92, & 94.

Type, *Y philomela*, Johannsen, from Java.

Range. Africa; the whole of the Indo-Malayan Region, extending to China and Australia.

♂ ♀. Fore wing triangular, costa widely arched; apex rounded or subacute; termen straight, tornus rounded, dorsum straight; cell comparatively very broad, of moderate length, about half length of wing; upper discocellular about half length of middle, lower longest, concave and oblique; veins 10 and 11 emitted after apex of cell, 11 and median vein considerably inflated at base. Hind wing ovate, costa and termen arched; dorsum straight, slightly emarginate towards tornus; cell long, well over half length of wing; discocellulars very oblique; vein 8 bordering costa to apex of wing. Antennæ slender, short, less than half length of fore wing, club very slight; palpi long, slender, oblique, with anteriorly a fringe of long hairs; eyes naked; intermediate and posterior femora scaled, not hairy beneath, longer than tibiæ. Male secondary sex-mark present in some of the forms in the shape of a patch of specialized scales on the upperside of the fore wing below and above the median nervure.

Key to the forms of Ypthima *.

A. Underside of hind wing with two subapical ocelli.
  a. The ocelli on underside of hind wing in pairs in échelon.
    a' Expanse under 50 mm.
      a^2. Underside of fore wing without subbasal transverse fascia.
        a^3. Two subapical ocelli on underside of hind wing coalescent, anterior one minute. Expanse 32–35 mm. — *Y. philomela*, p. 133.

* Does not nclude *Y. megalia*, de Nicéville (p. 146), which is unknown to me.

b^3. Two subapical ocelli on underside of hind wing separate, subequal.
Expanse over 40 mm.
a^4. Termen of fore wing convex .. *Y. sobrina*, p. 135.
b^4. Termen of fore wing concave in middle ... . *Y. similis*, p. 135.
b^2. Underside of fore wing with a subbasal transverse fascia.
a^3. ♂ with secondary sex-mark.
a^4. Underside of wings covered densely with short, slender, dark brown striæ; ground-colour scarcely showing through } *Y. philomela*, race *indecora*, p. 133.
b^4. Underside of wings with coarser, sparser, more open striæ; ground-colour showing plainly through .. .. .. *Y. baldus*, p. 134.
b^3. ♂ without a trace of a secondary sex-mark . .. *Y. affectata*, p. 135.
b'. Expanse over 50 mm.
a^2. Underside of fore wing without a subbasal transverse fascia.
a^3. Paired ocelli on underside of hind wing with narrow irides separate one from the other, irides not touching .. .. *Y. methora*, p. 136.
b^3. Paired ocelli on underside of hind wing with broad irides touching one another . ... .. *Y. dohertyi*, p. 137.
b^2. Underside of fore wing with a prominent subbasal transverse fascia ... *Y. savara*, p. 137.
b. Ocelli on underside of hind wing not in échelon, the posterior four in line.
a'. Expanse well over 50 mm. *Y. sakra*, p. 137.
b' Expanse well under 50 mm.
a^2. Discal and subterminal transverse fasciæ on underside of fore wing distinct, convergent, and broadening posteriorly.
a^3. Apical two ocelli on underside of hind wing free, or, if touching, posterior the smaller . ... *Y. avanta*, p. 140.
b^3. Apical two ocelli on underside of hind wing touching, always equal in size .. .... Race *striata*, p. 141.
b^2. Discal and subterminal transverse fasciæ on underside of fore wing indistinct or wanting, when present not convergent nor broadened posteriorly.
a^3. Apical ocellus on upperside of fore wing in ♂ ill-defined or wanting ... . Race *singala*, p. 141.
b^3. Apical ocellus on upperside of fore wing in ♂ always present, well-defined Race *cerealis*, p. 141.

B. Underside of hind wing with three subapical ocelli.. .... *Y. bolanica*, p. 144.

C. Underside of hind wing with one subapical ocellus.

a. Underside of hind wing with three, rarely four posterior ocelli; the tornal ocellus geminate, sometimes single and bipupilled.

a' Posterior three ocelli not in a line, the subtornal two in échelon with the tornal bipupilled ocellus . *Y. iarba*, p. 138.

b'. Posterior three ocelli in a line.

a^2. Ocelli on underside of hind wing elongate, appearing compressed in an antero-posterior direction. .. *Y chenui*, p. 141.

b^2. Ocelli on underside of hind wing rounded, not compressed.

a^3. Posterior three ocelli on underside of hind wing placed on a dark band, margined inwardly and outwardly by irrorated whitish bands .. .. *Y. ypthimoides*, p. 142.

b^3. Posterior three ocelli on underside of hind wing not placed on a dark band.

a^4. Upperside of hind wing brown.

a^5. Underside of fore wing with a more or less distinct discal transverse dark fascia. ... *Y. huebneri*, p. 142.

b^5. Underside of fore wing without any trace of a discal transverse dark fascia. .. Race *kashmira*, p. 143.

b^4. Upperside of hind wing partly pure white ... Race *ceylonica*, p. 144.

b. Underside of hind wing with two posterior ocelli, the tornal ocellus geminate.

a' Underside of wings marked with transverse dark fasciæ.

a^2. Underside of hind wing without a transverse subbasal fascia.

a^3. Underside of fore wing without a discal but with a subterminal transverse fascia.

a^4. Subterminal fascia on underside of fore wing broadening towards dorsal margin .. .. .. *Y nareda*, p. 138.

b^4. Subterminal fascia on underside of fore wing of even width. . *Y newara*, p. 139.

b^3. Underside of fore wing with discal and subterminal transverse fasciæ meeting below ocellus and forming a loop.... . . . . *Y. asterope*, p. 145.

b. Underside of hind wing with a more or less distinct subbasal transverse fascia. *Y. watsoni*, p. 139.

b'. Underside of wings not marked with transverse dark fasciæ.
*a*². Apical and posterior ocelli on underside of hind wing in line .. *Y lycus*, p. 140.
*b*². Apical and posterior ocelli on under side of hind wing in échelon. *Y inica*, p. 145.

153. **Ypthima philomela**, *Johannsen* (Papilio), *Amœn. Acad.* vi, 1764, p. 404; *Linn.* (Papilio) *Syst. Nat.* i, pt. 2, 1767, p. 768.
Ypthima tabella, *Marshall, in M. & de N. Butt. Ind.* i, 1883, p. 234; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 73, pl. 110, figs. 2, 2 *a*, ♂.
Ypthima baldus, *Elwes & Edw.* (*nec Fabr.*) *Trans. Ent. Soc.* 1893. p. 14, pl. i, figs. 15 & 16.

Race indecora.

Ypthima indecora, *Moore*, *P. Z. S.* 1882, p. 238, pl. 12, fig. 7; *M. & de N. Butt. Ind.* i. 1883, p. 218; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 63, pl. 107, figs. 1, 1 *a*, 1 *b*, ♂.

Wet-season form.— ♂ ♀ *Upperside* brown, terminal margins of wings broadly darker. Fore wing with a slightly oblique bipupilled, comparatively large, yellow-ringed, black ocellus near apex. Hind wing with generally two similar but smaller postdiscal posterior ocelli. *Underside* ochraceous white, closely irrorated with delicate slender transverse brown striæ; both fore and hind wings with obscure subterminal transverse brown fasciæ; sometimes wanting. Fore wing with the ocellus as on the upperside, but with the yellow iris broader, surrounded by an obscure brown ring. Hind wing with six unipupilled similar but smaller ocelli, more or less in échelon in pairs; tornal ocellus geminate. Antennæ, head, thorax and abdomen brown, paler beneath.

Dry-season form.— ♂ ♀ *Upperside* similar to the wet-season form but paler, subterminal bands less distinct. *Underside* also similar, the ground-colour more dusky ochraceous, the brown striæ somewhat diffuse; ocelli on underside reduced to mere specks.

Exp. ♂ ♀ 32–35 mm. (1·27–1·38″).

Hab. S. India, the Nilgiris and Wynaad. Described originally from Java.

Race **indecora**, Moore, closely resembles the typical form both in the wet- and dry-season varieties, but is constantly larger with larger ocelli. On the *upperside* in the ♂ the secondary sex-mark on the fore wing is far more clearly defined, and both the fore and hind wings have more or less distinct transverse discal and subterminal dark bands in both sexes. *Underside*: ground-colour from dull ochraceous white in the wet-season form to almost dark ochraceous brown in the dry-season form, both fore and hind wings irrorated with transverse dark brown short striæ; the ocelli as in the typical form, but on the hind wing more distinctly in échelon of twos; in the dry-season variety these ocelli are reduced

to mere specks. Fore and hind wings with more or less distinct subbasal, discal, and subterminal transverse brown bands. Antennæ, head, thorax and abdomen brown, paler beneath.

Exp. ♂ ♀ 36–40 mm. (1·42–1·68″).

Hab. N.W. Himalayas.

This is the North-Indian representative form of the Javan and Southern Indian *Y philomela*. In some respects, *e. g.* the transverse subbasal, discal and subterminal brown bands on the wings, the constantly larger size, and in the females often having more than an indication of the pale transversely-irrorated ocellar area, it approaches *Y baldus*.

154. **Ypthima baldus**, *Fabr.* (Papilio) *Syst. Ent. App.* 1775, p. 829; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 58, pl. 106, figs. 1, 1 *a*–1 *i*, larva & pupa.

Ypthima philomela, *M. & de N.* (*nec Johannsen*) *Butt. Ind.* i, 1883, p. 216.

Ypthima marshalli, *Butler*, *A. M. N. H.* (5) x, 1882, p. 373; *M. & de N. Butt. Ind.* i, 1883, p. 217; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 25, pl. 1, figs. 1, 1 *a*, & 11.

Wet-season form.— ♂ *Upperside* brown, both fore and hind wing with terminal margins much darker, and generally with more or less distinct subbasal and discal dark bands. Fore wing with a large, slightly oblique, oval, bipupilled, yellow-ringed, black, preapical ocellus. Hind wing with two postdiscal, round, unipupilled, similar but smaller ocelli, and very often one or two minute tornal ocelli also. *Underside* similar to the underside in *Y philomela*, but the ochraceous-white ground-colour paler, the transverse brown striæ coarser, the ocelli on the hind wing more distinctly in échelon, two tornal, two median, and two preapical, and on both fore and hind wing more or less distinctly defined, subbasal, discal and subterminal brown transverse bands.— ♀ Differs on the *upperside* in having the area surrounding or bordering the ocelli on both fore and hind wing paler, closely irrorated with brown striæ, the discal transverse band generally clearly defined, and very often both the tornal, and at least one of the apical, ocelli distinct. On the *underside* it is paler than the male, and has the subbasal, discal and subterminal transverse dark bands more clearly defined.

Dry-season form.— ♂ ♀ *Upperside* very similar to the above, paler; in the ♀ often the ground-colour ochraceous white, closely irrorated with brown striæ; ocelli as in the wet-season form, but those on the hind wing often non-pupilled. *Underside* also paler than in the wet-season form, the subbasal, discal and subterminal bands on the whole more prominent; ocelli on the hind wing reduced to mere specks.

Exp. ♂ ♀ 38–46 mm. (1·5–1·8″).

Hab. The Himalayas from Chamba to Sikhim and Bhutan. Bengal; Central, Western, and Southern India; Assam; Cachar Burma and Tenasserim.

155. **Ypthima sobrina**, *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 29, pl. i, figs. 17, 18.

♂. *Upperside* pale greyish brown, terminal margins convex and broadly darker brown. Fore wing with a moderately large, round, bipupilled, yellow-ringed, preapical black ocellus; hind wing with two subtornal similar, smaller ocelli, also a minute tornal ocellus. *Underside* greyish, covered rather closely with delicate transverse brown striæ; a postdiscal oblique, somewhat faintly-marked transverse dark fascia, and a more distinct subterminal fascia on both fore and hind wing; six ocelli in pairs in échelon on the hind wing, the apical pair separate and subequal, a single preapical ocellus on the fore wing as on the upperside. Antennæ, head and abdomen pale grey-brown, paler beneath; thorax darker above. No visible secondary sex-mark.— ♀ Similar, larger; the ocelli on both fore and hind wing placed on a pale broad band irrorated with transverse short dark striæ, defined inwardly by a dark continuous transverse band, outwardly by the brown terminal margins. Hind wing on both upper and underside with six complete ocelli in pairs in échelon.

Exp. ♂ ♀ 48–50 mm. (1·9–2·0″).

Hab. Recorded hitherto only from the hills north and east of Taungoo in Lower Burma.

156. **Ypthima similis**, *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 30, pl. i, fig. 19.

♂ Closely resembles *Y baldus*, but the secondary sex-mark so distinct generally in the ♂ of that species entirely absent. As in some males and the generality of females of *Y baldus*, the ocelli on the upperside in *similis* are placed on a pale broad irrorate band crossing both fore and hind wing. This pale area bordered inwardly by a narrow, very much darker band. *Underside* very similar to the underside in *Y baldus*, but the transverse short striæ more delicate and regular, and the subbasal dark transverse band that is more or less conspicuous in *Y baldus* entirely wanting. Male unknown.

Exp. ♂ 45–50 mm. (1·75–2″).

Hab. Recorded hitherto only from the hills north of Taungoo in Lower Burma.

157. **Ypthima affectata**, *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 30, pl. i, fig. 30.

♂ ♀ *Upperside* umber-brown, darker than in *Y baldus*, *sobrina*, *similis*, &c. Both fore and hind wing crossed by distinct postdiscal and subterminal dark bands, the space between the bands paler, more or less irrorated with dark brown, short, transverse striæ, bearing on the fore wing a large preapical ocellus,

and on the hind wing two minute tornal and two median ocelli similar to those in *Y. baldus* and other forms; termen of hind wing generally defined by a pale line. *Underside* as in many dark specimens of *Y baldus*, with the transverse striæ more dense, delicate and uniform; the subbasal and discal transverse fasciæ similar, but the terminal fascia more diffuse; the ocelli as in *Y baldus*. Male without secondary sex-marks.

Exp. ♂ ♀ 44–48 mm. (1·73–1·9″).

Hab. Assam, Khási Hills.

158. **Ypthima methora**, *Hewitson, Trans. Ent. Soc.* (3) ii, 1864, p. 291, pl. 18, figs. 20, 21, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 215; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 64, pl. 107, figs. 2, 2 *a*, 2 *b*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 37.
Ypthima persimilis, *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 39.

Wet-season form.— ♂ *Upperside* dark vandyke-brown, the terminal margins somewhat narrowly and evenly darker. Fore wing with a very large preapical bipupilled yellow-ringed black ocellus; hind wing with from three to five similar but smaller unipupilled postdiscal ocelli; ocellar area on both fore and hind wings in many specimens distinctly paler, irrorated with pale transverse striæ. Hind wing with an indistinct discal transverse band, the termen defined outwardly by a pale somewhat obscure yellow line. *Underside* pale yellowish brown, closely and evenly covered with delicate transverse dark brown striæ. Fore wing: the ocellus as on the upperside; hind wing with six ocelli in pairs in échelon; obscure discal and terminal dark brown bands. Antennæ, head, thorax and abdomen dark brown. No secondary sex-mark.— ♀. Similar, larger, paler; the upperside as well as the underside more or less irrorated with transverse striæ.

Dry-season form.— ♂ ♀ Similar on the upperside to the wet-season form. *Underside* paler, the discal and terminal dark transverse fasciæ more distinct, with indications in some specimens of a subbasal fascia. The ocelli on the hind wing much reduced in size.

Exp. ♂ ♀ 62–66 mm. (2·45–2·6″).

Hab. Sikhim; Bhutan; the hills of Assam.

Var. *persimilis*, Elwes and Edwards, shortly diagnosed from a pair of specimens procured at Mao, Manipur, 7000 feet, is apparently a link between *Y methora* and *Y. dohertyi*. Like the former, the ♂ is without any secondary sex-mark on the fore wing, while in the shape of the clasp, and by the tornal ocellus on the underside of the hind wing not being divided but simply bipupilled, it resembles the latter.

The two forms next described may be merely Eastern races of *Y methora*, but following Messrs. Elwes and Edwards I have provisionally kept them separate. I would, however, draw attention to Mr. Elwes's remarks at page 40 of the paper quoted.

159. **Ypthima dohertyi**, *Moore* (Thymipa), *Lep. Ind.* ii, 1893, p. 65, pl. 108, figs. 1, 1 *a*, ♂; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 38, pl. 2, fig. 31.

♂ ♀ Closely resembles *Y methora*, but in the ♂ the secondary sex-mark is prominent. In colour and markings *Y dohertyi* differs from *Y methora* as follows :—*Upperside* a paler brown, the pupils to the ocelli less prominent, often wanting, the tornal ocelli on the hind wing present and geminate. *Underside* very much paler, dull white with dark brown short striæ; the transverse dark fasciæ sometimes wanting, generally ill-defined ; five (not six) ocelli on the hind wing ; the tornal two ocelli confluent, having the appearance of one bipupilled ocellus ; the yellow irides to the ocelli very broad.

Exp. ♂ ♀ 62–64 mm. (2·45–2·51″).

Hab. Hills north of Taungoo, Lower Burma.

160. **Ypthima savara**, *Grose-Smith, A. M. N. H.* (5) xx, 1887, p. 267 ; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, pp. 66, pl. 108, figs. 2, 2 *a*, ♂; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 37, pl. 2, fig. 30; *Watson, Jour. Bomb. N. H. Soc.* x, 1895–1897, p. 645.

♂ ♀ This, like *Y dohertyi*, resembles *Y. methora* in both seasonal forms, but the ♂ has a prominent secondary sex-mark, more marked even than in *Y dohertyi*; and both sexes are on the upper and under sides very much paler than *Y methora*, the ground-colour being a dull white ; while, on the underside, *Y savara* differs also in having well-defined subbasal, discal and subterminal dark transverse fasciæ.

Exp. ♂ ♀ 54–58 mm. (2·12–2·28″).

Hab. Hills of Upper and Lower Burma, and Tenasserim.

161. **Ypthima sakra**, *Moore, Cat. Lep. Mus. E.I. C.* i, 1857, p. 236; *M. & de N. Butt. Ind.* i, 1883, p. 232 ; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 69, pl. 109, figs. 2, 2 *a*, 2 *b*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 40.

Ypthima nikæa, *Moore, P. Z. S.* 1874, p. 567 ; *M. & de N. Butt. Ind.* i, 1883, p. 232 ; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 68, pl. 109, figs. 1, 1 *a*, ♂.

Thymipa austeni, *Moore, Lep. Ind.* ii, 1893–96, p. 69, pl. 109, figs. 3, 3 *a*, ♂ ♀; *Elwes & Edw.* (Ypthima) *Trans. Ent. Soc.* 1893, p. 51.

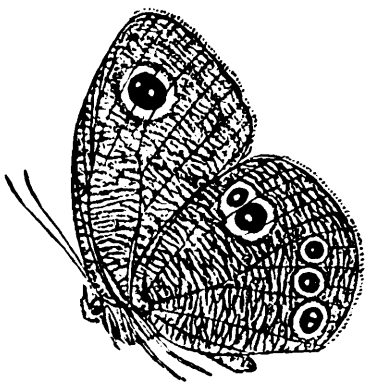

Fig. 32.—*Ypthima sakra*, ♂. Underside.

♂ ♀ *Upperside* umber-brown, terminal margins of the wings distinctly darker. Fore wing with a large, slightly oval, bipupilled, yellow-ringed, black ocellus, very slightly oblique, and with a dark brown outer ring. Hind wing with four similar unipupilled round ocelli,

the preapical and tornal ocelli frequently absent or faintly marked, the last when present always minute. *Underside* ochraceous brown, thickly irrorated by transverse, short, dark brown striæ. Fore wing with the preapical ocellus as on the upperside, but the encircling yellow ring broader and the outer brown ring more clearly defined. Some specimens, both from the N.W Himalayas and from Assam, have a second very much smaller obscure median ocellus, and others have dark discal and subterminal broad brown transverse bands. Hind wing with five prominent similar ocelli; the preapical two large, geminate, encircled in a common yellow ring; the posterior three in échelon with them, with distinct irides; the tornal ocellus bipupilled; the ocelli on the hind wing typically bordered with a narrow brown line on both sides; the surrounding area is concolorous with the rest of the wing, but in very many specimens more or less pale, and forms in the variety *austeni* a broad transverse pale band which extends on to the fore wing. Antennæ, head, thorax and abdomen umber-brown, paler beneath.

Exp. ♂ ♀ 50–54 mm. (2–2·13″).

Hab. The Himalayas, from Kulu to Sikhim; Assam, the Khási Hills to Upper Burma.

162. **Ypthima iarba**, *de Nicéville, Jour. Bomb. N. H. Soc.* x, 1895, p. 18, pl. R, figs. 7, 8, ♂ ♀ (Sumatra variety); *Watson, Jour. Bomb. N. H. Soc.* x, 1895, p. 651, pl. A, fig. 5 ♂ (Manipur variety).

♂ ♀ Closely resembles *Y. baldus*, but on the *upperside* a very pale vandyke-brown, not greyish sepia-brown; ocelli, dusky transverse bands, and in ♀ pale ocellar area on fore wing as in *Y baldus* but much less distinctly marked; terminal slender line pale yellow. *Underside* as in *Y baldus*, but the transverse short striæ irrorating the wings finer and more delicate, the transverse continuous dark bands very faint. Hind wing with only one subapical ocellus. Antennæ, head, thorax and abdomen brown; the head and thorax somewhat greyish. Male secondary sex-mark present, but very obscure.

Exp. ♂ ♀ 43–50 mm. (1·7–1·95″).

Hab. Recorded from Manipur.

Notwithstanding that the type specimen (from Sumatra), kindly lent to me by the authorities of the Indian Museum, has only one preapical ocellus on the underside of the hind wing, the form it most closely resembles seems to be *Y baldus*. In fact, in describing *Y iarba*, de Nicéville seemed to be in doubt whether the Manipur specimen, not the Sumatran, was not a mere aberrational form of *Y baldus*.

163. **Ypthima nareda**, *Kollar* (Satyrus) *in Hügel's Kaschmir*, iv, 1844, 2, p. 451; *M. & de N. Butt. Ind.* i, 1883, p. 221, pl. 17, fig. 63 ♂; *Moore* (Pandima), *Lep. Ind.* ii, 1893–96, p. 86, pl. 113, figs. 1, 1 *a*, ♂; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 20, pl. 1, fig. 2, pl. 2, fig. 40.

♂ ♀ *Upperside* pale vandyke-brown; cilia whitish brown,

with an anticiliary dark line on both fore and hind wings; the broad subterminal fasciæ on the underside showing through. Fore wing with the usual subapical ocellus. Hind wing with a subtornal and sometimes a minute tornal ocellus. *Underside* pale ochraceous, thickly irrorated with transverse short dark brown striæ, evenly and uniformly spread; ocelli as on the upperside, but the tornal ocellus bipupilled and always present; in addition, a larger preapical ocellus on the hind wing; both fore and hind wings with somewhat obscure, broad, dark subterminal bands, that on the fore wing broadening posteriorly. Antennæ, head, thorax and abdomen brown; the abdomen paler beneath.

Exp. ♂ ♀ 42–46 mm. (1·65–1·83″).

Hab. N.W. Himalayas, Kashmir to Kumaun.

The succeeding two forms are so similar in outward appearance that, without comparing their genitalia, they might be taken for mere varieties of *Y nareda*. The form of the clasp, however, is very different in all three.

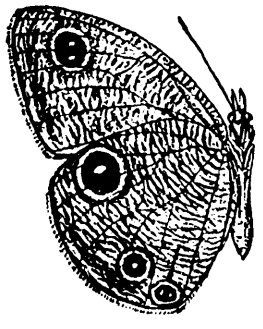

Fig. 33.
Ypthima newara, ♂.
Underside.

164. **Ypthima newara**, *Moore, P. Z. S.* 1874, p. 567; *M. & de N. Butt. Ind.* i, 1883, p. 222; *Moore* (Pandima), *Lep. Ind.* ii, 1893–96, p. 87, pl. 113, figs. 2, 2 *a*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 21, pl. 2, fig. 42.

♂ ♀ Very closely resembling *M. nareda*, but the subterminal fascia on the underside of the fore wing is of even width throughout, and the striation is slightly coarser and less uniform.

Exp. ♂ ♀ 44–50 mm. (1·71–1·95″).

Hab. Sikhim; Assam, Khási hills.

165. **Ypthima watsoni**, *Moore* (Pandima), *Lep. Ind.* ii, 1893–96, p. 89, pl. 113, figs. 4, 4 *a–c*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 47, pl. 1, fig. 25.

♂ ♀ In the wet-season form this closely resembles *Y nareda*, from which it differs chiefly on the underside in the very much sparser striation, in the presence and prominence of a discal, and on the hind wing of a subbasal, transverse fascia. These fasciæ are particularly well-defined in the dry-season form of this insect; the ground-colour of the underside of the wings in this latter form varies from greyish white in the Lower Burma specimens to ochraceous white in specimens collected in the Karen Hills. The form of the clasp in the male is, as already noted, widely different from that of *Y nareda* or *Y newara*.

Exp. ♂ ♀ 44–48 mm. (1·72–1·9″).

Hab. Burma.

166. **Ypthima lycus**, *de Nicéville, Jour. Bomb. N. H. Soc.* iv, 1889, p. 165, pl. A, fig. 2 ♂; *Moore* (Pandima), *Lep. Ind.* ii, 1893–96, p. 88, pl. 113, fig. 3 ♂; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 19, pl. 2, fig. 39.

Ypthima motschulzkii, *M. & de N.* (*nec Bremer*) *Butt. Ind.* i. 1883, p. 214.

♂ ♀ *Upperside* glossy brown, perceptibly darker on the basal area in the ♂ Fore wing with a comparatively large, obliquely-placed, oval, bipupilled, pale-ringed, black subapical ocellus; hind wing with a similar but much smaller round unipupilled subtornal ocellus. *Underside*: ground-colour similar, covered with the most delicate fine transverse short ochraceous striæ except on the dorsal margin of the fore wing. Fore wing with one subapical ocellus; hind wing with three ocelli—a large preapical, a smaller subtornal, and a tornal bipupilled ocellus similar to the ocelli on the upperside, but the encircling rings yellow and broad. Antennæ, head, thorax and abdomen brown, slightly paler beneath.

Exp. ♂ ♀ 40–42 mm. (1·58–1·68″).

Hab. Assam, the Khási Hills.

167. **Ypthima avanta**, *Moore, P. Z. S.* 1874, p. 567; *M. & de N. Butt. Ind.* i, 1883, p. 218, pl. 17, fig. 66 ♂; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 70, pl. 109, figs. 4, 4 *a*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 33, pl. 1, fig. 27.

Race striata.

Ypthima striata, *Hampson, J. A. S. B.* 1888, p. 349; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 73, pl. 110, figs. 3, 3 *a*, 3 *b*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 34, pl. 1, figs. 23, 24.

Race singala.

Ypthima singala, *Felder, Verh. zool.-bot. Ges. Wien*, 1868, p. 283; *Moore, Lep. Ceyl.* i, 1880, p. 24, pl. 12, figs. 3, 3 *a*, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 230; *Moore* (Thymipa), *Lep. Ind.* ii, 1893–96, p. 72, pl. 110, figs. 1, 1 *a*, 1 *b*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 31, figs. 26, 26 *a*.

Ypthima thora, *Moore, Lep. Ceyl.* i, 1880, p. 24, pl. 12, figs. 4, 4 *a*; *M. & de N. Butt. Ind.* i, 1883, p. 231.

Race cerealis.

Ypthima cerealis, *Watson, Jour. Bomb. N. H. Soc.* x, 1897, p. 646, pl. A, figs. 3, 4, ♂

Wet-season form.— ♂ ♀ *Upperside* umber-brown, with faint darker subterminal narrow bands. Fore wing with the usual bipupilled, yellow-ringed, black preapical ocellus, in the ♀ always present, in the ♂ faint or entirely wanting. Hind wing with two postdiscal ocelli in the ♂, generally four in the ♀. *Underside* dull brownish white, very closely covered with dark brown transverse delicate striæ; distinct discal and subterminal dark fasciæ crossing both wings; in the ♀ an additional subbasal fascia. Fore wing with the ocellus perfect. Hind wing with six ocelli in a

curve, or anterior two slightly in échelon with the rest. Antennæ, head, thorax and abdomen brown. Male secondary sex-mark generally prominent.

Dry-season form.— ♂ ♀ *Upperside* differs only in being suffused with dull plumbeous. *Underside* paler; transverse fasciæ more distinct; ocelli on hind wing reduced in size.

Exp. ♂ ♀ 42–46 mm. (1·65–1·88″).

Hab. The Himalayas, Kashmir, Kulu, Simla to Kumaun; Bengal, Orissa; Burma and Tenasserim.

Race **striata**, Hampson, differs from the typical form: on the upperside the ocellus on the fore wing is always present in both sexes; on the underside the ground-colour is a purer white, the striation more open, slender and delicate, the discal and subterminal transverse fasciæ darker and more clearly defined, and the yellow irides to the ocelli broader. Male secondary sex-mark obscure.

Exp. ♂ ♀ 36–42 mm. (1·4–1·62″).

Hab. The Nilgiris. A local race.

Race **singala**, Felder, differs from the typical form on the upperside in being slightly darker with a purplish tinge; in the ♂ uniform or with a single small postdiscal ocellus on the hind wing; in the ♀ with the usual preapical ocellus on the fore and from two to four smaller ocelli on the hind wing. *Underside*: ground-colour whiter than in *Y avanta*; the striæ and transverse dark fasciæ less distinct in the wet-season, more prominent in the dry-season form. Male secondary sex-mark present.

Exp. ♂ ♀ 35–44 mm. (1·4–1·7″).

Hab. Ceylon Hills. An insular form.

Race **cerealis**, Watson. "This is a well-defined local race of *Y avanta*, Moore, from a treeless district differs in its smaller size, in the constant presence of the ocellus on the upperside of the fore wing, in the white tone and less prominent fasciæ on the underside, and in the almost entire absence of *androconia* on the fore wing in the male. . In some ways *Y. cerealis* seems to bear the same relation to *Y avanta* that *Y philomela* (=*tabella*) does to *Y baldus*." (*Watson, l. c.*)

Exp. ♂ ♀ 33–36 mm. (1·3–1·45″).

Hab. Recorded from Myingyan, in the dry zone of Upper Burma.

168. **Ypthima chenui**, *Guérin-Méneville.*

Satyrus chenu, *Guérin-Méneville in Delessert, Voy. dans l'Inde*, ii, 1843, p. 77, pl. 21, fig. 2; *Westw.* (Ypthima) *in Dbleday, Westw. & Hew. Gen. Di. Lep.* 1851, p. 396; *Butl.* (Ypthima) *Cat. Satyr. Brit. Mus.* 1868, p. 151.

Ypthima chenui, *M. & de N. Butt. Ind.* i, 1883, p. 228; *Moore* (Kolasa), *Lep. Ind.* ii, 1893–96, p. 83, pl. 112, figs. 3, 3 *a*, ♂ ♀.

♂ ♀ *Upperside* vandyke-brown. Fore wing with the usual preapical, bipupilled, yellow-ringed, large ocellus, and a more

or less obscure transverse subterminal fascia. Hind wing with two small submedian unipupilled black ocelli; no indications of a tornal ocellus. *Underside*: fore wing—ground-colour dusky greyish brown, covered with short transverse brown striæ, very prominent discal and subterminal broad transverse dark brown posteriorly convergent fasciæ; the subterminal fascia bordered with whitish on both sides, and a preapical ocellus as on upperside. Hind wing: ground-colour white, with striæ as on the fore wing; subbasal, discal and subterminal broad transverse brown fasciæ, also one apical and three postdiscal, laterally elongate, ocelli in a curve. Antennæ, head, thorax and abdomen dull greyish brown; abdomen paler beneath. Male without any secondary sex-mark.

In the dry-season form the fasciæ on the underside of hind wing are still more prominent, the ocelli smaller.

Exp. ♂ ♀ 44–50 mm. (1·73–1·98″).

Hab. S. India, the Nilgiri and Anaimalai Hills.

169. **Ypthima ypthimoides,** *Moore* (Callerebia), *Trans. Ent. Soc.* 1881, p. 307; *M. & de N. Butt. Ind.* i, 1883, p. 230; *Moore* (Kolasa), *Lep. Ind.* ii, 1893–96, p. 84, pl. 112, figs. 4, 4 *a*, ♂ ♀.
Ypthima robinsoni, *Distant, A. M. N. H.* (5) x, 1882, p. 406; *M. & de N. Butt. Ind.* i, 1883, p. 229.

♂ ♀ Resembles *Y. chenui*, Guér.; differs, however, on the upperside by being slightly darker; on the underside by the ground-colour being brown, or in some specimens very dull brownish white, especially on the hind wing. Very often the transverse short striæ are entirely wanting. In the majority of specimens there is no trace of a fascia on the fore wing, and on the hind wing only obscure discal and subterminal broad transverse dark fasciæ; the subterminal fascia is bordered with obscure irrorated whitish bands on either side and bears posteriorly three ocelli. Antennæ, head, thorax and abdomen brown. Male without secondary sex-mark.

Exp. ♂ ♀ 46–54 mm. (1·8–2·13″).

Hab. Extreme south of India in the Travancore and Cochin hills.

170. **Ypthima huebneri,** *Kirby, Cat. Di. Lep.* 1871, p. 95; *M. & de N. Butt. Ind.* i, 1883, p. 226, pl. 17, fig. 65 ♂; *de Nicéville, J. A. S. B.* 1886, p. 231, pl. 12, fig. 1, *a*, *b*, larva & pupa; *Moore, Lep. Ind.* ii, 1893–96, p. 77, pl. 111, figs. 1, larva & pupa, 1 *a*-1 *c*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 9, pl. 1, fig. 5, genitalia.
Ypthima howra, *Moore, J. A. S. B.* 1884, p. 17.
Ypthima apicalis, *Moore, J. A. S. B.* 1884, p. 17; *id. Lep. Ind.* ii, 1893–96, p. 76.
Ypthima catharina, *Butler, A. M. N. H.* (5) xviii, 1886, p. 183.
Ypthima jocularia, *Swinhoe, P. Z. S.* 1889, p. 396; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 50.

Race kashmira.

Ypthima kasmira, *Moore, J. A. S. B.* 1884, p. 17; *id. Lep. Ind.* ii, 1893–96, p. 76, pl. 112, figs. 1, 1 *a*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 10, pl. 1, fig. 2.

Race ceylonica.

Ypthima ceylonica, *Hewitson, Trans. Ent. Soc.* (3) ii, 1864, p. 288, pl. 18, figs. 14, 15, ♂; *Moore, Lep. Ceyl.* i, 1881, p. 25, pl. 12, figs. 5, 5 *a*, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 228; *Moore, Lep. Ind.* ii, 1893–96, p. 81, pl. 112, figs. 2, 2 *a*, ♂ ♀; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 11, pl. 1, fig. 8.

Wet-season form.— ♂ ♀ *Upperside* greyish brown. Fore wing with the usual comparatively large, bipupilled, yellow-ringed, black preapical ocellus. Hind wing usually with two, sometimes with three, very rarely without any, smaller similar unipupilled postdiscal ocelli. *Underside* greyish white, not very densely covered with transverse short brown striæ. Fore wing with the preapical ocellus as on the upperside, obscure discal and subterminal dull brown transverse fasciæ and a narrow brown ring round the ocellus diffusely produced posteriorly. Hind wing with one apical and typically three postdiscal posterior ocelli placed in a curve; traces of transverse brown discal and subterminal fasciæ in most specimens. Antennæ, head, thorax and abdomen greyish brown, the abdomen paler beneath. Male without secondary sex-mark.

Dry-season form.— ♂ ♀ Similar, somewhat paler on both upper and under sides; the discal and subterminal transverse fasciæ more pronounced; the ocelli on the underside of the hind wing minute or absent.

Exp. ♂ ♀ 40–44 mm. (1·58–1·72″).

Hab. Throughout peninsular India, Assam and Burma.

Larva. About one inch in length, with two divergent processes from the anal segment pointing backwards. "Colour entirely green with a dorsal line somewhat darker green, which becomes white at the fourth segment, and extends right through the crown of the head; there is also a paler green lateral line below the spiracles" (*de Nicéville*).

Pupa. "Green or brown, with the head rounded, the edges of the wing-cases raised and angled anteriorly; the thorax humped and marked like the abdominal segments, with some dark brown waved lines and spots" (*de Nicéville*).

Ypthima howra, Moore, was founded on a specimen of the dry-season form.

Var. *jocularia*, Swinhoe, is the pale form from Western India said by Messrs. Elwes and Edwards to be nearest to *kashmira*, Moore.

Race **kashmira**, Moore, differs from the typical form in the darker and more uniform colour of the upperside, in the ground-colour on the underside being dull brownish not white. and the

wings non-fasciated in most specimens, or with only the subterminal fascia on the fore wing. The clasp in the male differs, however, considerably from that of *Y huebneri*.

Exp. ♂ ♀ 33–39 mm. (1·25–1·50″).

Hab. N.W Himalayas; Kashmir; S. India, Mysore and the Anaimalai Hills (fide *Elwes*).

Race **ceylonica**, Hewitson.— ♂ ♀. *Upperside* vandyke-brown to dark sepia-brown. Fore wing uniform, with the usual single preapical ocellus. Hind wing: posterior half, sometimes less than half, pure white, with two or three small posterior ocelli, a lunular incomplete subterminal and an even slender terminal brown line. *Underside* white, with somewhat sparse, short, delicate, fine transverse brown striæ, getting denser towards the apex of the fore wing. Fore wing with the ocellus, a brown ring surrounding it very broad and very broadly and diffusely produced downwards, discal and subterminal transverse fasciæ obscure. Hind wing with four ocelli in a curve, the anal bipupilled; traces of a discal transverse brown fascia and of a lunular subterminal brown line. Antennæ, head, thorax and abdomen brown; abdomen white beneath.

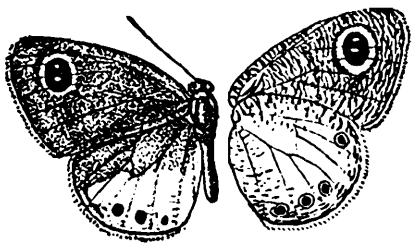

Fig. 34.
Ypthima huebneri, Kirby.
Race *ceylonica*, Hew., ♂.
Upper and under sides.

Exp. ♂ ♀ 34–40 mm. (1·34–1·58″).

Hab. Bengal, Orissa; S. India, the Nilgiris, Travancore; Ceylon.

171. **Ypthima bolanica**, *Marshall, P. Z. S.* 1882, p. 759 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 231; *Moore* (Nadiria), *Lep. Ind.* ii, 1893–96, p. 85, pl. 112, figs. 5, 5 *a*, ♂ ♀

♂ ♀. *Upperside* umber-brown. Fore wing with a single, slightly oval, oblique, bipupilled, fulvous-ringed, large, black ocellus placed in a paler ocellar area; the ocellus and the surrounding area both defined outwardly by a broad darker brown line. Hind wing uniform, with a very much smaller but similar unipupilled ocellus. Cilia brown, with a distinct interior whitish line. *Underside* brown, irrorated with minute, short, transverse, delicate white striæ, the dorsal margin broadly of the fore wing, a curved discal band crossing both fore and hind wings, and some very obscure transverse basal, subbasal and terminal narrow bands free from the white striæ; ocelli as on the upperside, but on the hind wing, in addition to the subtornal ocellus, a single smaller geminate tornal and three anterior similar ocelli. Antennæ, head, thorax and abdomen brown; the antennæ annulated with white, ochraceous towards apex.

Exp. ♂ ♀ 44–48 mm. (1·73–1·9″).

Hab. Baluchistan.

172. **Ypthima inica**, *Hewitson, Trans. Ent. Soc.* (3) ii, 1864, p. 284, pl. 17, fig. 5; *M. & de N. Butt. Ind.* i, 1883, p. 225; *Moore* (Lohana), *Lep. Ind.* ii, 1893–96, p. 93, pl. 114, figs. 2, 2 *a*–2 *e*, ♂ ♀.
Ypthima ariaspa, *Moore, P. Z. S.* 1874, p. 568; *M. & de N. Butt. Ind.* 1883, i, p. 224.
Ypthima dædalia, alkibie, et complexiva, *Swinhoe, P. Z. S.* 1886, pp. 422, 423, pl. 40, fig. 2 (complexiva).

Wet-season form.— ♂ ♀. *Upperside* uniform dark brown. Fore wing with one comparatively large rounded preapical black ocellus, bipupilled, with usual yellow iris. Hind wing with a single similar smaller unipupilled subtornal ocellus. *Underside* light grey, very evenly and closely striated. Fore wing with the ocellus as above. Hind wing with an apical and two posterior similar but smaller ocelli, the apical slightly in échelon with the other two. Antennæ, head, thorax and abdomen brown, paler beneath.

Dry-season form.— ♂ ♀ *Upperside* as in the wet-season form. *Underside* pale grey, transverse brown striæ very numerous and fine, evenly spread. Fore wing with a subterminal, ochraceous, broad, somewhat broken fascia. Hind wing crossed in most specimens by four similar fasciæ; ocelli reduced to mere specks or obsolete. Rest similar to the wet-season form.

Exp. ♂ ♀ 38–44 mm. (1·51–1·7″).

Hab. Recorded from Upper Bengal; Punjab; Central India.

173. **Ypthima asterope**, *Klug* (Hipparchia), *Symb. Phys.* 1832, pl. xxix, figs. 11–14; *M. & de N. Butt. Ind.* i, 1883, p. 224; *Elwes & Edw. Trans. Ent. Soc.* 1893, p. 11, pl. 1, fig. 4, pl. 3, fig. 44 *b*.
Ypthima mahratta, *Moore, J. A. S. B.* 1884, p. 16; *id.* (Pandima) *Lep. Ind.* ii, 1893–96, p. 90, pl. 114, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Wet-season form.— ♂ ♀ *Upperside* somewhat dull brown; cilia brownish white. Fore wing with the usual subapical ocellus; in most specimens a pale ocellar area and a subterminal dark brown band. Hind wing uniform, with a single small subtornal ocellus. *Underside* greyish white, covered with very delicate minute transverse striæ. Fore wing with the ocellus as on the upperside, discal and subterminal dark brown bands converging and meeting below the ocellus to form a loop. Hind wing more uniform, with a preapical, a subtornal and a tornal comparatively small ocellus. Antennæ, head, thorax and abdomen dull brown; abdomen greyish white beneath.

Dry-season form.— ♂ ♀ similar. *Upperside* slightly paler. *Underside* differs only in the ocelli on the hind wing being reduced to mere points or altogether absent. In some specimens an obscure discal sinuous transverse dark fascia on the hind wing; and in all, the dark brown loop round the lower side of the ocellus as in the wet-season form.

Exp. ♂ ♀ 36–44 mm. (1·43–1·7″).

Hab. Within our limits in the N.W Himalayas; Punjab;

Western and Central India; the Deccan; Burma; extending to China on the east, and to Arabia, Aden, Nubia and Abyssinia on the west.

174. **Ypthima megalia**, *de Nicéville*, *J. A. S. B.* 1897, p. 546, pl. 1, fig. 5 ♂.

♂ "*Upperside*: both wings shining hair-brown, with an indistinct submarginal fuscous fascia; cilia cinereous. Fore wing with the usual subapical deep black ocellus bipupilled with silver, outwardly defined by a dull yellow ring. Hind wing with a similar unipupilled subanal small ocellus. *Underside*: fore wing pale brown, finely and evenly striolated throughout (except narrowly along the inner margin) with white and ochreous of a curious shade; the ocellus as above but larger, with the pupils metallic blue and the outer yellow ring wider than on the upperside. Hind wing with no trace of ocelli, striolated as on the fore wing, but the white and yellow striolæ not so much intermixed, there being an ill-defined broad yellow fascia across the disc from middle of costa to middle of abdominal margin, followed by a still broader but equally ill-defined whitish fascia, which is broken into broadly in the middle of the outer margin by a large triangular patch of the yellow striolation."

Exp. "♂ 1·9 inches" (49 mm.).

Hab. Northern Shan States, Upper Burma.

"Described from a single example" (*de Nicéville*).

Unknown to me.

Genus **EREBIA.**

Erebia, *Dalm. Kong. Vet.-Akad. Handl.* xxxvii, 1816, p. 58; *M. & de N. Butt. Ind.* i, 1883, p. 239, pt.

Callerebia, *Butler*, *A. M. N. H.* (3) xx, 1867, p. 217; *M. & de N. Butt. Ind.* i, 1883, p. 243, pt.; *Moore, Lep. Ind.* ii, 1893–96, p. 96, pt.

Paralasa, pt., *Moore, Lep. Ind.* ii, 1893, p. 103.

Type, *E. ligea*, Linn., from Europe.

Range. Palæarctic Region, and in India the Himalayas at high elevations.

Most of the Indian forms have been arranged under Butler's genus *Callerebia*, but the structural differences between *Callerebia* and *Erebia* are very slight, and the chief differential characters, viz., the shape of the hind wing and of the antennæ, are bridged over by the Siberian *E. parmenis*, Bœb., on the one hand, and the Indian forms *E. mani*, *E. kalinda* and *E. shallada* on the other. It seems therefore to me that no good purpose can be served by separating the Indian and European forms under different genera. The characters given below have been drawn up from the Indian forms.

♂ ♀ Fore wing broadly triangular or narrow; costa strongly

arched; apex generally broadly rounded; termen convex or straight, dorsum straight; cell long, over half length of wing; veins 6 and 7 approximate at base, consequently upper discocellular short, middle strongly curved inwards, lower long, oblique; veins 10 and 11 from before apex of cell, 12 inflated at base, subcostal and median normal. Hind wing ovate; costa and termen widely arched (the latter in forms *mani*, *kalinda* and *shallada* strongly arched and rounded); dorsum very long, straight, emarginate towards tornus; tornus angulate, almost lobed (rounded in *mani*, *kalinda* and *shallada*); cell over half length of wing; discocellulars oblique; vein 3 from well before, vein 4 from apex of cell, vein 6 slightly closer to 7 than to 5 at base. Antennæ about half length of fore wing, club long and gradual (short and flattened in *mani*, *kalinda* and *shallada*); palpi comparatively short with porrect hairs anteriorly; eyes naked; intermediate and posterior femora scaled, not hairy beneath.

Key to the forms of Erebia.

A. Males with secondary sex-mark of specialized scales on fore wing .. — *E. narasingha*, p. 148.

B. Males without secondary sex-marks.

a. Club of antennæ spatulate as in European forms.

a'. With a large subtriangular yellow patch on upperside of fore wing. — *E. mani*, p. 148.

b'. Without such patch.

a^2. Ochraceous-red patch on upperside of fore wing large; preapical ocellus with a comparatively broad yellow ring .. .. — *E. kalinda*, p. 149.

b^2. Ochraceous-red patch on upperside of fore wing small; preapical ocellus without, or with only an obscure, reddish-yellow narrow ring .. ... — *E. shallada*, p. 149.

b. Club of antennæ not spatulate, subcylindrical and gradual.

a' Ground-colour of fore and hind wings on underside not alike, or if alike then hind wing irrorated more or less with greyish scales or short transverse dark striæ.

a^2. Two large preapical and two tornal ocelli on underside of hind wing. — *E. hyagriva*, p. 150.

b^2. No preapical ocelli, or ocelli in a continuous series of five or six, on underside of hind wing.

a^3. Underside of hind wing with sinuous, transverse, postdiscal and subterminal dark bands, sometimes obscure but always traceable.

a^4. Underside of hind wing without, or with feeble, grey irrorations, and from two to six ocelli — *E. nirmala*, p. 150.

b^1. Underside of hind wing with thick-set grey irrorations, never more than two ocelli.
a^5. Preapical ocellus on fore wing with narrow obscure ring on upperside.
a^6. Termen of fore wing nearly straight .. .. . *E. amada*, p. 150.
b^6. Termen of fore wing strongly convex. ... .. . Race *hybrida*, p. 151.
b^5. Preapical ocellus on fore wing with a very broad conspicuous outer ring on upperside.. Race *orixa*, p. 151.
b^3. Underside of hind wing with no trace of sinuous, transverse, postdiscal and subterminal dark bands. *E. scanda*, p. 151.
b'. Ground-colour of fore and hind wings on underside alike; no trace of greyish irrorations . *E. daksha*, p. 152.

175. **Erebia narasingha**, *Moore* (Ypthima), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 236; *M. & de N.* (Ypthima) *Butt. Ind.* i, 1883, p. 225; *Moore* (Hemadara), *Lep. Ind.* ii, 1893–96, p. 107, pl. 118, figs. 3, 3 *a*, ♂.

♂ ♀. *Upperside* greyish brown; fore wing with a very large preapical black ocellus bipupilled with white and ringed with pale olivascent ochraceous, and a faint subterminal incomplete dark band. Hind wing with a curved series of obscure, very minute pale ocelli, and a broad, more or less distinct, terminal band. *Underside*: fore wing brown, all except the dorsal margin thickly sprinkled with olivascent scales; preapical ocellus as on the upperside, the surrounding ring broader, bordered above, below, and on the inner side by a margin of brown; obscure, very short, discal and subterminal dark bands. Hind wing olivascent grey, thickly irrorated with short dark brown transverse striæ; a curved obscure postdiscal series of whitish dots. Antennæ, head, thorax and abdomen dark greyish brown, paler beneath. Male with a secondary sex-mark of dark brown, densely set, specialized scales in a band below the median vein and extending into the cell.

Exp. ♂ ♀ 55–62 mm. (2·2–2·48″).

Hab. Recorded only so far from Sikhim and Upper Burma.

This is a somewhat aberrant form, having in the ♂ a secondary sex-mark, but the neuration is that of *Erebia*.

176. **Erebia mani**, *de Nicéville, J. A. S. B.* 1880, p. 247; *M. & de N. Butt. Ind.* i, 1883, p. 242, pl. 15, fig. 43 ♂; *Moore* (Paralasa), *Lep. Ind.* ii, 1893–96, p. 106, pl. 118, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀. *Upperside* brown; cilia white alternated with brown. Fore wing with a very large subtriangular yellow patch, larger in the ♂ than in the ♀, extending from apex of cell to a narrow

terminal brown border, and from a narrow costal brown border to vein 1 *a*, enclosing a black preapical ocellus with a minute white centre and a much paler yellow ring. Hind wing uniform. *Underside*: fore wing—basal area to apex of cell brown tinged with ochraceous red; the yellow patch, ocellus, narrow costal and terminal brown border above and beyond it, as on the upperside, but the ocellus with a broader pale yellow ring, and the costa, apex and termen sprinkled with scales. Hind wing: ground-colour, postdiscal series of white dots, and irrorations of white scales much as in *E. shallada*. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 48–55 mm. (1·9–2·25″).

Hab. Kashmir, Ladák.

177. **Erebia kalinda** (Pl. III, fig. 22), *Moore*, *P. Z. S.* 1865, p. 501, pl. 30, fig. 5 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 241; *Moore* (Paralasa), *Lep. Ind.* ii, 1893–96, p. 104, pl. 117, figs. 3, 3 *a*, 3 *b*, ♂ ♀.

♂ ♀ *Upperside* rich brown; fore wing with a unipupilled, black, preapical ocellus surrounded by a yellow ring, the centre of the wing above vein 1 below the ocellus, and between the apex of the cell and narrow terminal border, deep ochraceous red. Hind wing without ocelli; a small patch of deep ochraceous red subterminally in the middle line of the wing. Cilia of both wings white alternated with brown. *Underside*: fore wing ochraceous red, the preapical ocellus as on the upperside, the costa, apex broadly, termen and dorsal margin, brown, sprinkled with greyish scales. Hind wing very dark blackish brown, thickly irrorated with greyish-white scales; a postdiscal strongly arched series of seven white spots. Antennæ brown ringed with white; head, thorax and abdomen brown.

Exp. ♂ ♀ 50–54 mm. (2–2·18″).

Hab. Western Himalayas at high elevations, Kumaun, Kulu, Ulwas, Pangi, the basin of the Ravi.

178. **Erebia shallada**, *Lang*, *M. & de N. J. A. S. B.* 1880, p. 247; *iid. Butt. Ind.* i, 1883, p. 241, pl. 15, fig. 42 ♂; *Moore* (Paralasa), *Lep. Ind.* ii, 1893–96, p. 105, pl. 118, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ This form, which is found in places together with *E. kalinda*, closely resembles it, but the wings are much broader in proportion to length, the ocellus on the fore wing is without, or with only a very obscure, reddish-yellow ring and much larger, the ochraceous-red patch is of a darker colour and much smaller. *Underside*: fore wing similar to the fore wing in *E. kalinda*, but the red of a darker shade. Hind wing similar, with a similar curved series of white dots, but the ground-colour very much paler, irrorated with minute white scales. Antennæ, head, thorax and abdomen as in *E. kalinda*.

Exp. ♂ ♀ 58–62 mm. (2·3–2·43″).

Hab. Western Himalayas.

179. **Erebia hyagriva**, *Moore* (Ypthima), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 236; *M. & de N.* (Ypthima) *Butt. Ind.* i, 1883, p. 226, pl. 17, fig. 64 ♀; *Moore* (Dallacha), *Lep. Ind.* ii, 1893–96, p. 95, pl. 115, figs. 1, 1 *a*, ♂ ♀

♂ ♀ *Upperside* rich dark brown, of a paler more umber-brown tint than in *E. daksha*. Fore wing with a well-defined subterminal darker band and a single bipupilled, black, yellow-ringed preapical ocellus. Hind wing with a similar but less well-defined subterminal dark band and a single unipupilled but similar smaller tornal ocellus. *Underside* ochraceous brown, the dark subterminal bands on the wings as on the upperside but better defined and with a slender terminal dark line. Fore wing uniform, the costal and terminal margins only with brown mottlings, the ocellus as on the upperside. Hind wing covered with short dark transverse striæ, with a postdiscal series of four large, black, white-pupilled, yellow-ringed ocelli, two subapical, two subanal, somewhat as in *Ypthima*. Antennæ, head, thorax and abdomen dark brown.

Exp. ♂ ♀ 50–62 mm. (1·98–2·45″).

Hab. The Himalayas from Kashmir to Kulu.

180. **Erebia nirmala**, *Moore, P. Z. S.* 1865, p. 501; *M. & de N.* (Callerebia) *Butt. Ind.* i, 1883, p. 247; *Moore* (Callerebia), *Lep. Ind.* ii, 1893–96, p. 100, pl. 116, figs. 2, 2 *a*–2 *e*, ♂ ♀
Callerebia intermedia et cashapa, *Moore, P. Z. S.* 1882, p. 236.

♂ ♀. Resembles *E. scanda*, Kollar, but on the *upperside* the hind wing, in most of the specimens I have seen, has, besides the subtornal ocellus, one or more similar postdiscal ocelli. On the *underside* the central area of the fore wing is deep ochraceous red; the postdiscal and subterminal dark bands are present and arranged as in *E. annada*. Hind wing without, or in some specimens with only traces of, the irroration of grey scales; there is instead a powdering of minute yellow scales on the posterior area of the wing; the ocelli are as on the upperside, but range up to six in number, varying in size; there are always faint postdiscal and subterminal sinuous dark incomplete bands as in *E. annada*. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 51–60 mm. (2–2·38″).

Hab. Western Himalayas, Kunawar to Kumaun.

Vars. *intermedia* and *cashapa*, Moore, were founded on specimens having a varying number of ocelli on the hind wing, with the underside of that wing "uniformly sprinkled with grey scales."

181. **Erebia annada**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 226; *M. & de N.* (Callerebia) *Butt. Ind.* i, 1883, p. 245; *Moore* (Callerebia), *Lep. Ind.* i, 1893–96, p. 97, pl. 115, figs. 3, 3 *a*, 3 *b*, ♂ ♀

Race orixa.

Callerebia orixa, *Moore, P. Z. S.* 1872, p. 555 ♂ ; *M. & de N. Butt. Ind.* i, 1883, p. 245 ; *Moore, Lep. Ind.* ii, 1893–96, p. 96, pl. 115, figs. 2 2 *a*, ♂ ♀.

Race hybrida.

Callerebia hybrida, *Butler, P. Z. S.* 1880, p. 147 ; *M. & de N. Butt. Ind.* i, 1883, p. 246, pl. 15, fig. 44 ♂ ; *Moore, Lep. Ind.* ii, 1893–96, p. 98, pl. 116, figs. 1, 1 *a*, ♂ ♀

♂ ♀ *Upperside* : ground-colour and ocelli as in *E. scanda*, but the latter ringed with deep brownish orange, not pale fulvous ; both fore and hind wing with an obscure subterminal dark brown band. *Underside* : fore wing—a shade of deep ochraceous red-brown, the dorsal margin broadly brown, the apex and the terminal margin just below it irrorated with some greyish scales ; the ocellus and subterminal band as on the upperside, the latter joining an oblique postdiscal dark band below the ocellus. Hind wing dark umber-brown, thickly irrorated with greyish scales and transverse umber-brown striæ, the irroration getting denser towards the costa; two subtornal fulvous-ringed blind ocelli ; postdiscal and subterminal more or less incomplete umber-brown sinuous transverse bands. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 62–70 mm. (2·45–2·75″).

Hab. The Himalayas, Kashmir to Bhutan.

Race **orixa**, Moore, differs only in the brownish-orange ring surrounding the ocelli on both upper and under sides being very much broader, especially on the fore wing ; the ocelli on the hind wing are on the underside less distinct as a rule. The subterminal band on the upperside and the postdiscal and subterminal bands on the underside of the fore wing are entirely wanting in the majority of the specimens I have examined.

Exp. ♂ ♀ 56–72 mm. (2·23–2·85″).

Hab. Assam, the Khási Hills ; Manipur.

Race **hybrida**, Butler, is more distinct, the fore wing being narrower and much more rounded at apex. *Upperside* : ground-colour slightly paler brown, the ocelli ringed with yellow. *Underside* also paler, the irrorations on the hind wing yellowish not grey, and the postdiscal and subterminal sinuous bands more complete.

Exp. ♂ ♀ 62–64 mm. (2·45–2·53″).

Hab. The Western Himalayas to Mussoorie and Kumaun.

182. **Erebia scanda**, *Kollar, Hügel's Kaschmir*, iv, 1844, 2, p. 452, pl. 17, figs. 3, 4, ♂ ; *M. & de N.* (Callerebia) *Butt. Ind.* i, 1883, p. 244 ; *Moore* (Callerebia), *Lep. Ind.* ii, 1893–96, p. 101, pl. 117, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ *Upperside* dark velvety brown, broadly paler towards

apex and termen; fore wing with a bipupilled, very pale fulvous-ringed, oval, dark brown preapical ocellus. *Underside* uniform brown; fore wing with the ocellus as on the upperside and beyond it a faint subterminal transverse darker brown band. Hind wing more or less irrorated with white scales on the posterior two-thirds; two small subbasal, fulvous-ringed, white-pupilled black ocelli, and in a curve in the interspaces above them four minute white dots. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 52–72 mm. (2·05–2·85″).

Hab. Himalayas, Kashmir to Kumaun.

183. **Erebia daksha**, *Moore* (Callerebia), *P. Z. S.* 1874, p. 266, pl. 43, fig. 1 ♂; *M. & de N.* (Callerebia) *Butt. Ind.* i, 1883, p. 248; *Moore* (Callerebia), *Lep. Ind.* ii, 1893–96, p. 102, pl. 117, figs. 2, 2*a*, ♂.

♂ ♀ *Upperside* dark brown, paling very slightly towards the terminal margin and apex of fore wing. Fore wing with a bipupilled black preapical ocellus; hind wing with a unipupilled subtornal similar ocellus. *Underside* similar; the ocelli encircled with dark ferruginous rings; on the fore wing sometimes an additional small ocellus below the preapical ocellus. Hind wing with a curved subterminal series of white spots above the subtornal ocellus, one or two of these sometimes form centres to minute ocelli. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 50–52 mm. (2–2·1″).

Hab. Kashmir.

Genus **ERITES.**

Erites, *Westw. Gen. Di. Lep.* ii, 1851, p. 392; *M. & de N. Butt. Ind.* i, 1883, p. 235; *Moore, Lep. Ind.* ii, 1893–96, p. 113.

Type, *E. madura*, Horsf., from Java.

Range. The Indo-Malayan Region.

♂ ♀ Fore wing triangular, costa widely arched, termen oblique; dorsum straight, apex rounded, slightly produced; the

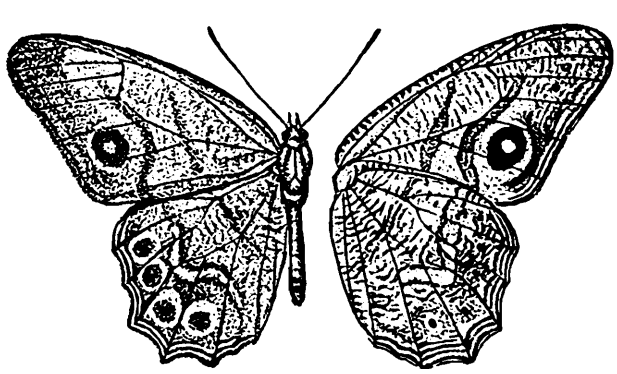

Fig. 35.—*Erites angularis*, Moore, ♂. ½.

termen just below apex in one species angulate; cell long, well over half length of wing; upper discocellular minute, middle a little more than half longer, the two together forming a single

concave line; veins 4, 5 and 6 parallel, 10 and 11 from before apex of cell, 12 inflated at base, subcostal and median normal. Hind wing pear-shaped, costa and dorsum nearly straight; termen deeply scalloped, more or less produced at apex of vein 4, cell about half length of wing; discocellulars oblique, middle concave; vein 3 from before apex of cell, vein 6 closer to 7 than to 5. Antennæ slender, about half length of fore wing, club very gradual; palpi erect, fringed with long porrect hairs anteriorly, third joint moderately long; eyes naked; intermediate femora longer than tibiæ, scaled not hairy.

The forms of *Erites* all have more or less transparent delicate wings.

Key to the forms of Erites.

a. Apex of fore wing rounded.
  a' Fore wing: all the ocelli of underside showing through by transparency on upperside. Underside ground-colour rich purplish.. *E. argentina*, p. 153.
  b' Fore wing: only the large ocellus on underside at tornus showing through by transparency on upperside. Underside ground-colour pale grey or pale ochraceous.
    *a*². Ochraceous rings surrounding postdiscal series of black spots on upperside of hind wing narrow, well separated .. . *E. angularis*, p. 154.
    *b*². Ochraceous rings surrounding postdiscal series of black spots on upperside of hind wing broad, confluent. .. ... *E. rotundata*, p. 154.
b. Apex of fore wing truncate, termen just below truncation angulate. .. *E. falcipennis*, p. 155.

184. **Erites argentina**, *Butler, Cat. Satyr. Brit. Mus.* 1868, p. 188, pl. 5, fig. 8 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 113, pl. 121, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ *Upperside* ferruginous brown, the median and discal transverse bands and the ocelli on the underside of both fore and hind wing showing through by transparency; a subtornal ochraceous-ringed black ocellus in interspace 2 and pale sinuous, slender, subterminal and terminal lines on the hind wing being the only definite markings. The ocellar ring in the ♀ broader than in the ♂ *Underside* rich purplish; basal half of both fore and hind wing irrorated with short, transverse, delicate, brown striæ and crossed by broad transverse dark bands as follows—an obscure short band at extreme base of wings, a median and a discal band; the latter two with a stripe of ochraceous down the middle, in ♀ on both fore and hind wing, in ♂ only on the hind wing. In both sexes the discal dark band strongly angulated outwards on vein 4 of the hind wing and there bordered externally with ochraceous. Beyond on the fore wing there is an anterior series, margined with dark brown on both sides, of four or five, small, silvery-centred, purple-ringed, black ocelli, and a very large similar

ocellus at the tornus only encircled with a very broad ochraceous ring. Hind wing: a slightly curved series of five similar ocelli, the posterior two ringed with ochraceous, the anterior three with purplish. Both fore and hind wing with very slender sinuous subterminal and terminal dark lines. Antennæ, head, thorax and abdomen pale brown, whitish beneath; the antennæ annulated with white and ochraceous, on the club.

Exp. ♂ ♀ 54–60 mm. (2·13–2·38″).

Hab. Tenasserim; and Malayan Subregion to Borneo.

185. **Erites angularis,** *Moore, P. Z. S.* 1878, p. 825 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 236, pl. 16, fig. 50 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 115, pl. 121, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀ Resembles *E. argentina*, but differs as follows:—Fore wing comparatively longer and narrower, the apex more produced, the termen more oblique. Hind wing: the termen more deeply scalloped, decidedly caudate at apex of vein 4. *Upperside*: the ocelli on the hind wing better defined. *Underside*: ground-colour much paler. Fore wing: the dark discal and postdiscal bands and the series of small anterior ocelli ill-defined, the tornal large ocellus elongate with a large blue centre. Hind wing: the transverse discal bands outwardly angulate in the middle, not straight; discal and submedian bands more ochraceous, the curved series of ocelli much smaller.

Exp. ♂ ♀ 62–64 mm. (2·44–2·5″).

Hab. Burma; Tenasserim.

186. **Erites rotundata,** *de Nicéville, J. A. S. B.* 1893, pt. 2, p. 4.
Erites beelinga, *Moore, Lep. Ind.* ii, 1893–96, p. 114.

♂ ♀ Differs from *E. angularis* on the upperside in the tornal ocellus on the fore wing and all the ocelli on the hind wing being clearly defined and encircled with very broad ochraceous rings; there is also a short postdiscal transverse, ochraceous, medially angulated band on the hind wing. *Underside* much paler, more ochraceous than in *E. angularis*; the whole of the wings, not only the basal half as in *E. argentina*, with short transverse brown striæ; no transverse dark bands on the hind wing; the ocelli on both fore and hind wing, with the exception of the tornal ocellus on the fore, minute, sometimes reduced to mere specks, or altogether obsolete. For the rest, shape of the wings, &c., this form is very close to *E. angularis*.

Exp. ♂ ♀ 58–62 mm. (2·27–2·43″).

Hab. Recorded from the hills between Burma and Tenasserim.

According to Mr. Doherty the genitalia of *E. angularis* and *E. rotundata* are structurally different. I have therefore kept the forms separate. In any case, *E. angularis*, *rotundata* and the form next described, *falcipennis*, are very closely allied to each other.

187. **Erites falcipennis**, *W.-M. & de N. Butt. Ind.* i, 1883, p. 237; *Moore, Lep. Ind.* ii, 1893–96, p. 116, pl. 121, figs. 3, 3 *a*, ♂ ♀.

♂ "Nearest allied to *E. angularis*, Moore, but differs from that species in the coloration of the upperside being dark fuliginous throughout, in the fore wing being distinctly falcate, the ocellus round and prominently white-pupilled with a very narrow pale iris. *Hind wing* with the outer fascia and series of blind ocelli hardly defined with ochreous, the outer margin (termen) less waved, especially at the third median nervule, where in *E. angularis* the wing is produced into a short tail; the marginal lines obsolete. UNDERSIDE: all the markings duller and less ochreous. *Fore wing* with a small round central pure white pupil to the posterior ocellus, not large, silvery and eccentric as in *E. angularis*; the iris narrow. On the hind wing the ocelli are small, the two discal fascia wider and of a deeper ochreous, the striæ on both wings shorter and more thickly disposed, forming on the hind wing a submarginal purplish band."

"*Exp.* 2·1–2·3 mm." (*Butt. Ind.*)

Hab. Cachar.

I quote the original description as I have seen only a single broken specimen, a ♀ of this form, captured by the late Capt. Watson in the Chin Hills, Upper Burma.

This specimen agrees fairly well with the description above of the ♂, but on the underside it more closely resembles *E. rotundata* in the absence of the discal and postdiscal transverse bands on the hind wing and in the minuteness of the ocelli.

Genus **RAGADIA**.

Ragadia, *Westw. Gen. Di. Lep.* ii, 1851, p. 376; *M. & de N. Butt. Ind.* i, 1883, p. 234; *Moore, Lep. Ind.* ii, 1893–96, p. 110.

Type, *R. crisia*, Hübner, from the Malay Peninsula.

Range. Malayan Subregion, extending into China; Burma Assam and Eastern Himalayas.

♂ ♀. Fore wing: costa widely arched, termen straight, in the ♀ slightly convex, dorsum straight, apex and tornus distinct but more or less rounded; discoidal cell long, over half length of wing; upper and middle discocellulars inclined very obliquely inwards, lower discocellular strongly bent inwards, concave; vein 5 closer to 6 than to 4 at base, 10 emitted well beyond apex of cell, 11 from just before apex, 12 greatly inflated at base, median vein normal. Hind wing pear-shaped; termen strongly arched, entire; discoidal cell very short, much less than half length of wing, very narrow, acute at apex; veins 3 and 4, and 6 and 7 stalked far beyond apex of cell. Antennæ short, about half length of fore wing, club gradually formed, long and slender; palpi moderately long, third joint slender; eyes very slightly hairy; intermediate femora and tibiæ subequal, not hairy. The male secondary sex-

mark consists of the discocellulars of the hind wing inflated, covered by a tuft of long hairs on the upperside.

The forms of *Ragadia* constitute a well-marked and homogeneous group very closely allied to each other. In fact, they are all really slightly differentiated races of one form. Three are found within our limits.

Key to the forms of Ragadia.

a. Veins crossing the discal transverse white band on both fore and hind wing not margined with black.
  a' Discal and postdiscal white bands far apart, intervening dark area broader than discal band . . . . . *R. crisilda*, p. 156.
  b' Discal and postdiscal white bands closer, intervening dark area narrower than discal band . . . . . *R. critolaus*, p. 157.
b. Veins crossing the discal transverse white band on both fore and hind wing margined with black *R. crito*, p. 156.

188. **Ragadia crisilda** (Pl. III, fig. 23), *Hewitson, Exot. Butt.* iii, 1862, Ragadia, pl., figs. 5, 6, ♀; *M. & de N. Butt. Ind.* i, 1883, p. 235, pl. 15, fig. 36 ♀ ; *Moore, Lep. Ind.* ii, 1893–96, p. 110, pl. 120, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* dull brownish black. Fore and hind wings crossed by a white oblique discal band attenuate at apex, broader in the ♀ than in the ♂; the white bands of the underside indicated by transparency above; hind wing in addition with a curved narrow postdiscal white band. *Underside* similar, but both fore and hind wing crossed by five white bands, the postdiscal and subterminal bands on the hind wing curved; between the discal and postdiscal bands there is, on both fore and hind wing, an oblique series of silvery-centred, fulvous-ringed, black ocelli, eight on fore, seven on hind wing; three of the median ocelli on the hind wing encircled by the same fulvous ring. Antennæ, head, thorax and abdomen brownish, antennæ ringed with white; club of antennæ and the body beneath more or less ochraceous.

Exp. ♂ ♀ 45–48 mm. (1·78–1·9″).

Hab. Assam, Sylhet, Shillong; Cachar; Arakan, Tenasserim.

189. **Ragadia crito**, *de Nicéville, Jour. Bomb. N. H. Soc.* v, 1890, p. 199, pl. D, figs. 1, 2, ♂ ♀ ; *Moore, Lep. Ind.* ii, 1893–96, p. 111, pl. 120, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀ *Upperside* dusky black; cilia blackish. Fore and hind wings crossed obliquely by four white bands, the basal two narrow and less distinct; the discal band the broadest, broader on the hind wing than on the fore wing; on the latter broken by the veins, which are margined with dusky black, into subquadrate spots decreasing in size towards costa. Beyond this the post-

discal white band straight on fore, curved on hind wing, the intervening black space with the ocelli of the underside showing through. Lastly, a faint dusky pale subterminal band on both fore and hind wing. *Underside* similar, the transverse bands pure white and more clearly defined, the ocelli precisely as in *R. crisilda*. Antennæ, head, thorax and abdomen as in *R. crisilda*.

Exp. ♂ ♀ 50–60 mm. (2–2·38″).

Hab. Bhutan; Upper Assam.

190. **Ragadia critolaus**, *de Nicéville, Jour. Bomb. N. H. Soc.* vii, 1893, pl. H, fig. 1 ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 112.

♂ ♀ This local form, apparently confined to Tenasserim, resembles *R. crito*, from which it can be distinguished as follows:— *Upperside*: discal white band crossing both wings very much broader than in *R. crisilda*, postdiscal white band also slightly broader; both much more sharply and clearly defined. *Underside* similar to the upperside; all the bands pure white.

Exp. ♂ ♀ 42–44 mm. (1·68–1·75″).

Hab. Tenasserim.

Genus **MELANITIS**.

Melanitis, *Fabr. Illig. Mag.* vi, 1807, p. 282; *Moore, Lep. Ceyl.* i, 1880, p. 14; *M. & de N. Butt. Ind.* i, 1883, p. 250; *Moore, Lep. Ind.* ii, 1893–96, p. 117.

Type, *M. leda*, Linn., from Amboina.

Range. Africa; Madagascar; Mauritius; throughout the Indo-Malayan Region to Australia.

♂ ♀. Fore wing short, broad, triangular, costa very strongly arched; apex obtuse, acute or falcate, in the dry-seasonal form very falcate; the termen below the falcation straight, very slightly scalloped; tornus distinct but rounded, dorsum straight; cell rather long, well over half length of wing; discocellulars, upper and middle subequal, very short, veins 5, 6 and 7 therefore closely approximate at base; lower discocellular strongly concave, veins 10 and 11 from well before apex; vein 12, subcostal and median normal. Hind wing irregularly oval, costa arched; termen straight to vein 4, thence to tornus produced, scalloped, dorsum straight; cell short, much under half length of wing; discocellulars oblique, upper and middle subequal, vein 3 from well before apex of cell; costal margin very broad at base of wing; vein 8 produced along costa to apex. Antennæ about half length of fore wing, slender, club very gradual, blunt at apex; palpi compressed, long, but with no fringe of long hairs; eyes naked; intermediate and posterior femora long, not hairy beneath.

On the upperside the Indian forms of *Melanitis* resemble each other a good deal; on the underside they differ remarkably, not so much form from form as individually, and the so-called wet and dry seasonal varieties one from the other. Broadly speaking, the

wet season produces an ocellated form, the wings covered with numerous short transverse striæ; the dry season a form in which the striæ are not so prominent and the ocelli are often reduced to mere specks; but the ocellated and non-ocellated varieties are often captured together. It is impossible within any reasonable limits to give a detailed description of the variations in the colour of the underside of the wings, especially in the dry-weather forms of this genus. Every shade and gradation of ochraceous brown, yellow, grey-black and ochraceous red occur and are arranged in spots, blotches, lines and striæ in an endless variety of patterns, but in all specimens closely approximating in shade and markings to the dead and dying leaves among which they are found.

Key to the forms of Melanitis.

a. Upperside of fore wing without, or with comparatively small narrow markings of ferruginous or ochraceous near apex.
  a' The markings bordering a large subapical black spot inwardly and above, but not extending to costa... .. *M. ismene*, p. 158.
  b' The markings extending to costa in a short oblique bar ... . *M. bela* and races, p. 159.
b. Upperside of fore wing with a large patch of orange-yellow near apex.
  a' Subapical black spots on upperside of fore wing large, confluent, extending inwards and joining black patch beyond apex of cell .. ... . *M. zitenius*, p. 161.
  b'. Subapical black spots on upperside of fore wing small, in rare cases wanting, never extended inwards, surrounded by orange patch *M. bethami*, p. 162.

191. **Melanitis ismene**, *Cramer* (Papilio), *Pap. Exot.* i, 1775, pl. 26, figs. A, B; *Moore, Lep. Ceyl.* i, 1880, p. 14, pl. 10, figs. 2, 2 *a*, 2 *b*, ♂ ♀; *M. & de N. Butt. Ind.* i, 1883, p. 256, pl. 12, fig. 28 ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 118, pls. 122, 123, figs. 1 *a*–1 *e*, ♂ ♀

Papilio leda, *Drury* (*nec Linn.**), *Exot. Ins.* i, 1773, pl. 15, figs. 5 & 6; *Moore* (Melanitis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 222; *id.* (Melanitis) *Lep. Ceyl.* i, 1880, p. 15, pl. 10, figs. 1, 1 *a*, 1 *b*, ♂ ♀; *M. & de. N.* (Melanitis) *Butt. Ind.* i, 1883, p. 252.

Wet-season form.— ♂ ♀ Fore wing: apex subacute; termen slightly angulated just below apex, or straight. *Upperside* brown. Fore wing with two large subapical black spots, each with a smaller spot outwardly of pure white inwardly bordered by a ferruginous interrupted lunule; costal margin narrowly pale. Hind wing with a dark, white-centred, fulvous-ringed ocellus subterminally in interspace 2, and the apical ocellus, sometimes also others of the ocelli,

* The true *leda*, Linn., is the Amboina form of which the Indian form "*ismene*," Cramer, is only a race. Drury's figures represent this dark Indian race, for which, following Moore, I have retained Cramer's name.

on the underside, showing through. *Underside* paler, densely covered with transverse dark brown striæ; a discal curved dark brown narrow band on fore wing; a post-discal similar oblique band, followed by a series of ocelli: four on the fore wing, that in interspace 3 the largest; six on the hind wing, the apical and subtornal the largest.

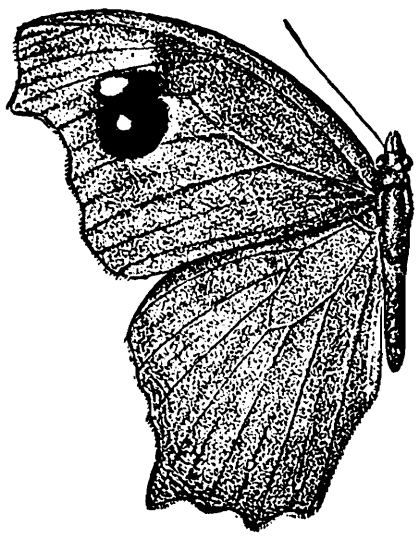

Fig. 36.
Melanitis ismene, ♂. ½.

Dry-season form.— ♂ ♀ Fore wing: apex obtuse and more or less falcate; termen posterior to falcation straight or sinuous. *Upperside*: ground-colour similar to that in the wet-season form, the markings, especially the ferruginous lunules inwardly bordering the black sub-apical spots on fore wing, larger, more extended below and above the black costa. Hind wing: the ocellus in interspace 2 absent, posteriorly replaced by three or four minute white subterminal spots. *Underside* varies in colour greatly, as noted above in the remarks under generic characters. Antennæ, head, thorax and abdomen in both seasonal forms brown or greyish brown; the antennæ annulated with white, ochraceous at apex.

Exp. ♂ ♀ 70–80 mm. (2·78–3·15″).

Hab. Has an immense range. Found in Africa from south of a line between Ashanti on the West coast to Abyssinia on the East. It occurs also in Madagascar, Mauritius and Bourbon; while from all over the Indo-Malayan Region down to Australia one or other of the local races of this insect has been recorded.

Larva. "Long, slender, somewhat fusiform, rough; terminal segment armed with two divergent setose fleshy processes" (*Moore*). "Colour grass-green with a yellow lateral line and many rows of small white spots, with the horn and a continuing cheek-stripe red, and three black spots on the face, but sometimes the head and horns are dark brown with three white spots on the face" (*Aitken*). "Feeds on grasses" (*Moore*).

Pupa. "Thick, smooth, abdomen dorsally convex; head-case terminating in an obtuse point in front; colour pale watery green without markings" (*Moore*).

192. **Melanitis bela**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 223; *M. & de N. Butt. Ind.* i, 1883, p. 254; *Moore, Lep. Ind.* ii, 1893–96, p. 128, pl. 126, figs. 1, 1*a*–1*e*, ♂ ♀.

Cyllo aswa, *Moore, P. Z. S.* 1865, p. 769 ♂; *M. & de N.* (Melanitis) *Butt. Ind.* i, 1883, p. 253; *Elwes, Trans. Ent. Soc.* 1888, p. 329.

Race varaha.

Melanitis varaha, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 224; *M. & de N. Butt. Ind.* i, 1883, p. 256: *Moore, Lep. Ind.* ii, 1893–96, p. 131, pl. 127, figs. 1, 1 *a*-1 *d*, & pl. 128, figs. 1 *a*–1 *f*, ♂ ♀

Melanitis gokala, *Moore. Cat. Lep. Mus. E. I. C.* i, 1857, p. 224; *M. & de N. Butt. Ind.* i, 1883, p. 256; *Moore, Lep. Ind.* ii, 1893-96, p. 133, pl. 129, figs. 1, 1 *a*–1 *e*, ♂ ♀.
Melanitis aculeata, *Hampson, J. A. S. B.* 1888, p. 351.
Melanitis ampa, *Swinhoe, A. M. N. H.* (6) v, 1890, p. 353.

Race tambra.

Melanitis tambra, *Moore, Lep. Ceyl.* i, 1880, p. 15, pl. 9, figs. 2, 2 *a*–2 *c*, ♂ ♀, larva & pupa; *M. & de N. Butt. Ind.* i, 1883, p. 255; *Moore, Lep. Ind.* ii, 1893-96, p. 125, pl. 124, fig. 1, larva & pupa, 1 *a*–1 *f*, ♂ ♀

Wet-season form.— ♂ ♀ Costa more strongly arched; apex and termen of fore wing as in *M. ismene*. *Upperside* closely resembles *M. ismene*, but the ferruginous markings near apex of fore wing are entirely wanting, the black subapical spots smaller and very obscure, the smaller white spot absent. Hind wing uniform, without ocelli; in a few specimens the mere trace of a subterminal ocellus in interspace 2. *Underside* similar to the underside in *M. ismene*, but the ground-colour darker and the transverse striæ not so clear and well-defined, the transverse brown lines also more obscure.

Dry-season form.— ♂ ♀. Costa of fore wing very strongly arched, apex more falcate than in *M. ismene*. *Upperside*: ground-colour as in *M. ismene* but often pale purplish towards the terminal margins; markings near apex ferruginous, very often ochraceous or merely pale, much less definite and more limited in extent than in *M. ismene*, when present confined to the area inwards from and above the black subapical spots, not extended beyond towards the termen, but generally prolonged to the costa as an oblique short broad stripe. *Underside* as in *M. ismene*. Antennæ, head, thorax and abdomen brown; the antennæ annulated and tipped with ochraceous.

Exp. ♂ ♀ 72–86 mm. (2·83–3·38″).

Hab. The Himalayas from Kashmir to Sikhim; Assam, Nága, and Khási Hills; Burma, and Tenasserim.

Race **varaha**, Moore.—This, the southern form of *M. bela*, differs in being smaller and much darker, with the ferruginous or ochraceous markings on the upperside near the apex of the fore wing still more obsolete than they are in typical *M. bela*. In the wet-season form the subapical large black spots on the upperside of fore wing are very obscure and want the smaller white spots. In the dry-season form the terminal margins on the upperside of fore and hind wings are always purplish, and in the females the ochraceous markings are similar to the markings in *M. bela* and tolerably distinct, the ground-colour being much paler than in the male.

Exp. ♂ ♀ 68–70 mm. (2·68–2·75″).

Hab. Southern India.

Var. **gokala**, Moore, is a form intermediate between typical *M. bela* and typical *M. varaha*. ♂ ♀ *Upperside* umber-brown, the black subapical spots diffuse and generally in both wet-season

and dry-season forms without the white smaller spot; the black costal patch beyond apex of cell, more or less obscure in typical *M. bela*, is prominent in var. *gokala* and is extended to the upper subapical spot.

Race **tambra**, Moore.—An insular form closely resembling the Southern Indian race *varaha*, Moore, from which it differs in being slightly larger, and in the ground-colour of the underside in the wet-season form being always a rich dark purplish brown; in *varaha* it is dark blackish brown. The ocelli, too, in this form are much more obsolescent than they are in the wet-season form of *varaha*.

Exp. ♂ ♀ 70–78 mm. (2·75–3·1″).

Hab. Ceylon.

Larva. "Elongated, thickened in the middle; head with two long pubescent red processes; anal segment also with two processes; colour green with longitudinal and transverse darker lines; face striped with red." (*Moore.*)

Pupa. "Green. Head and thorax flattened." (*Moore.*)

193. **Melanitis zitenius** (Pl. III, fig. 24), *Herbst* (Papilio), *Natursyst. Schmett.* viii, 1796, p. 5, pl. 182, figs. 1, 2; *M. & de N. Butt. Ind.* i, 1883, p. 258, pl. xii, fig. 29 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 135, pl. 130, figs. 1, 1 *a*–1 *d*, ♂ ♀, & pl. 131, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Cyllo duryodana, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 464; *M. & de N.* (Melanitis) *Butt. Ind.* i, 1883, p. 257.

Melanitis kalinga, *Moore, Lep. Ind.* ii, 1894, p. 137, pl. 131, figs. 2, 2 *a*, ♂

Wet-season form.— ♂ ♀ Fore wing: costa strongly arched, apex acute; termen immediately below apex in ♂ angulate, in ♀ falcate. *Upperside* resembles *M. ismene*, but ground-colour on the whole somewhat warmer brown, a very broad patch of ochraceous yellow, above and beyond the subapical black spots, larger in the ♀ than in the ♂ *Underside* closely irrorated with dark brown striæ; the ocelli subequal, very much smaller and less clearly defined than in *M. ismene*.

Dry-season form.— ♂ ♀ Costa of fore wing less strongly arched; apex in both sexes very falcate. From the wet-season form it differs in the greater amount of ochraceous yellow on the apex of fore wing. This forms a very broad band passing from costa above and beyond the subapical black spots, spreading below and encircling them except for a narrow band which joins the spots to a large black mark beyond apex of cell. Hind wing with two or three white subterminal spots posteriorly. *Underside* as in *M. ismene* but not quite so variable, the ocelli often entirely obsolete.

Exp. ♂ ♀ 82–90 mm. (3·25–3·5″).

Hab. Sikhim; S. India; Assam; Burma; Tenasserim; Andamans; extending to the Malay Peninsula.

Var. *kalinga*, Moore.—A specimen from Moore's own collection, now in the British Museum, is the only one I have seen.

Except that it is slightly smaller it is absolutely indistinguishable from many Sikhim and Burmese specimens of *M. zitenius*.

Two female specimens of *M. zitenius* in the British Museum, collected by me years ago in Tenasserim, show markings approaching those of the doubtfully distinct *M. ambasara*, Moore (*M. gnaphodes*, Butler), from Java. In these two specimens the black subapical spots on the upperside of the fore wing are wanting; the ochraceous-yellow colour forms a very broad, prominent, oblique subapical bar from costa to termen.

194. **Melanitis bethami**, *de Nicéville, P. Z. S.* 1887, p. 451; *Moore, Lep. Ind.* ii, 1893–96, p. 127, pl. 125, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Wet-season form.— ♂ ♀ Shape of the wings as in *M. zitenius*. *Upperside* very dark blackish brown, paler along the terminal margins, the subapical black spots wanting; a tolerably large patch, orange-yellow preapically, on the fore wing, larger and generally extended to the termen in the ♀, bearing in interspace 3 a round white central black ocellus. *Underside* purplish brown, somewhat closely and evenly irrorated with short transverse dark brown striæ; fore wing with four obscure, hind wing with six postdiscal small ocelli.

Dry-season form.— ♂ ♀. Fore wing more falcate than in the wet-season form. *Upperside*: ground-colour a warmer richer brown, the terminal margins broadly ashy; the orange-yellow patch on fore wing much larger, subtriangular, inwardly extending almost to the apex of the cell, outwardly sometimes to apex and termen of wing; subapical black spots bearing a white spot on their outer margins, small but always present, completely surrounded by the orange-yellow. Hind wing with one or two white spots near tornus. *Underside* very variable, as in all the forms of *Melanitis*. Antennæ brown, marked with ochraceous yellow in the ♂; head, thorax and abdomen dull brown.

Exp. ♂ ♀ 72–84 mm. (2·8–3·3″).

Hab. Recorded only as yet from Pachmari in Central India.

Genus **CYLLOGENES.**

Cyllogenes, *Butler, Cat. Satyr. Brit. Mus.* 1868, p. 6; *M. & de N. Butt. Ind.* i, 1883, p. 260; *Moore, Lep. Ind.* ii, 1893–96, p. 137.

Type, *C. suradeva*, Moore, from Sikhim.

Range. Recorded only from Sikhim; Bhutan; Assam, the Nága Hills.

♂ ♀. Allied to *Melanitis*. Differs in having comparatively broader wings with much broader discocellular cells. Typically the apex of the fore wing is acute, never rounded or falcate as in *Melanitis*. Vein 1 of the fore wing is remarkably short in the males, terminating on the dorsal margin at a distance of less than half the length of the latter from base. Hind wing broadly caudate at vein 4; vein 7, and not vein 8, produced to apex of wing, vein 8 terminating on the basal half of the costa. The rest

of the venation similar to that of *Melanitis*. Antennæ less than half the length of fore wing, with a shorter and broader club; palpi as in *Melanitis*; eyes naked; femora of intermediate and posterior legs scaled, slightly longer than the tibiæ. So far as is known, there is no seasonal dimorphism; typically the male is furnished with a very large and conspicuous sex-mark of specialized scales, lying on both sides of the median vein on the upperside of the fore wing.

Key to the forms of Cyllogenes.

a. Termen of fore wing in both males and females straight, not angulated below apex. . . . *C. suradeva*, p. 163.
b. Termen of fore wing in both males and females distinctly angulated below apex *C. janetæ*, p. 163.

195. **Cyllogenes suradeva**, *Moore* (Melanitis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 225; *M. & de N. Butt. Ind.* i, 1883, p. 260, pl. 13, fig. 30, ♂ ♀; *Elwes, Trans. Ent. Soc.* 1888, p. 330; *Moore, Lep. Ind.* ii, 1893–96, p. 138, pl. 132, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ *Upperside* vandyke-brown with in some lights a purplish gloss. Fore wing: a preapical curved broad yellow fascia from costa to a little below vein 5, but not reaching the termen. Hind wing uniform. *Underside* dull ochraceous white, somewhat closely irrorated with fine short transverse brown striæ; both fore and hind wing with a dark, transverse, slightly diffuse discal band, and an obscure, very incomplete postdiscal series of small white ocellar spots. The discal band broader in the ♀ than in the ♂; in the latter bordered outwardly by a broad diffuse purplish band. Antennæ, head, thorax and abdomen pale brown, dull ochraceous white beneath; the antennæ bright ochraceous at apex. Male sex-mark as described under generic characters.

Exp. ♂ ♀ 82–88 mm. (3·25–3·47″).

Hab. Recorded hitherto only from Sikhim.

196. **Cyllogenes janetæ**, *de Nicéville, P. Z. S.* 1887, p. 453; *Moore, Lep. Ind.* ii, 1893–96, p. 139, pl. 132, figs. 2, 2 *a*, ♂.

♂ ♀. Very closely resembles *C. suradeva* in colour, but the outline of the fore wing in both ♂ and ♀ is different, as noted in the Key to the forms; the preapical yellow band on the upperside of the fore wing is broader, more curved and reaches the termen, along which it is continued narrowly to the tornus; the termen of the hind wing is broadly, but very obscurely, also yellow; and the ♂ is entirely without the conspicuous sex-patch on the fore wing. *Underside* very much darker than in *C. suradeva*, the striæ coalescing in places and shading the whole area of the wings irregularly with brown. Antennæ, head, thorax and abdomen as in *C. suradeva*, but much darker.

Exp. ♂ ♀ 96–98 mm. (3·8–3·85″).

Hab. Bhutan; the Nága Hills.

Genus **PARANTIRRHŒA.**

Parantirrhœa, *Wood-Mason, J. A. S. B.* 1880, p. 248; *M. & de N. Butt. Ind.* i, 1883, p. 261; *Moore, Lep. Ind.* ii, 1893-96, p. 139.

Type, *P. marshalli*, Wood-Mason, from Travancore.

Range. Only known from Southern India, Travancore.

"*Male.* Fore wing triangular; costal margin moderately and regularly arched; apex acute; outer margin almost straight, being only just perceptibly convex; inner angle rounded; inner margin sinuous, being lobed at the base much as in the males of *Clerome* and *Æmona*, genera of *Morphinæ*; subcostal nervure four-branched, the first branch given off before, and the second beyond the end of the discoidal cell, the first, second and third coalescing, successively and respectively, with the costal nervure, the first and the second and all three in turn becoming free and running off at a tangent like the costal nervure to the anterior margin, the fourth being perfectly free from its origin and running to the apical angle; lower discocellular nervule long, very slightly concave outwards, almost straight; middle one not quite half the length of the lower one, upper one rudimentary; submedian nervure sinuous, short, terminating near the inner margin at about the level of the junction of the basal and second fourth of the length of that margin, being in fact hardly more developed than is the internal nervure of the *Papilioninæ*, as compared with that of many Heterocerous Lepidoptera; the first median nervure directed straight outwards and backwards, out of its normal course, to the inner angle and supplying the place of the rudimentary submedian nervure. On turning to the underside, it is seen that a narrow rounded lobe of the functional sutural area (inner margin), about six times as long as it is broad, is folded back upon the under surface to which it is firmly adherent. The lobe occupies the middle two-fourths of the length of the inner margin, and is thickly clothed on its surface and fringed at its free edge with firmly attached long and somewhat raised modified scales, rendered conspicuous by their rich dark brown colour and satiny lustre. The outline of this turned-up lobe is marked out on the upperside by a curvilinear groove. Hind wing tailed, subquadrate, with four distinct margins; viz., a strongly and irregularly-arched costal margin, nearly straight external and hind margins, and an inner or abdominal margin marked out by the obtuse-angled apex; the tail and the well-rounded anal angle with a black oval sexual mark divided by the submedian nervure near the anal angle; costal nervure short and straight, terminating before, and the first branch of the subcostal which originates close to the base of its nervure ending beyond the middle of the length of the costal margin, the second branch being given off before the middle of the discoidal cell and extending into the apical angle; the discoidal nervule in the same straight or slightly curved line with the subcostal; the discocellular nervule sinuous; the third median nervule produced

to a conspicuous tail. Antennæ fine and distinctly clubbed. " (*Wood-Mason.*)

A single species only is known, constituting the type of the genus.

197. **Parantirrhœa marshalli**, *Wood-Mason, J. A. S. B.* 1880, p. 250; *M. & de N. Butt. Ind.* i, 1883, p. 262; *Moore, Lep. Ind.* ii, 1893–96, p. 140, pl. 132, figs. 3, 3 *a*, ♂.

♂ " *Upperside*, both wings dark fuscous suffused with rich deep violet. Fore wing with an outwardly and forwardly arched subcrescentic pale violet or mauve band, commencing beyond the middle of the wing at the costal nervure, terminating at the inner angle, and crossed obliquely by a series of three small white spots disposed in a straight line parallel to the outer margin, and placed upon folds of as many consecutive interspaces, the last being between the second and third median nervules. Hind wing relatively longer tailed than in *Melanitis ismene*, Cramer, with the membranous parts of the divergent tail almost wholly formed by the produced wing-membrane of the interspace between the second and third median nervules, a very narrow anterior membranous edging being contributed by the interspace next in front; and with rather more than the basal two-thirds of its length in front of the discoidal nervure and subcostal nervure ochreous. *Underside*: both wings ochreous, obscurely striated with a deeper shade of the same colour, and marked with a submarginal series of inconspicuous brown specks, the probable rudiments of ocelli." (*Wood-Mason.*)

Exp. 2·4 inches (61 mm.).

Hab. Trevandrum, Travancore.

Genus **ANADEBIS.**

Theope, *Moore* (*nec Doubleday*), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 234.
Anadebis, *Butler, A. M. N. H.* (3) xx, 1867, p. 50.
Zethera, *M. & de N.* (*nec Felder*) *Butt. Ind.* i, 1882, p. 97.
Euploeamima, *Holl. Trans. Am. Ent. Soc.* 1887, p. 113; *Moore, Lep. Ind.* i, 1890–1892, p. 155.

Type, *A. himachala*, Butler, from the N.E. Himalayas.

Range. Indo-Malayan Region.

♂ ♀ Fore wing very broadly triangular, costa arched from base, termen convex or straight, dorsum slightly sinuous, apex and tornus well-marked; discoidal cell very broad and short, not half the length of wing; discocellulars oblique, upper and middle subequal, lower very long; vein 12 and median vein scarcely thickened towards base, subcostal strongly arched, veins 10 and 11 free. Hind wing broadly ovate; cell short, not half length of wing; veins 3 and 4 emitted close together, but 3 a little before apex of

cell, 4 at apex, 6 closer to 5 than to 7. Antennæ filiform, about half length of fore wing; club indistinct, very gradual; palpi long, subporrect, third joint long, distinct; eyes naked; intermediate and posterior femora long, not hairy beneath. Sexes alike; male with no secondary sexual characters.

Key to the forms of Anadebis.

a. Upperside: both wings with postdiscal row of black, white-centred ocelli	*A. himachala*, p. 166.
b. Upperside: both wings with rows of white spots, not ocelli, subterminal and terminal on fore, postdiscal, subterminal and terminal on hind wing	*A. diademoides*, p. 166.

198. **Anadebis himachala**, *Moore* (Mycalesis?, Theope), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 234; *M. & de N. Butt. Ind.* i, 1882, p. 99, pl. 14, fig. 35 ♀; *Moore, Lep. Ind.* i, 1890–92, p. 157, pl. 54, figs. 2, 2 *a*, ♂ ♀.
Neorina sita, *Felder, Wien. ent. Monatsch.* iii, 1859, p. 403.

♂ ♀ *Upperside* dark umber-brown, somewhat paler in the ♀; termen broadly paler, the paler shade on the fore wing being produced angularly inwards along the costa. On this pale portion there is on the fore wing a row of seven (occasionally only six) white-pupilled black ocelli, each surrounded by a ring of pale fulvous and an outer ring of brown, these latter rings touching each other on the veins; beyond this, two somewhat waved lines parallel to the termen and curving inwards opposite the apex; the termen and cilia brown, touched with pale fulvous. Hind wing similar, with similar ocelli and subterminal lines; ocelli six; the apical ocellus very large but obscure and faintly marked, the middle one of the five distinct ocelli the largest, the anal one bipupilled. *Underside* similar, the ground-colour on each side of the internal subterminal brown line pinkish, the apical ocellus on the hind wing distinct, very large. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 84–98 mm. (3·3–3·85″).

Hab. Sikhim; Assam, Sylhet, Khási Hills, Cachar; Upper Burma.

199. **Anadebis diademoides**, *Moore* (Zethera), *P. Z. S.* 1878, p. 824, pl. 51, fig. 3 ♂; *M. & de N.* (Zethera) *Butt. Ind.* i. 1882, p. 98, pl. 14, fig. 33 ♂; *Moore* (Euplœamima), *Lep. Ind.* i, 1890–92, p. 156, pl. 54, figs. 1, 1 *a*, ♂.

♂ ♀. *Upperside* sepia-brown to dark blackish brown. Fore wing with a subterminal row of white spots decreasing in size towards the costa, a terminal row of smaller, more or less obscure white spots, and between the two series a faintly-white row of lunules. Hind wing with three rows of white spots along the termen: the innermost row of spots very large, broadly oval, decreasing in size

towards the apex; the outer two rows much smaller, subequal in size. *Underside* rather pale vandyke-brown, the white spots on both wings as on the upperside. Antennæ, head, thorax and

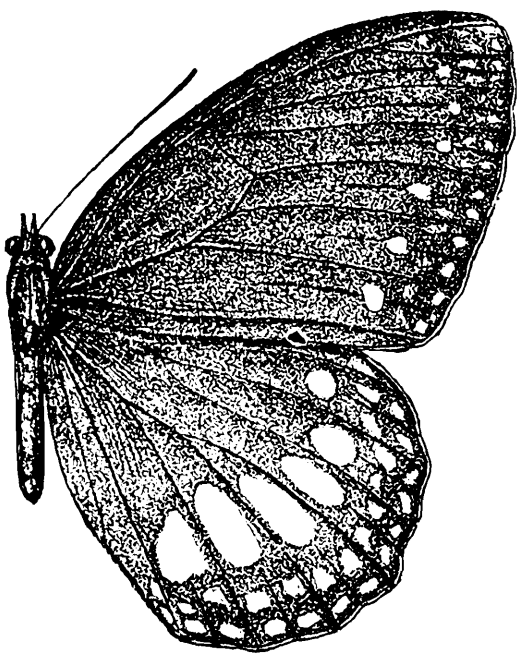

Fig. 37.—*Anadebis diademoides*, ♂. ½.

abdomen brown, the sides of the palpi and of the abdomen beneath streaked with white.

Exp. ♂ ♀ 74–90 mm. (2·9–3·55″).

Hab. Upper Burma, Shan States, Ruby Mines, Karen Hills; Lower Burma, Pegu Yoma; throughout Tenasserim. Recorded from Hainan.

Genus **NEORINA.**

Neorina, *Westw., Dblday., Westw. & Hewits. Gen. Di. Lep.* 1851, p. 369.

Type, *N. hilda*, Westw.

Range. Indo-Malayan Region.

♂ ♀ Wings comparatively very broad. Fore wing: costa strongly arched, termen and dorsum nearly straight, apex and tornus slightly rounded but distinct. Hind wing oval; costa and termen strongly arched, the latter scalloped, sometimes produced at apex of vein 4; cell in both wings not half length of wing; upper and middle discocellulars in fore wing very short, lower bent inwards near base, then straight; veins 10 and 11 from before apex of cell, vein 12 not at all, or very slightly, swollen at base. Hind wing: discocellulars short, oblique, curved outwards; veins 3 and 4 from extreme apex of cell, 4, 5, 6 and 7 subequally distant from each other. Antennæ about half length of fore wing, slender, gradually thickening to apex, but without a distinct club; eyes naked; palpi somewhat broad, third joint short; intermediate femora longer than tibiæ, scaled not hairy.

Key to the forms of Neorina.

a. Termen of hind wing not produced at apex of vein 4 . . . . . *N. hilda*, p. 168.
b. Termen of hind wing produced, caudate at apex of vein 4 . . *N. westwoodi*, p. 168.

200. **Neorina westwoodi**, *Moore, Lep. Ind.* i, 1892, p. 226, pl. 74, figs. 2, 2*a*, ♂ ♀.
Neorina chrishna, *M. & de N.* (*nec Westw.*) *Butt. Ind.* i, 1883, p. 135, pl. 14, fig. 34 ♀

♂ ♀. Closely resembles *N. hilda*, but differs chiefly as follows:—*Upperside*: ground-colour darker; fore wing with the oblique band whiter, much broader, extending into the upper third of the cell, and narrowing towards the tornus; discocellulars marked with brown. Hind wing broadly caudate at apex of vein 4; apex and cilia white not yellow. *Underside*: the disc and posterior portion of hind wing powdered with lilacine grey not yellow scales, the ocellus in interspace 2 larger and more distinct.

Exp. ♂ ♀ 114–128 mm. (4·5–5·05″).

Hab. Sikhim? (*Brit. Mus.*); Assam, Cachar, Burma.

This insect was confounded with a Javan species *N. chrishna*, Westw., from which it can be distinguished at once by being larger and by the very much broader tail to the hind wing.

201. **Neorina hilda**, *Westw. in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 370, pl. 65, fig. 2 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 134; *Moore, Lep. Ind.* i, 1890–92, p. 225, pl. 74, figs. 1, 1*a*, ♂ ♀

♂ ♀. *Upperside* very dark vandyke-brown. Fore wing with an oblique yellow band, with irregular margins, reaching from the costa above apex of cell, nearly to the tornus; a large black ocellus, faintly centred paler, in interspace 5; a white spot above and another smaller one below it. Hind wing: the terminal and costal margins near the apex somewhat narrowly yellow; cilia yellow. Both wings with faint, somewhat broad, pale subterminal and terminal incomplete lines. *Underside*: ground-colour similar, with a powdering of yellowish scales towards the dorsal margin of the hind wing. Fore wing with the yellow oblique band, black ocellus, and white spots as on the upperside; the ocellus white-centred and fulvous-ringed, with an outer ring of black. Hind wing with yellow markings as on the upperside, a preapical ocellus similar to the ocellus on the fore wing, and very much smaller, similar, somewhat obsolescent ocelli in interspaces 2, 3, and 4. Both wings with two subterminal lunular dark lines, bordered by lilacine on the inner side and between the lines towards the tornus of the hind wing. Antennæ rufescent brown; palpi with a yellow stripe on the sides; head, thorax and abdomen dark vandyke-brown.

Exp. ♂ ♀ 96–104 mm. (3·75–4·1″).

Hab. Sikhim; Bhutan; Assam.

Genus **ELYMNIAS.**

Elymnias, *Hübner, Verz. bek. Schmett.* 1816, p. 37; *M. & de N. Butt. Ind.* i, 1883, p. 264.
Elymnias, Melynias, Bruasa, Mimadelias, et Agrusia, *Moore, Lep. Ind.* ii, 1894, p. 144.

Type, *E. undularis*, from India.
Range. Africa and the Indo-Malayan Region.

♂ ♀ Wings ample; terminal margins uneven, generally scalloped; entire only in a few forms. Fore wing short and broad or elongate, moderately narrow; cell broad, short, well under half length of wing; upper discocellular very short, outwardly oblique; middle discocellular vertical, not half length of lower, lower strongly concave; veins 3 and 4 from lower apex of cell, vein 4 curved strongly upwards; veins 10 and 11 from before upper apex of cell; vein 12 swollen at base. Hind wing short and broad, oval, generally more or less caudate at apex of vein 4, sometimes also shortly caudate at the apices of veins 1 to 3; cell very short and broad; upper discocellular nearly horizontal, middle vertical, lower concave; a well-marked prediscoidal cell; veins 3 and 4 from lower apex of cell; vein 8 very short. Antennæ short, less than half length of fore wing, club gradual; palpi obliquely porrect, tufted posteriorly, with somewhat thickset, adpressed hairs in front; eyes naked and prominent; intermediate and posterior femora longer than the tibiæ, scaled not hairy. Males with secondary sex-mark of specialized scales covered by a tuft of long hair, placed below vein 1 when present on the fore wing, and near the base within the cell on the hind wing. These sex-marks are, in the majority of the Indian forms, present only on the hind wing.

I have taken the genus *Elymnias* in the wide sense, distinguished from the rest of the *Satyrinæ* by the possession of a prediscoidal cell in the hind wing. The Indian forms can, however, be divided into three fairly well-marked groups:—I. True *Elymnias*, comprising the forms arranged under *Elymnias* and *Melynias* by Moore; II. *Bruasa*, Moore, with one form from within our limits; III. Forms comprised in Moore's genera *Mimadelias* and *Agrusia*. *Bruasa* differs from *Elymnias* in the shape of the wings, and *Mimadelias* and *Agrusia* in the character of the secondary sex-mark in the male.

Key to the forms of Elymnias.

A. Basal area up to apex of cell on upperside of wings uniform, without markings.
  a. Markings when present on upperside of wings terminal.
    a'. Underside of hind wing not ocellated.
      a^2. Upperside: ♂, wings brown, terminal margin of hind wing only chestnut-red or ochraceous; ♀, wings tawny,

terminal margins black with white spots, or wings more or less concolorous with those of ♂.

a^3. Upperside: ♂, terminal margin of fore wing with blue spots; ♀, black on terminal margin of hind wing not extending inwards along veins.

a^4. Upperside: ♂, terminal margin of hind wing chestnut-red; ♀, oblique preapical white band on fore wing broad, its margins uneven . . . . . *E. undularis*, p. 171.

b^4. Upperside: ♂, terminal margin of hind wing not chestnut-red, ochraceous; ♀, oblique preapical white band on fore wing narrow, its margins even . . . . . Race *fraterna*, p. 172.

b^3. Upperside: ♂, terminal margin of fore wing with white spots; ♀, black on terminal margin of hind wing extending inwards along veins . . . . . *E. caudata*, p. 173.

b^2. Upperside: ♂, wings brown, terminal margins of both fore and hind wing chestnut-red; ♀, wings more or less concolorous with those of the ♂.

a^3. Hind wing in both sexes dentate at apex of vein 4; chestnut-red margins of wings narrow, occupying scarcely one-fourth of wing . . . . *E. cottonis*, p. 173.

b^3. Hind wing in both sexes distinctly caudate at apex of vein 4; chestnut-red margins of wings broad, occupying more than one-third of wing. Race *obnubila*, p. 173.

c^2. Upperside: ♂ brown, terminal margins of both fore and hind wing with large blue or greenish spots . . . . *E. esaca* ♂, p. 179.

b'. Underside of hind wing ocellated . . . *E. mimus*, p. 178.

b. Markings when present on upperside of wings subterminal.

a' Upperside of hind wing with a subterminal broad band greenish white, irrorated, broken and interrupted by patches of transverse brown striæ. Sexes alike . . . . . *E. singhala*, p. 174.

b' Upperside of hind wing: ♂ with subterminal narrow incomplete band blue; ♀ with a diffuse anterior pale area and a conspicuous red quadrate tornal spot. *E. peali*, p. 175.

c. Markings when present on upperside of wings discal and postdiscal.

a'. Apex of fore wing not acute; terminal margins of wings more or less scalloped, uneven.

a^2. Upperside of both fore and hind wing with obliquely transverse broad white discal bands *E. dara*, p. 177.

b^2. Upperside of both fore and hind wing with discal or postdiscal blue spots, no white bands.
a^3. Upperside of hind wing uniform, without white spots. Sexes not alike.
a^1. Underside of wings brown without any reddish or ferruginous tint or suffusion of lilac .... *E. malelas* ♂, p. 175.
b^1. Underside of wings more richly coloured with a reddish or ferruginous tint; apical half of fore wing suffused with lilac . Race *saueri*, p. 176.
b^3. Upperside of fore wing with a curved postdiscal series of small white spots. Sexes alike .... . . *E. patna*, p. 177.
b' Apex of fore wing acute; terminal margins of wings not scalloped, straight and even . . .. *E. penanga*, p. 180.
B. Basal area of wings not uniform, more or less streaked.
a. Underside of hind wing ocellated .. *E. esaca* ♀, p. 179.
b. Underside of hind wing not ocellated.
a' Underside of hind wing with posterior half more or less canary-yellow, without striæ . ... *E. vasudeva*, p. 178.
b' Underside of hind wing brown or purplish white, with transverse dark striæ.
a^2. Upperside: fore wing more or less suffused with blue; hind wing with white streaks in the interspaces . . *E. malelas* ♂, p. 175.
b^2. Upperside: fore wing not suffused with blue; hind wing with bluish-green streaks in the interspaces *E. timandra*, p. 177.

202. **Elymnias undularis**, *Drury* (Papilio), *Ill. Exot. Ins.* ii, 1773, pl. 10, figs. 1, 2, ♂; *M. & de N. Butt. Ind.* i, 1883, p. 266, pl. 17, fig. 59, ♂ ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 145, pl. 133, figs. 1, 1 *a*–1 *c*, ♂ ♀.
Elymnias tinctoria, *Moore, P. Z. S.* 1878, p. 826; *M. & de N. Butt. Ind.* i, 1883, p. 267; *Moore, Lep. Ind.* ii, 1893–96, p. 148, pl. 133, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Race fraterna.

Elymnias fraterna, *Butler, P. Z. S.* 1871, p. 520, pl. 42, fig. 3 ♂; *Moore, Lep. Ceyl.* i, 1880, p. 25, pl. 13, figs. 1 *a*, 1 *b*, ♂ ♀; *M. & de N. Butt. Ind.* i, 1883, p. 268; *Moore, Lep. Ind.* ii, 1893–96, p. 149, pl. 134, figs. 1, 1 *a*–1 *e*, larva & pupa, ♂ ♀.

♂. *Upperside* blackish brown. Fore wing with a subterminal series of blue or sometimes slightly green elongate spots, curving strongly inwards and getting more elongate opposite apex, forming almost an oblique bar up to the costa. Hind wing: the terminal margin broadly bright chestnut, sometimes with a subterminal paler spot in two or more of the interspaces. *Underside* pale brown, the basal two-thirds of both fore and hind wing densely,

the outer third more sparsely covered with dark ferruginous, somewhat broad, transverse striæ. Fore wing with a broadly triangular pale purplish-white preapical mark; both fore and hind wings with a broad subterminal area purplish white. Hind wing with a small white spot opposite middle of the costa and a more or less complete series of more obscure whitish subterminal spots. Antennæ, head, thorax and abdomen brown; abdomen beneath paler.—♀ *Upperside* tawny, veins black. Fore wing: the dorsal margin broadly black; the apical area beyond a line curving from the tornus, round apex of the cell and a little beyond it, to the base of the costa also black, the wing crossed preapically by a conspicuous, broad, oblique white bar, and three subterminal white spots. Hind wing: dorsal margin dusky; terminal broadly, costal margin more narrowly black; a subterminal series of four white spots. *Underside* tawny, with markings similar to those in the ♂; the pale whitish markings more extensive; the dorsal margin broadly without striæ.

Exp. ♂ ♀ 72–86 mm. (2·85–3·4″).

Hab. The Himalayas, Mussoorie to Bhutan; Lower Bengal; Central India; Assam; Burma and Tenasserim, extending to the Malayan Subregion.

The Burmese variety has been separated as *E. tinctoria* by Moore. The differences, however, are very slight and very variable, consisting chiefly in the size of the subterminal blue markings on the upperside of the fore wing in the ♂, and in the extent of black on the upperside of both fore and hind wing in the ♀

Larva. "Elongate, fusiform, setose; green with longitudinal dorsal and lateral yellow lines, and a subdorsal row of yellow elongated spots, which are centred with red and posteriorly edged with blue; head brownish, armed with two erect brownish setose processes; anal segment also with two red slender hindward-projecting processes."

Pupa. "Similar to *E. fraterna* and *E. caudata*." (*Moore.*)

Race **fraterna**, Butler, is an insular representative of *E. undularis*. The ♂ differs on the upperside in the more or less complete absence of the subterminal and preapical blue markings on the fore wing; and in the broad terminal border of the hind wing being of a much brighter, almost ochraceous chestnut. On the underside the pale markings are somewhat restricted. The male very closely resembles, both on the upper and under side, the male of *E. undularis*.

Exp. ♂ ♀ 70–82 mm. (2·75–3·2″).

Hab. Ceylon.

Larva. Very similar to the larva of *E. undularis*, head more yellowish than brown.

Pupa. "Green, with longitudinal yellow streaks bordered by red streaks or spots; head and thorax truncate in front, with three short tubercles." (*Moore.*)

203. **Elymnias cottonis**, *Hewitson* (Melanitis), *A. M. N. H.* (4) xiv, 1874, p. 358; *M. & de N. Butt. Ind.* i, 1883, p. 268; *Moore, Lep. Ind.* ii, 1893–96, p. 151, pl. 136, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Race obnubila. (Pl. III, fig. 26.)

Elymnias obnubila, *Marshall, in M. & de N. Butt. Ind.* i, 1883, p. 272; *Moore, Lep. Ind.* ii, 1893–96, p. 153, pl. 137, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ *Upperside* rich velvety black; both fore and hind wing with the terminal margins broadly chestnut-red. *Underside* dull brown, thickly overlaid with transverse striæ and blotches of very dark ferruginous, which on the basal two-thirds of the wings are almost continuous; on the terminal third the striæ are more scattered and delicate, and the ground-colour in certain lights has a suffusion of minute silvery scales; a prominent subtriangular pale preapical patch on the fore wing and white subcostal spot on the hind wing. Antennæ brown; head, thorax and abdomen darker velvety brown.—♀ Similar. *Upperside*: ground-colour fuscous dark brown; terminal margins paler chestnut-red with a series of diffuse white spots, sometimes more or less obsolescent. *Underside*: similar to that in the ♂, but the transverse ferruginous striæ more scattered and open over the whole area of the wings.

Exp. ♂ ♀ 72–78 mm. (2·85–3·1″).

Hab. The Andamans.

Race **obnubila**, Marshall.—Closely resembles the typical form, but the hind wing is more prominently caudate at apex of vein 4, *Upperside*: ground-colour slightly paler, the terminal margins of both fore and hind wing much more broadly chestnut-red and paler; on the fore wing the apex is brown, the chestnut-red of the terminal margin below the apex being continued as an oblique preapical band to the costa. *Underside* similar to that in *cottonis*, but the preapical patch on the fore and both fore and hind wing outwardly paler with a pinkish tint. Hind wing with a curved postdiscal series of six black dots with inward specks of diffuse white. Antennæ, head, thorax and abdomen as in the typical form. Male with sex-mark on the hind wing. The female is larger and paler, the terminal chestnut-red area much broader; hind wing with two or three postdiscal black spots on the upperside.

Exp. ♂ ♀ 62–72 mm. (2·22–2·85″).

Hab. Middle and South Tenasserim.

204. **Elymnias caudata** (Pl. III, fig. 25), *Butler, P. Z. S.* 1871, p. 520, pl. 42, fig. 4; *M. & de N. Butt. Ind.* i, 1883, p. 270; *Moore, Lep. Ind.* ii, 1893–96, p. 150, pl. 135, figs. 1, 1 *a*, larva & pupa, 1 *b*–1 *d*, ♂ ♀; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 268, pl. A, figs. 2, 2 *a*, larva & pupa.

♂ ♀ Resembles *E. undularis*, Drury, but both sexes have the wings longer, proportionately to their breadth, and the tail at apex of vein 4 on the hind wing longer. *Upperside*: ♂ differs from *E. undularis* as follows:—the subterminal and preapical

spots on the fore wing white suffused slightly with dark scales; the terminal half of the hind wing tawny, more or less suffused with dusky black, which in some specimens forms a distinct border along the termen. ♀ similar to the ♀ of *E. undularis*, but the black more extended; veins 2, 3, and 4 on the hind wing broadly bordered with black. *Underside*: ♂ differs from *E. undularis* in the more conspicuous broadly triangular white preapical patch on the fore wing, and in the prominence of the broad tawny terminal half of the upperside of the hind wing, which shows through a pale, sometimes pinkish-brown on the underside. Antennæ, head, thorax and abdomen brown, paler beneath and much paler in the ♀ than in the ♂.

Exp. ♂ ♀ 86–88 mm. (3·4–3·5″).

Hab. South India from Travancore to Mysore and the Nilgiris.

"*Larva*: spindle-shaped, slender, transversely rugose and clothed with short stout bristles . ; head large, surmounted by two stout horns, sloping backwards, slightly branched at the ends; a pair of long straight caudal spines setose like the body; colour bright green with longitudinal yellow lines more or less distinct and two rows of large yellow spots tinged with green and sometimes tipped with black on the back; head dark brown, with a yellow cheek-stripe and frontal-line.

"*Pupa*: suspended by the tail only, but in a rigidly horizontal position, regular with the exception of two small pointed processes from the head and an acute thoracic projection above them; colour bright green, beautifully ornamented with four irregular rows of large yellow spots bordered with red." (*Davidson & Aitken.*)

205. **Elymnias singhala**, *Moore, P. Z. S.* 1874, p. 568; *id. Lep. Ceyl.* i, 1880, p. 26, pl. 13, figs. 2, 2*a*, ♂ ♀; *M. & de N.* (Dyctis) *Butt. Ind.* i, 1883, p. 277; *Moore* (Melynias), *Lep. Ind.* ii, 1893–96, p. 156, pl. 138, figs. 1, 1*a*, 1*b*, ♂ ♀

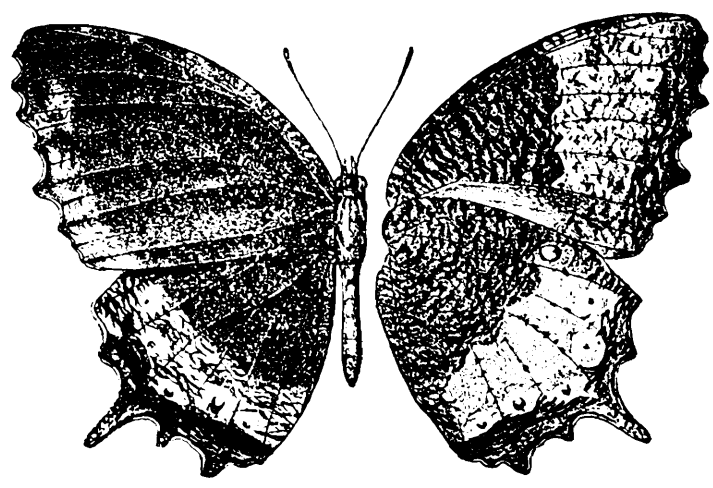

Fig. 38.—*Elymnias singhala*, ♂. ½.

♂. Hind wing: a long narrow tail at apex of vein 4, dentate at apices of veins 1, 2, and 3. *Upperside* purpurescent dark brown. Fore wing with the terminal margin broadly speckled

with greenish white, the specks confluent and prominent on its posterior half; costa also with a few like-coloured spots and specks. Hind wing with a broad subterminal irregular band composed of striæ and blotches of the same colour. *Underside* light brown, irrorated with transverse striæ and specks of very dark brown, most dense on the basal halves of the wings; a very broad pinkish-brown irregular subterminal band, on which the dark striæ and irrorations are more scattered, followed by a terminal more or less darker border to both fore and hind wing; the latter with a conspicuous subcostal white spot and a curved series of six or seven small black spots surrounded by white areas. Antennæ brown; head, thorax and abdomen velvety dark brown; abdomen paler beneath. ♀ similar, brighter and paler in colour.

Exp. ♂ ♀ 70–90 mm. (2·8–3·6″).

Hab. Ceylon.

206. **Elymnias peali**, *Wood-Mason, A. M. N. H.* (5) xi, 1883, p. 62, pl. 2, figs. A, B, ♂; *M. & de N.* (Dyctis) *Butt. Ind.* i, 1883, p. 276; *Moore* (Melynias), *Lep. Ind.* ii, 1893–96, p. 157, pl. 138, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀ Shape of wings as in *E. singhala*. ♂ *Upperside* deep velvety purpurescent black; fore wing: terminal margin broadly suffused with pale blue, costa with transverse flecks of the same colour. Hind wing: apex and terminal margin anteriorly with a faint suffusion of pale blue darkening to a postdiscal short transverse band posteriorly; a red spot at tornus. *Underside* rich dark ferruginous brown; costa, a large preapical patch, terminal half of fore and of the hind wing with purplish lilacine diffuse transverse striæ; a prominent white subcostal and a tornal reddish spot on the latter wing. Antennæ, head, thorax and abdomen velvety brown. Male sex-mark on hind wing only.— ♀ *Upperside* pale purpurescent brown; fore wing, cell-area much darker; hind wing, cell-area and posterior half of wing much darker; tornal red spot quadrate, larger than in the ♂ *Underside* similar to that of the ♂ but very much paler, the rich dark ferruginous-brown colour restricted to the cell in the fore wing, to the basal third, the disc posteriorly and the terminal margin in the hind wing; the rest of the wings dull white, crossed by numerous transverse purplish-brown striæ. Antennæ, head, thorax and abdomen as in the ♂.

Exp. ♂ ♀ 75–86 mm. (2·98–3·4″).

Hab. Assam, Sibságar, Margherita.

207. **Elymnias malelas** (Pl. III, fig. 27), *Hewitson* (Melanitis), *Exot. Butt.* iii, 1863, Melanitis, pl. i, figs. 6, 7, ♂; *Moore* (Melynias), *Lep. Ind.* ii, 1893–96, p. 159, pl. 140, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Elymnias leucocyma, *M. & de N.* (*nec Boisduval*) *Butt. Ind.* i, 1883, p. 273, pl. 17, fig. 60, ♂ ♀

Race saueri.

Elymnias saueri, *Dist. Rhop. Malay.* 1882, p. 65, pl. 9, fig. 3 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 274 ♂; *Moore* (Melynias), *Lep. Ind.* ii, 1893–96, p. 161, pl. 140, figs. 2, 2 *a*, ♂ ♀.

♂ *Upperside* dark brown: fore wing suffused with iridescent purple; a spot beyond apex of cell, two discal spots, and a curved series of larger postdiscal spots glistening light purplish blue. Hind wing very dark chestnut-brown suffused with fuscous, uniform or sometimes with a postdiscal series of obscure pale purplish-white spots. *Underside* dark chestnut-brown; both fore and hind wing irrorated with delicate white transverse striæ towards the terminal half; the usual pale preapical patch on fore wing and subcostal white on hind wing absent. Antennæ, head, thorax and abdomen fuscous black, paler beneath.—♀ similar, but the iridescent purple restricted to the apical half of the fore wing; the spots as in the ♂ but almost white. Fore wing in addition with an obscure white streak along the dorsum and a broader streak from base in interspace 1. Hind wing with similar whitish streaks in the interspaces not reaching the terminal margin, somewhat broken and interrupted in interspaces 2 to 5, and crossed preapically by a very incomplete row of round black spots; terminal margin broadly and evenly dark brown. *Underside* much paler than in the ♂, far more closely irrorated with the white transverse striæ. Antennæ, head, thorax and abdomen dusky brown; thorax and abdomen suffused with whitish beneath. Male sex-mark on hind wing only.

Exp. ♂ ♀ 94–98 mm. (3·7–3·88″).

Hab. Common at low elevations from Kumaun to Bhutan, and spread through the hill-region of Assam, Burma and Tenasserim.

Race **saueri**, Distant.—Closely resembles the typical form. On the upperside it is identical in ground-colour and markings with many Sikhim specimens of the latter. *Underside*: ground-colour brown, with more or less of a ferruginous or reddish tint on the anterior half of the fore and on the whole of the hind wing. Fore wing suffused on the anterior half with pale lilacine blue, costa flecked and blotched with a paler shade of the same. Both fore and hind wing covered with mottlings, striæ and specks of dark velvety brown. Antennæ, head, thorax and abdomen dark brown.

Exp. ♂ 81 mm. (3·22″).

Hab. The Malay Peninsula, extending into our limits in Southern and Middle Tenasserim.

The ♀ is, I believe, still unknown. Moore assigns *E. kunstleri*, Honrath, as the ♀, but, judging from the shape of the wings and the colour of the latter and from the analogy of the typical form, the ♂ and ♀ of which are certainly known, I should think it quite improbable that *E. saueri* and *E. kunstleri* are sexes of the same insect.

208. **Elymnias timandra** (Pl. III, fig. 27), *Wallace, Trans. Ent. Soc.* 1869, p. 326; *M. & de N. Butt. Ind.* i, 1883, p. 275; *Moore* (Melynias), *Lep. Ind.* ii, 1893–96, p. 158, pl. 139, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂. *Upperside* black. Fore wing: a series of long streaks in the interspaces up to 5, the posterior half of the cell, some transverse short striæ on the basal half of the costa, and four or five spots on its apical half bluish green: the streaks cut off short before the terminal margin, that in interspace 4 clavate inwardly, in interspace 5 clavate outwardly. Hind wing with similar streaks and in the posterior interspaces with lunate, white, subterminal markings beyond. *Underside* purplish white, profusely and somewhat irregularly covered with blotches, striæ, spots and irrorations of rich dark brown scales, more scattered, with the pale ground-colour showing through broadly, along the costal margin of the fore wing and on the median area posteriorly on the hind wing. Antennæ, head, thorax and abdomen dark brown; the antennæ somewhat ochraceous towards apex, the thorax streaked and mottled with greenish white above, the abdomen beneath suffused with greenish white.—♀. Differs on the upperside in the streaks, especially on the hind wing, being suffused with ochraceous and on the underside in the mottlings being more uniform.

Exp. ♂ ♀ 80–90 mm. (3·15–3·6″).

Hab. Sikhim; Sylhet; Burma; Tenasserim.

209. **Elymnias patna**, *Westwood* (Melanitis), *in Dblday., Westw. & Hewits. Gen. Di. Lep.* 1851, p. 405, pl. 68, fig. 2; *M. & de N.* (Dyctis) *Butt. Ind.* i, 1883, p. 277; *Moore* (Melynias), *Lep. Ind.* ii, 1893–96, p. 162, pl. 141, figs. 1, 1 *a*, ♂.

Melynias patnoides, *Moore, Lep. Ind.* ii, 1893–96, p. 163, pl. 141, figs. 2, 2 *a*, ♂

♂ *Upperside* dark velvety brown, paler towards the terminal margins. Fore wing with a series of three discal streaks, increasing in length towards the costa, and a very oblique preapical band, glistening blue. Hind wing with a postdiscal curved series of four to seven small white spots. *Underside* umber-brown; fore wing with three, hind wing with seven bluish-white postdiscal spots; the posterior half of the terminal margin of the hind wing broadly, and the disc of the fore wing occasionally, with short, transverse, pinkish-white striæ and minute spots. Antennæ, head, thorax and abdomen brown.—♀. Similar, larger; sometimes an obscure blue streak beyond apex of cell on upperside of fore wing.

Exp. ♂ ♀ 96–104 mm. (3·78–4·1″).

Hab. The Himalayas from Kumaun to Sikhim; Assam; Burma.

Var. *patnoides*, Moore, can barely be separated even as a variety, its chief difference lying, to judge from the only two specimens I have seen, in the termen of the hind wing being less convex than in the typical form, the apex more acute.

210. **Elymnias dara**, *Distant, A. M. N. H.* (5) xix, 1887, p. 50.
Elymnias albofasciata, *Stdgr. Deutsche ent. Zeit., Lep.* 1889, p. 39.
Elymnias dædalion, *de Nicéville, Jour. Bomb. N. H. Soc.* 1890, p. 202, pl. D, fig. 4 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 154, pl. 137, figs. 2, 2 *a*, ♀.

♂. *Upperside* purplish black; fore and hind wings with a broad postdiscal white band, oblique on the fore wing, not reaching the dorsum or termen, posteriorly continued by one or two ill-defined separate streaks, curved outwards; the band is complete on the hind wing from costa to dorsum, with two or three diffuse black spots along its outer margin. *Underside*: basal half of both fore and hind wing dark purplish brown, crossed by obscure transverse pale short striæ; outer half of both wings white suffused with a very pale lavender tint, and crossed by transverse dark purple-brown striæ, getting closer and denser towards the termen; an ill-defined narrow discal band on the fore wing, and a broader better-defined crescentic discal band on the hind wing without the transverse dark striæ. The band on the hind wing bears along its outer margin a curved series of purple-black blue-centred spots. Antennæ ochraceous; head, thorax and abdomen brown. Male sex-mark on hind wing only.— ♀. Very similar but larger, very much paler on both upper and under sides, the transverse bands broader and pure white.

Exp. ♂ ♀ 64–70 mm. (2·52–2·8″).

Hab. Recorded from Burma from within our limits, extending to the Malayan Subregion.

211. **Elymnias mimus**, *Wood-Mason & de Nicéville, J. A. S. B.* 1881, p. 230; *M. & de N. Butt. Ind.* i, 1883, p. 271; *Moore, Lep. Ind.* ii, 1893–96, p. 152, pl. 136, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ *Upperside* dark vandyke-brown, terminal margins paler; hind wing with one or two postdiscal dusky black spots. *Underside* brighter; basal two-thirds or more of both fore and hind wing covered with transverse, rather coarse brown striæ; hind wing with the usual subcostal prominent white spot but placed on a black background, and an incomplete series of six oval, lilac-centred, pale-ringed black ocelli, the subapical and subtornal two the largest.— ♀ Similar, but very much paler on both upper and under sides, the terminal margins of both fore and hind wing very broadly dusky white; on the fore wing the whitish marginal band is bent inwards opposite the apex and crosses to the costa as a comparatively narrow preapical band. Antennæ, head, thorax and abdomen in both sexes brown. Male sex-mark on the hind wing only.

Exp. ♂ ♀ 70–76 mm. (2·8–3″).

Hab. The Nicobars and Nias Island.

212. **Elymnias vasudeva**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 238; *M. & de N.* (Dyctis) *Butt. Ind.* i, 1883, p. 278, pl. 17, fig. 61 ♂; *Moore* (Mimadelias), *Lep. Ind.* ii, 1893–96, p. 166, pl. 142, figs. 1, 1 *a*–1 *c*, ♂ ♀.
Elymnias thycana, *Wallace, Trans. Ent. Soc.* 1869, p. 323, ♂ ♀.
Mimadelias deva et burmensis, *Moore, Lep. Ind.* ii, 1893–96, pp. 167, 168, pl. 142, figs. 2, 2 *a*, ♂ ♀, & pl. 143, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ *Upperside* black; fore wing with broad bluish-grey streaks in the cell and in the interspaces; costa flecked with transverse spots of the same. Hind wing white, the costal margin and apex broadly, the terminal margin more narrowly and decreasingly towards the tornus black; the cell with a bluish-grey streak in its lower half and vein 4 broadly lined with black on both sides. *Underside* transversely mottled with black and white; the markings on the posterior half of the fore wing diffuse. Hind wing: a conspicuous red spot at base of interspaces 1*a* and 1, followed in those interspaces and in 2 by uniform chrome-yellow not extending to the terminal margin; anteriorly the wing is mottled as on the fore wing, crossed at bases of interspaces 3–6 by elongate inwardly rounded white spots; beyond these the mottled area on the apex and termen decreases gradually in width to the tornus. Antennæ, head, thorax and abdomen brown, suffused on the abdomen above with bluish grey, paler beneath. Male sex-mark on both fore and hind wing.

Exp. ♂ ♀ 80–90 mm. (3·2–3·58″).

Hab. Sikhim; Assam; Burma and Tenasserim.

The Eastern forms *thycana*, Wallace, vel *deva*, Moore, and *burmensis*, Moore, are good varieties, scarcely more, as they are not differentiated enough to form races. Both differ in being paler on both upper and undersides, the mottlings of the underside showing through above on the bluish-grey streaks; the extent of the black on the upperside of the hind wing is much restricted, and on the underside there is a larger extent of yellow; the mottlings on the underside show larger interspaces of white, and the black transverse striæ in var. *burmensis* are finer, more slender.

213. **Elymnias esaca**, *Westwood* (Melanitis), *in Dbldy., Westw. & Hew. Gen. Di. Lep.* 1851, p. 405 ♂; *M. & de N.* (Dyctis) *Butt. Ind.* i, 1883, p. 278.

Dyctis andersonii, *Moore, Jour. Linn. Soc.* 1886, p. 33, pl. 3, fig. 5 ♂; *id.* (Agrusia) *Lep. Ind.* ii, 1893–96, p. 169, pl. 143, figs. 2, 2*a*, ♂.

♂ *Upperside* velvety black, in certain lights tinged with olive-green; a curved series of large bluish-green spots in the interspaces of both fore and hind wing, separate one from the other, subterminal and curved inwards opposite the apex on the fore wing, broader, continuous and terminal on the hind wing. *Underside* fuscous brown, irrorated with pale striæ, these striæ wider and closer at apex of fore wing, giving it a distinctly white or lilacine-white appearance; fore wing with one, hind wing with five or six minute white-centred black subapical ocelli; a comparatively large red spot near base of hind wing. Antennæ, head, thorax and abdomen dark brown, slightly paler beneath. Sex-mark on hind wing only.

♀ *Upperside* dull black, base of both fore and hind wing bluish. Fore wing with obscure diffuse broad whitish streaks in interspaces 1*a* to 3, and a series of discal similar spots beyond. Hind wing: a large white patch posteriorly filling all but the bases and apices of

interspaces 1 *a*–4. *Underside* fore wing: ground-colour white, densely covered with fuscous transverse striæ, getting sparser posteriorly. Hind wing: a large red spot near base; basal third fuscous brown; a large posterior white patch as on the upperside, but suffused with chrome-yellow from dorsum to vein 3, and extending nearly to costa, followed by a curved series of six minute ocelli as on the upperside; beyond, the apex and termen broadly and closely irrorated with fuscous transverse striæ. Antennæ ochraceous; head, thorax and abdomen greyish brown, abdomen paler beneath.

Exp. ♂ ♀ 65–76 mm. (2·55–3″).

Hab. Within our limits recorded from Mergui in Southern Tenasserim. Found in Malacca, Sumatra and Borneo.

Judging from descriptions and figures, Distant's *E. godferyi* and de Nicéville's *E. esacoides* are both identical with *E. esaca*, Westwood.

214. **Elymnias penanga**, *Westwood* (Melanitis), *in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 405 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 269.

Melanitis mehida, *Hewitson, Exot. Butt.* iii, 1863, Melanitis, pl. figs. 2, 3, ♂.

Elymnias chelensis, *de Nicéville, Jour. Bomb. N. H. Soc.* 1890, p. 200, pl. D, fig. 3 ♂; *Moore* (Bruasa), *Lep. Ind.* ii, 1893–96, p. 164, pl. 141, figs. 3, 3 *a*, ♂.

♂ *Upperside* dark chocolate-brown. Fore wing richly glossed with dark purple and with postdiscal broad streaks of glistening silvery purple in the interspaces. Hind wing uniform. *Underside* purplish brown, irrorated with diffuse white striæ, which become concentrated into an irregular, very broad postdiscal band from below vein 4 on the fore wing and across the whole width of the hind wing. Fore wing with the costa preapically closely marked with purer white striæ, continued as an ill-defined, inwardly oblique band. Hind wing with a white subcostal spot and a postdiscal series of minute white dots in the interspaces. Antennæ, head, thorax and abdomen brown. Sex-mark on hind wing only.

♀. *Upperside* plumbeous blue. Fore wing with a broad white oblique postdiscal band not quite reaching the termen. *Underside* similar to that in the male but fuscous brown, very finely irrorated with pale whitish striæ, which are more dense and somewhat broader on the apical half of the fore wing, giving it a whitish appearance; subcostal spot and postdiscal series of dots on the hind wing as in the male.

Exp. ♂ ♀ 72–80 mm. (2·85–3·15″).

Hab. Malacca; Sumatra, and within our limits recorded from Tenasserim, the Shan States, Upper Burma, and the Khási Hills, Assam.

I have compared the type of *E. chelensis*, de Nicéville, kindly lent to me by the Authorities of the Indian Museum, with the type of *E. penanga* in the Brit. Mus. collection; it scarcely differs enough to reckon it even as a varietal form.

Subfamily MORPHINÆ.

Egg. Somewhat similar to that of the *Satyrinæ*, but comparatively flat, not so high in proportion to width, "translucent, hard, smooth (*Discophora*, *Thaumantis*), or obscurely facetted (*Clerome*)" (*Doherty*).

Larva. So far as known, not fusiform, cylindrical, hairy, with two setose processes on the anal segment directed backwards. In the genus *Amathusia* with a pair of palmated lateral processes on the head. (*After Moore.*)

Imago. Wings proportionately to length very broad; cell of fore wing closed, of hind wing open, or at most partially closed by a fold in the membrane only. Fore wing: vein 11 free; vein 10 out of 7 well beyond apex of cell, sometimes entirely absent; vein 11 very commonly anastomosing with 12, 10 with 11. In all the genera there is a tendency in the fore wing to a crowding of the veins towards the costal margin. Palpi comparatively short, with densely-set short hairs, more or less convergent towards the middle line of each palpus. Looked at from the front, the palpi often have the appearance of being longitudinally ridged.

The distinctive characters of the Eastern *Morphinæ* as separating them from the *Nymphalinæ* are of somewhat doubtful value. It is convenient, however, to keep them as a separate group, in some respects intermediate between the *Satyrinæ* and the *Nymphalinæ*. The shape of the larvæ, so far as known, recalls that of the *Satyrinæ*, and the forms in the genus *Clerome*, all of which have vein 12 in the fore wing inflated at base, bear a close resemblance in appearance, mode of flight, and habits to forms of the *Mycalesis* group. On the other hand, in the *Morphinæ* the cell of the hind wing is open, as it is in the bulk of the *Nymphalinæ*.

Key to the Indian Genera of Morphinæ.

A. Vein 10 in fore wing present.
- *a*. Vein 12 in fore wing swollen at base — CLEROME, p. 182.
- *b*. Vein 12 in fore wing not swollen at base.
  - *a'*. Cell of hind wing partially closed by a fold in membrane of wing — AMATHUSIA, p. 187.
  - *b'* Cell of hind wing entirely open.
    - a^2. Vein 4 in both fore and hind wing with an upward directed spur — ZEUXIDIA, p. 186.
    - b^2. Vein 4 without such spur in either fore or hind wing.
      - a^3. Vein 11 in fore wing anastomosed with vein 12.
        - a^4. Vein 10 in fore wing anastomosed with vein 11. — DISCOPHORA, p. 199.

b^4. Vein 10 in fore wing not anastomosed with vein 11.
a^5. Apex of fore wing acute, produced; forms of comparatively small size: expanse under 100 mm. . . . ÆMONA, p. 196.
b^5. Apex of fore wing rounded, not produced; of comparatively large size: expanse well over 100 mm. . THAUMANTIS, p. 189.
b^3. Vein 11 in fore wing running close to, sometimes touching, but not anastomosed with vein 12.
a^4. Vein 7 of fore wing emitted from before apex of cell . . THAURIA, p. 195.
b^4. Vein 7 of fore wing emitted from apex of cell. . XANTHOTÆNIA, p. 185.

B. Vein 10 in fore wing absent.
a. Veins 5 and 6 of fore wing from a point and closely approximate at base .. ENISPE, p. 197.
b. Veins 5 and 6 of fore wing well separated.
a' ♂ with one secondary sex-mark on hind wing; ♂ and ♀, apical half of dorsum of hind wing slightly and widely emarginate, tornus prominent .. .. STICHOPHTHALMA, p. 191.
b'. ♂ with two secondary sex-marks on hind wing; ♂ and ♀, dorsum of hind wing entirely rounded, tornus not prominent .. MELANOCYMA, p. 184.

Genus **CLEROME.**

Faunis, *Hübner* (*nec Montf.*), *Verz. Schmett.* 1816, p. 55.
Clerome, *Westwood, in Dbldy., Westw. & Hew. Gen. Di. Lep.* 1851, p. 333; *M. & de N. Butt. Ind.* i, 1883, p. 312; *Moore, Lep. Ind.* ii, 1893-96, p. 206.

Type, *C. arcesilaus*, Westw., from Assam.

Range. Assam; Burma; Tenasserim; extending eastward to China and Siam; southward to the Malayan Subregion.

♂ ♀ Wings rounded, broad. Fore wing: costa strongly arched, termen slightly convex; dorsum in ♂ concave, in ♀ nearly straight, slightly convex; cell moderately broad, rather short, not half length of fore wing, upper apex rounded, lower considerably produced; upper and middle discocellulars equal, short, lower very long, concave anteriorly, then abruptly and strongly produced towards termen; vein 10 from just before apex of cell, 11 from one-third before apex, vein 12 swollen at base. Hind wing broadly oval; cell entirely open; veins 3 and 4 from a point, vein 8 terminating before apex of wing. Antennæ more than half length of fore wing, filiform, club not at all or very little thicker than shaft; eyes naked; palpi obliquely porrect, clothed with dense short hairs in front, longer posteriorly, third joint long; anterior legs in ♀ with the tarsi clavate.

Key to the forms of Clerome.

a. Upperside of wings uniform ochraceous.
  a' Underside of wings with ground-colour uniform, not paler towards apex of fore wing ... . — *C. arcesilaus*, p. 183.
  b' Underside of wings with ground-colour not uniform, distinctly paler on terminal half of fore wing .... — *C. assama* ♂, p. 184.
b. Upperside not uniform. Fore wing with a broad, oblique, preapical bright ochraceous band.
  a'. Upperside: ground-colour maroon.. — *C. eumeus*, p. 183.
  b' Upperside: ground-colour ochraceous brown — *C. assama* ♀, p. 184.

215. **Clerome arcesilaus**, *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 28; *M. & de N. Butt. Ind.* i, 1883, p. 313; *Moore, Lep. Ind.* ii, 1893–96, p. 207, pl. 162, figs. 1, 1 *a*–1 *c*, ♂ ♀

♂ ♀ *Upperside* ochraceous, uniform in ♂; apex of fore wing and termen in fore and hind wings in ♀ slightly darker. *Underside* slightly ochraceous brown; subbasal and discal narrow dark fasciæ crossing both fore and hind wing, strongly curved on the latter; followed by a postdiscal line of minute yellow spots, six on the fore, seven on the hind wing, on the latter posteriorly abruptly curved; lastly, a subterminal dark sinuous line. Antennæ, head, thorax and abdomen concolorous with the upperside of the wings.

Exp. ♂ ♀ 72–82 mm. (2·85–3·23″).

Hab. The hills of Assam, Burma and Tenasserim, extending to Siam and the Malay Peninsula.

216. **Clerome eumeus**, *Drury* (Papilio), *Ill. Exot. Ent.* i, 1773, pl. 2, fig. 3; *Cramer* (Papilio), *Pap. Exot.* ii, 1777, pl. 183, figs. C, D. Clerome ærope, *Leech, Ent.* xxiii, 1890, p. 31; *id. Butt. China*, 1892, p. 112, pl. 1, fig. 4 ♂.

♂ ♀ *Upperside*: fore wing maroon, with a very broad, oblique, preapical, somewhat diffuse, bright ochraceous band extending from costa to termen and along latter almost to the tornus; this band broader in the ♀ than in the ♂ Hind wing brown, shading to dark maroon anteriorly. *Underside* maroon-brown; apex of fore wing broadly paler, dorsal margin of same dull brown; subbasal, discal and postdiscal dark, sinuous, continuous lines crossing both wings; between the latter two a series of prominent round white spots, five or six on the fore wing (straight in ♂, slightly incurved in ♀), six or seven on the hind wing, arched in both sexes. Antennæ, head, thorax and abdomen brown.

Exp. ♂ ♀ 70–86 mm. (2·8–3·37″).

Hab. Recorded within our limits from the Southern Shan States, Upper Burma; China; Borneo.

217. **Clerome assama**, *Westwood, Trans. Ent. Soc.* (new ser.) iv, 1856, p. 185; *M. & de N. Butt. Ind.* i, 1883, p. 314, fig. ♀; *Moore, Lep. Ind.* ii, 1893-96, p. 208, pl. 163, figs. 1, 1 *a*-1 *c*, ♂ ♀.

♂ ♀ Closely allied to and resembling *C. eumeus*, but larger; the ground-colour on the upperside in the ♂ uniform ochraceous, without a preapical oblique band on the fore wing; the ♀ is more ochraceous brown than maroon, with a preapical bright ochraceous oblique band on the fore wing, broader and more diffuse than in *C. eumeus*. *Underside* similar to the underside in *C. eumeus*, with the sinuous transverse dark lines and spots much as in that form, but the ground-colour is slightly darker and more uniform.

Exp. ♂ ♀ 88–102 mm. (3·48–4″).

Hab. Hill-ranges of Assam.

Genus **MELANOCYMA**.

Melanocyma, *Westwood, Trans. Ent. Soc.* (new ser.) iv, 1856, p. 186; *Moore, Lep. Ind.* ii, 1893–96, p. 210.

Type, *M. faunula*, Westw., from the Malay Peninsula.

Range. Indo-Malayan Region, but not recorded from beyond the Chin Hills in Upper Burma.

♂ ♀ Fore wing broadly triangular, costa with a regular arch, apex rounded, termen straight, tornus rounded, dorsum slightly sinuous; cell longer than half fore wing, moderately broad; upper and middle discocellulars short, subequal, lower long, oblique, **S**-shaped; vein 10 absent, 11 from one-third before upper apex of cell, free. Hind wing broadly pear-shaped; costa, termen and dorsum all slightly arched; apex rounded; tornus more broadly rounded; cell open; veins 5 and 6 shortly stalked, vein 7 terminating at apex, vein 8 on costal margin. Antennæ moderately long, about half length of fore wing; club long, very gradual; palpi compressed, obliquely porrect, third joint short; eyes naked; posterior tibiæ longer than the tarsi. Male secondary sex-mark a patch of specialized scales at base of vein 8 on upperside of hind wing, overlapped by a tuft of long hairs; a second similar elongate sex-mark between veins 1 *a* and 1 near the tornal angle.

218. **Melanocyma faunuloides**, *de Nicéville, Jour. Bomb. N. H. Soc.* ix, 1895, p. 259, pl. N, fig. 2 ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 210, pl. 167, figs. 1, 1 *a*, ♀

♀. *Upperside* very pale brownish grey, the dark markings of the underside showing through; hind wing posteriorly canary-yellow, the brownish-grey colour fading to white along the inner margins of the yellow. *Underside*: fore wing, a spot in the cell, a bar across it, the sides of the median vein up to this bar, a discal and a postdiscal transverse narrow band black, the discal irregularly sinuous, the postdiscal nearly straight. Hind wing with basal, subbasal, discal and postdiscal narrow, transverse

bands black, the basal and subbasal straight, the other two highly sinuous, finally a subterminal slightly sinuous black line and the dorsal margin and tornus narrowly canary-yellow. Antennæ black; head, thorax and abdomen brownish grey. Male unknown.

Exp. ♀ 104 mm. (4·1″).

Hab. Recorded from the Chin Hills in Upper Burma.

Apparently a local race of *M. faunula*, differing chiefly in the postdiscal band on the underside of the fore wing being straight, not crescent-shaped.

Genus **XANTHOTÆNIA**.

Xanthotænia, *Westwood, Trans. Ent. Soc.* (new ser.) iv, 1856, p. 187; *M. & de N. Butt. Ind.* i, 1883, p. 283; *Moore, Lep. Ind.* ii, 1893–96, p. 216.

Type, *X. busiris*, Westw., from the Malay Peninsula.

Range. Tenasserim; Malay Peninsula; Sumatra and Borneo.

♂ ♀. Fore wing broadly triangular; costa slightly arched, apex rounded, termen convex, tornus well-marked, dorsum straight; cell broad, length about half of fore wing; upper discocellular minute, middle short, vertical, lower long, very oblique, slender at base; veins 8, 9, 10 out of 7, vein 10 from well beyond upper apex of cell, 11 free, 12 terminating about midway on costa. Hind wing more or less subquadrate, costa straight, apex rounded, termen straight, tornus and dorsum strongly convex; cell open or very obscurely and slenderly closed; vein 8 long, running close along costa nearly to apex. Antennæ very long, much over half length of fore wing, slender, filiform, club scarcely formed; palpi compressed, small, oblique, third joint short, slender and acute. Male secondary sex-mark a tuft of erect hairs one-third from apex of vein 1 on the upperside of the hind wing, covering a small patch of scabrous specialized scales.

219. **Xanthotænia busiris** (Pl. III, fig. 28), *Westw. Trans. Ent. Soc.* (new ser.) iv, 1856, p. 187; *M. & de N. Butt. Ind.* i, 1883, p. 284, fig. ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 216, pl. 166, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ *Upperside* dark chestnut-red. Fore wing: apical half obliquely dusky black; a broad, yellow, very oblique discal band from a little before middle of costa to near the apex of interspace 2, but not reaching the termen, followed by a white preapical spot. Hind wing uniform. *Underside* ochraceous red shaded with a darker tint of the same. Fore wing: the oblique discal yellow band as on upperside; a highly sinuous line across the cell, a postdiscal similar line from costa to end of discal band and a less sinuous subterminal line dark chestnut-brown; the apical area between the discal yellow band and the postdiscal dark line chestnut-red, carrying in vertical series a single ocellus with a large and a small white spot above and two minute white dots below it. Hind wing crossed by subbasal, median, postdiscal and subterminal highly sinuous dark chestnut-brown lines; a broad,

discal, diffuse, chestnut-brown band carrying a strongly-curved series of seven ocelli, the subapical ocellus the largest, apical and subtornal equal, the others much smaller. Antennæ chestnut-red; head, thorax and abdomen chestnut-red, ochraceous red beneath.

Exp. ♂ ♀ 70–81 mm. (2·8–3·2″).

Hab. Tenasserim, extending into the Malay Peninsula; Sumatra and Borneo.

Genus **ZEUXIDIA.**

Zeuxidia, *Hübner, Samml. ex. Schmett.* ii, 1816–24, p. 2; *M. & de N. Butt. Ind.* i, 1883, p. 285; *Moore, Lep. Ind.* ii, 1893–96, p. 173.

Type, *Z. luxeri,* Hübner, from Java.

Range. Malayan Subregion, extending to Tenasserim.

♂ ♀ Fore wing: costa arched, apex pointed and produced; termen slightly concave below apex, convex posteriorly; tornus rounded, dorsum slightly convex; cell broad, moderately long, about half length of fore wing; upper discocellular very short, middle short and vertical, lower slightly concave, long and oblique; vein 1 angulated upwards at base, 4 angulated upwards one-third from base, with a transverse upward-directed spur at the angle; vein 11 from about one-third before apex of cell, anastomosed with vein 12, but terminally free; 12 terminating a little after middle of costa. Hind wing: cell open; vein 4 angulate, with a spur as in the fore wing; vein 8 terminating on costal margin. Antennæ long, over half length of fore wing; labial palpi somewhat slender, third joint long, angularly porrect. Male secondary sex-mark on upper-side of hind wing; a small elongate patch of specialized hairs above the subcostal vein, another similar patch in cell, both overlapped by long pencils of hair, and a fold in the membrane below vein 1 with a similar overlapping tuft of hair.

220. **Zeuxidia masoni** (Pl. IV, fig. 29), *Moore, P. Z. S.* 1878, p. 826 ♀; *M. & de N. Butt. Ind.* i, 1883, p. 286; *Moore, Lep. Ind.* ii, 1893–96, p. 174, pl. 144, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ *Upperside* brownish black. Fore wing with a broad curved discal bar, narrowing posteriorly, extending from costa to near apex of vein 2; hind wing with a terminal broad patch between veins 1 and 4 metallic purplish blue. *Underside* brown. Fore wing: cell crossed by three pale lilacine bands and beyond shaded with lilacine. Hind wing shaded on the basal half with the same tint, turning to a more decided pinkish lilac broadly along the dorsal margin. Both fore and hind wing crossed by a conspicuous narrow brown discal bar, followed on the hind wing by an ochraceous ocellus in interspace 2 and another in interspace 6. Antennæ dark red; head, thorax and abdomen dark brown.

♀ *Upperside* paler brown than in the ♂ Fore wing with a somewhat similar discal band but creamy white in colour, not curved, its margins irregular and uneven, ending near termen

in three spots; tornus and terminal margin just above narrowly ochraceous; finally a white preapical spot. Hind wing: the terminal margin irregularly, broadly and somewhat diffusely ochraceous. *Underside* similar to the underside in the ♂ but paler, shaded more or less with ochraceous and with the white band and preapical spot on the upperside of the fore wing showing through.

Exp. ♂ ♀ 104–118 mm. (4·1–4·65″).

Hab. Burma and Tenasserim, in evergreen forests on the higher hill-ranges.

Genus **AMATHUSIA.**

Amathusia, *Fabr. Illig. Mag.* vi, 1807, p. 279; *M. & de N. Butt. Ind.* i, 1883, p. 288; *Moore*, pt., *Lep. Ind.* ii, 1893–96, p. 178.
Amathuxidia, *Staudinger, Exot. Schmett.* i, 1887, p. 188; *Moore*, pt., *Lep. Ind.* ii, 1893–96, p. 176.

Type, *A. phidippus*, Johanssen, from the Malay Peninsula.

Range. Burma; Tenasserim and southwards to the Malay Peninsula; Borneo; Java and the Philippines.

♂ ♀. Wings very broad and ample. Fore wing triangular, costa strongly arched, apex well-marked but not acute, termen straight, tornus more or less rounded, dorsum straight or slightly convex; cell short, broad, less than half length of fore wing; discocellulars: upper minute, middle short, nearly vertical, lower long, very concave at upper third, straight and very oblique for the rest; vein 11 free, vein 10 from basal half of vein 7 well beyond apex of cell, 8, 9 and 10 being short and subequal, not anastomosed, 11 anastomosed with or running very close to 12 towards apex. Hind wing subquadrate; cell partially closed, not by a vein, but by a fold in the membrane of the wing; costa widely arched, termen arched; tornus produced, broadly caudate; dorsum widely arched. Antennæ about half length of fore wing, club long and gradual; palpi long, suberect, reaching above top of the head, with a sharp margin anteriorly clothed with dense short hairs; legs scaled.

Key to the forms of Amathusia.

a. Fore wing: upperside brown; no broad discal fascia in either sex . . . . . *A. phidippus*, p. 187.
b. Fore wing: upperside dark brown, ♂ with a blue, ♀ with a yellow, broad, oblique discal fascia . *A. amythaon*, p. 188.

221. **Amathusia phidippus**, *Johanssen* (Papilio), *Amœn. Acad.* vi, 1764, p. 402; *Fabricius, Illig. Mag.* vi, 1807, p. 279; *M. & de N. Butt. Ind.* i, 1883, p. 289: *Moore, Lep. Ind.* ii, 1893–96, p. 179, pl. 146, figs. 1, 1 *a*–1 *c*, ♂ ♀, larva & pupa, pl. 147, fig. 2 ♀ (Andaman form).

♂ *Upperside* umber-brown. Fore wing with the costal margin

narrowly fulvous near apex, crossing towards the termen, forming an obscure preapical band joining a subterminal lunular band of the same colour. Hind wing uniform, with a subterminal band as in the fore wing but not lunular, straight. *Underside* pale brown, with the following transverse pale lilac-white bands crossing both fore and hind wing: basal, subbasal, discal, postdiscal, broad subterminal and terminal; the subbasal and discal of equal width, meeting above the tornal angle in **V**-shape, the space between the two bands with, on the fore wing, two shorter similar bands crossing the cell, on the hind wing a single similar band from costa to median vein; subterminal band on hind wing bent upwards above tornal area and continued halfway up the dorsal margin, the broadly-produced tornus with a dark brown spot; finally a large ochraceous ocellus in interspace 2, and a smaller similar one in interspace 6. Antennæ reddish; head, thorax and abdomen umber-brown. Secondary sex-mark a glandular fold in membrane of wing shaded by tufts of long hair along vein 1 on upperside of hind wing, and preapically on the abdomen with tufts of stiff long hairs.— ♀ Upper and under sides as in ♂ but paler; on the upperside the fulvous along the costal margin widens into a preapical patch, and generally the bands on the underside show through and appear above as pale fulvous bands.

Exp. ♂ ♀ 112–122 mm. (4·4–4·8″).

Hab. Burma; Tenasserim; Andamans; extending to Malay Peninsula.

One specimen in the British Museum Collection, a ♂ from the Andamans, is on the upperside a rich warm uniform ochraceous; on the underside ochraceous with the markings as in the typical form, but with three ocelli on the hind wing. Another specimen, also a ♂, from the same locality has on the underside of the hind wing four ocelli.

Larva. Cylindrical, light brown above; fifth to anal segment with rows of short fine hairs, anterior segments and head with longer, anteriorly projecting hairs; the head with a pair of lateral palmated processes, anal segment with two backward-projecting setose processes. Colour light pinkish brown above, ochraceous beneath, dark brown lateral and dorsal lines, a black transverse band on third and fourth segments. (*After Moore.*) Food-plant, according to Horsfield, the cocoanut.

Pupa. Green; head bifid, elongate boat-shaped. (*Moore.*)

222. **Amathusia amythaon**, *Doubleday, A. M. N. H.* xix, 1847, p. 175; *M. & de N. Butt. Ind.* i, 1883, p. 291; *Moore* (Amathuxidia), *Lep. Ind.* ii, 1893–96, p. 176, pl. 145, figs. 1, 1 *a*, ♂ ♀.
Amathusia portheus, *Felder, Novara Reise, Lep.* iii, 1867, p. 461; *M. & de N. Butt. Ind.* i, 1883, p. 293, fig. ♂

♂ *Upperside* brownish black, cilia white. Fore wing with a remarkably broad, curved, pale blue discal band extending from costa to near apex of vein 1. Hind wing uniform without markings.

Underside pinkish buff, with the following dark brown lines crossing both fore and hind wing: basal, extending to little beyond the middle of vein 2 in the hind wing, subbasal crossing from subcostal of fore to median vein of hind wing, discal from costa of fore to near tornus of hind wing, postdiscal from costa of fore to tornus of hind wing, thence bending upwards at an angle and following the dorsal margin of hind wing, and subterminal somewhat indistinct on the fore, well-defined and broadening towards tornus of hind wing. In addition to these there are on the fore wing a short line of the same colour crossing the cell near apex and a discal line from costa to vein 2, and on the hind wing a large ochraceous postdiscal ocellus in interspace 2 and another in interspace 6. Antennæ brown; head, thorax and abdomen dark brown. Sex-marks a patch of specialized scales in cell, extending into interspaces 1 and 2, and a glandular fold near base of vein with a stiff brush of hairs beneath it.— ♀. *Upperside* umber-brown. Fore wing with a band as in the ♂, but bright yellow, narrower, reaching to the tornus, its inner margin very irregularly zigzag and sinuous, a spot below it in the middle. Hind wing uniform, apex bright yellow. *Underside* as in the ♂, but the ground-colour paler.

Exp. ♂ ♀ 118–133 mm. (4·25–5·25″).

Hab. The hill-ranges of Assam; Burma and Tenasserim.

Genus **THAUMANTIS.**

Thaumantis, *Hübner, Samml. ex. Schmett.* ii, 1816–1824, *Index, Syst.* p. 2; *M. & de N. Butt. Ind.* i, 1883, p. 304.
Kringana et Thauria, *Moore, Lep. Ind.* ii, 1893–96, p. 185.

Type, *T. odana*, Godart, from Java.

Range. Sikhim; Assam; Burma; Tenasserim, extending to Siam; the Malay Peninsula; Sumatra; Borneo; Java.

♂ ♀. Wings very broad in proportion to length. Fore wing: costa very strongly arched, apex well-marked, termen slightly convex, tornus rounded, dorsum straight; cell short, not half length of fore wing, very broad; upper discocellular very short, about half length of middle, middle slightly oblique, lower concave, oblique posteriorly; vein 4 obtusely angled upwards; 11 from one-third before apex of cell, anastomosed with 12; 10 out of 7 well beyond apex of cell, anastomosed with 11; 9 and 8 not anastomosing. Hind wing: costa and termen widely arched, tornus rounded, dorsum more slightly arched; cell open, vein 4 strongly obtusely angulated upwards. Antennæ long and slender, club long and gradual; palpi suberect, pointed, narrow in front, densely clothed with short hairs; eyes large; legs scaled.

Key to the forms of Thaumantis.

a. Fore wing on upperside suffused with brilliant blue, except on a narrow terminal and on broader dorsal margin ... . *T. lucipor*, p. 190.

b. Fore wing on upperside with a broad blue discal bar, basal half of wing uniform brown *T. diores*, p. 190.

223. **Thaumantis diores** (Pl. IV, fig. 32), *Westw. A. M. N. H.* xv, 1845, p. 234; *M. & de N. Butt. Ind.* i, 1883, p. 304; *Moore* (Nandogea), *Lep. Ind.* ii, 1893–96, p. 182, pl. 148, figs. 1, 1 *a*–1 *b*, ♂ ♀
Thaumantis ramde, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 215; *M. & de N. Butt. Ind.* i, 1883, p. 305.

♂ ♀. *Upperside* dusky brown; fore wing with a broad beautifully iridescent blue discal band from below vein 8 to dorsum, extending posteriorly towards the base of the wing, outwardly suffused with a brilliant silvery gloss. Hind wing with a median, similar, somewhat rounded patch, the outward silvery gloss very brilliant, in fresh specimens the blue spreading towards the base of the wings. *Underside* rich silky brown, terminal margins of the wings broadly paler, sprinkled with lilacine scales near an inward well-defined very pale brownish-yellow sinuous line; the basal five-sixths of the wings darkening perceptibly outwards. Fore wing with two pairs of transverse sinuous dark narrow bands across cell, followed by an oblique discal similar band, from costa to interspace 1. Hind wing with two similar transverse bands divergent posteriorly, an oval yellowish-white spot in interspaces 2 and 6 respectively and a dark tornal spot; the spot in interspace 2 shaded with brown. Antennæ red; head, thorax and abdomen brown. Male secondary sex-mark a small erectile tuft of hair, not covering apparently any specialized scales, near the base of the subcostal vein on the upperside of the hind wing.

Exp. ♂ ♀ 110–122 mm. (4·3–4·8″).

Hab. Sikhim to Assam; Burma and Tenasserim, along the hill-ranges at low elevations.

224. **Thaumantis lucipor**, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 337; *M. & de N. Butt. Ind.* i, 1883, p. 306 footnote.

♂. *Upperside* dark brown. Fore wing, except the costal margin narrowly, apex and terminal margin more broadly, suffused with the most brilliant metallic, somewhat iridescent blue. Hind wing similar, the terminal and dorsal margins more broadly uniform dark brown. *Underside.* Fore wing: the basal three-fourths very dark maroon-brown, the dorsal and terminal margins broadly paler, the dark basal area crossed from costa to vein 2 by an oblique bar of irrorated pale scales, irrorations of like scales in the cell, at the apex of wing and on the broad pale terminal margin. Hind wing

similar but without the bar; irrorations of pale scales on the basal dark area and on the lighter brown terminal margin, forming an irregular transverse band on the latter; close to the outer margin of the dark area there are two black ocelli, with the interior half of the irides surrounding pure white. Antennæ red; head, thorax and abdomen dark brown. Secondary sex-mark a small glandular patch above the base of the subcostal vein on the upperside of the hind wing, covered by a tuft of long hair.—♀ Similar, the blue on the upperside restricted to the basal area. Fore wing with a curved discal band of whitish spots from costa to vein 2, and a subterminal zigzag dusky white narrow band. Hind wing with a very dark brown zigzag subterminal narrow band. *Underside* similar to the underside in the male but paler; the hind wing with a discal, slightly sinuous, dark brown band in addition to the other markings.

Exp. ♂ ♀ 100–106 mm. (4–4·2″).

Hab. Borneo and the Malay Peninsula, extending into the extreme south of Tenasserim.

Genus **STICHOPHTHALMA**.

Sticophthalma, *Felder*, *Wien. ent. Monatsch.* vi, 1862, p. 27; *M. & de N. Butt. Ind.* i, 1883, p. 308; *Moore*, *Lep. Ind.* ii, 1893–96, p. 202.

Type, *S. howqua*, Westw., China.

Range. Eastern Himalayas; Assam; Burma; extending to China, Siam and Cambodia.

♂ ♀ Fore wing very broadly triangular, costa arched; termen straight, slightly convex on posterior half; tornus rounded, dorsum straight; cell very broad, short, not half length of fore wing; upper and middle discocellulars short, subequal, lower discocellular strongly concave, oblique in its lower portion; vein 4 from lower apex of cell and obtusely angulate at one-third from base; vein 10 absent. Hind wing broadly ovate; costa arched, termen slightly scalloped, apex rounded; dorsum nearly straight along basal half, then slightly emarginate; cell open, vein 8 ending on costal margin. Antennæ filiform, not quite half length of fore wing, club gradual; palpi erect, projecting above level of head; eyes not hairy; intermediate and posterior femora longer than the tibiæ. Male secondary sex-mark "a small ovate glandular patch" above base of vein 1 of hind wing shaded by an erectile tuft of long hairs.

Key to the forms of Stichophthalma.

a. Upperside: terminal markings on both fore and hind wing large and conspicuous.
a′ Basal area on upperside of fore wing dark chocolate-brown .... . *S. camadeva*, p. 192.

b'. Basal area on upperside of fore wing ochraceous .. .. *S. louisa*, p. 194.
c'. Basal area on upperside of fore wing rich reddish fulvous ... . *S. howqua*, var. *sparta*, p. 193.
b. Upperside: terminal markings on both fore and hind wing small and slender.
a. Yellow preapical band on upperside of fore wing broad, not continued along termen to tornus .. ... . *S. nourmahal*, p. 192.
b. Yellow preapical band on upperside of fore wing narrow, continued along termen to tornus Race *nurinissa*, p. 193.

225. **Stichophthalma camadeva**, *Westwood* (Morpho-Thaumantis), *Cab. Or. Ent.* p. 9, pl. 4, figs. 1, 2; *M. & de N. Butt. Ind.* i, 1883, p. 309, fig. ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 203, pl. 158, figs. 1, 1 *a*, ♂ ♀

♂ ♀ *Upperside.* Fore wing: basal third chocolate-brown, shading into pale bluish white on the rest of the wing; a broad, irregular, pure white discal bar bounded on each side by sinuous pale blue lines; a series of two or three large postdiscal brownish spots, succeeded by a series of quadrate dark brown spots touching an outer series of broad lunules of the same colour; finally a subterminal row of narrow whitish crescentic marks and a terminal dark brown line. Hind wing dark chocolate-brown, paler towards base; a broad postdiscal, bluish-white, curved band formed of paired, large, inwardly angular spots in the interspaces followed by a continuous series of broad brown lunules, a subterminal row of narrow crescentic white marks, and a terminal brown line. *Underside* ochraceous, irrorated with greenish scales on the basal area of the wings and on the discal bar of the hind wing; fore and hind wings crossed by subbasal and discal, transverse, sinuous, dark brown lines, followed by a straw-coloured discal bar, a brownish diffuse band, very dark ochraceous series of partly ocelli and partly obscure spots, and a postdiscal outer, broad, diffuse dark brown band, ending posteriorly in a black spot at the tornus of the hind wing. Antennæ, head, thorax and abdomen chocolate-brown.

Exp. ♂ ♀ 148–160 mm. (5·82–6·30″).

Hab. Sikhim; the hill-ranges of Assam; Cachar; and Manipur.

226. **Stichophthalma nourmahal**, *Westwood* (Thaumantis), *in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 337; *M. & de N. Butt. Ind.* 1883, p. 312; *Moore, Lep. Ind.* ii, 1893–96, p. 205, pl. 160, figs. 1, 1 *a*, 1 *b*, ♂ ♀

Race nurinissa.

Stichophthalma nurinissa, *de Nicéville, Jour. Bomb. N. H. Soc.* v, 1890, p. 131, pl. C, fig. ♂ ♀; *Moore, Lep. Ind.* ii, 1893–96, p. 206, pl. 161, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂. *Upperside* bright chocolate-brown. Fore wing with a very

broad, curved, oblique preapical band from costa to termen; apex and the termen narrowly dark brown; a subterminal series of delicate, brown, trident-shaped marks. Hind wing with a band along the terminal margin yellow, bearing paired, lunular, brown marks in the interspaces. *Underside* dark ochraceous, paler towards the apex of the fore wing, with the following transverse markings—subbasal and median dark brown sinuous lines, bordered, the former on the inside, the latter on the outside, by narrow bands of greenish blue; a discal series of obscure ocelli, some of them defined only as pale spots; a postdiscal and a subterminal dark highly-sinuous line, the former ending in a black tornal spot outwardly margined with pink. Antennæ, head, thorax and abdomen chocolate-brown above, ochraceous beneath.

♀. *Upperside* similar, a preapical white spot on fore wing. *Underside* with the transverse markings similar; the ground-colour up to the median black transverse line chocolate-brown; beyond, the fore wing from costa to vein 4 light ochraceous, inwardly paling to white below vein 1; the hind wing crossed by a diffuse dark brown band; ocelli as in the male, followed by a dull ochraceous-brown postdiscal area, the terminal margins broadly brown, inwardly defined and crossed subterminally by highly sinuous dark lines. Antennæ, head, thorax and abdomen as in the ♂

Exp. ♂ ♀ 98–118 mm. (3·9–4·25″).

Hab. Sikhim.

Race **nurinissa**, de Nicéville.— ♂ ♀ *Upperside* differs from the typical form in having the preapical yellow band on the fore wing narrower but continued down to the tornus along the terminal margin; the apex more broadly brown, and a row of obscure brown spots instead of the trident-shaped marks. The yellow band on the hind wing broader. *Underside* in both sexes almost precisely similar to the underside in *S. nourmahal*.

Exp. ♂ ♀ 104–128 mm. (4·1–5·1″).

Hab. Bhutan.

227. **Stichophthalma howqua**, *Westwood* (Thaumantis), *Trans. Ent. Soc.* (new ser.) i, 1851, p. 147; *Leech* (var. suffusa), *Butt. China*, 1892–94, p. 114, pl. i, fig. 3, var. ♀.

Stichophthalma sparta, *de Nicéville*, *J. A. S. B.* 1894, p. 2, pl. i, fig. 4 ♂; *Moore*, *Lep. Ind.* ii, 1893–96, p. 217, pl. 167, figs. 2, 2*a*, ♂.

♂ ♀ *Upperside* ochraceous yellow suffused with a darker, somewhat brownish shade of the same towards base of fore wing and on hind wing. Fore wing: a postdiscal transverse row of fleur-de-lys-shaped spots, a subterminal series of broad black lunules, followed by a series of narrow crescentic marks of the ochraceous ground-colour; apex and a terminal line black. Hind wing: a subterminal series of black lunules as on the fore wing, giving out inwards a series of large, shafted, roundly lanceolate marks of the same colour, followed, as on the fore wing, by narrow

ochraceous crescentic marks and a terminal black line, the marks posteriorly rather diffuse and tending to run together. *Underside* ochraceous yellow, with the following transverse markings—subbasal, median, postdiscal, subterminal and terminal dark brown sinuous lines; a discal row of dark ochraceous ocelli, six on fore, five on hind wing; and, bordering the ocelli on the inner side, a variable diffuse dusky-black band, ending posteriorly on the hind wing in a black tornal spot. Antennæ dark brown; head, thorax and abdomen ochraceous, abdomen paler beneath.— ♀ *Upperside* similar, the black markings broader and heavier. *Underside* also similar, but the ground-colour a beautiful pale green with a silky lustre, the median transverse dark brown line outwardly bordered from costa of fore to vein 1 of hind wing with greenish white; the dusky-black transversely discal band broader and more diffuse; fore wing with seven ocelli; terminal margins broadly but lightly infuscated.

Exp. ♂ ♀ 120–128 mm. (4·72–5·1″).

Hab. China, extending to the west into our limits and recorded from Manipur.

The above is a description of *S. howqua*, var. *suffusa*, Leech, from W China; the typical form, which has the markings lighter and smaller, and the ground-colour on upperside uniform, comes from Central China, while the far west race *S. sparta*, de Nicéville, from Manipur, differs less from *S. suffusa* than the latter does from *S. howqua*.

228. **Stichophthalma louisa**, *Wood-Mason* (Thaumantis), *P. A. S. B.* 1877, p. 163; *M. & de N. Butt. Ind.* i, 1883, p. 311; *Moore, Lep. Ind.* ii, 1893–96, p. 204, pl. 159, figs. 1, 1 *a*, ♂ ♀.

♂ ♀ *Upperside*: basal half of fore and basal two-thirds of the hind wing from pale to rich ochraceous, the outer halves of both wings white tinged with lilacine; a subterminal series of inwardly pointed, large, hastate black marks coalescing with a terminal series of black angular lunules. *Underside*: basal half of both fore and hind wing pale dull ochraceous with a powdering of greenish scales; outer half white, the hind wing with the postdiscal area suffused with greenish; the terminal margins of both wings broadly dull ochraceous, darker on the hind wing than on the fore wing; a subbasal and a discal dark brown transverse sinuous line meeting and crossing near the tornus of the hind wing, followed on both fore and hind wing by irregular white and suffused dark brown bands, then a series of ocelli, five on fore and five on the hind wing, the former pale brown, the latter ochraceous red with black irides, the apical and the posterior ocelli the largest; finally a suffused large black tornal spot on the hind wing. Male sex-mark as noted for the genus.

Exp. ♂ ♀ 133–143 mm. (5·3–5·6″).

Hab. The foot of the hill-ranges in Burma and Tenasserim.

Appears only in April and May.

Genus **THAURIA.**

Thaumantis, pt., *Westwood, Trans. Ent. Soc.* (new ser.) iv, 1856, p. 176, pl. 17 ♀; *M. & de N.*, pt., *Butt. Ind.* i, 1883, p. 307.
Thauria, *Moore, Lep. Ind.* ii, 1893–96, p. 185.

Type, *T. aliris*, Westwood, from Borneo.

Range. Lower Burma; Tenasserim; Siam; Malay Peninsula; Borneo.

♂ ♀. Closely allied to *Thaumantis*, Westwood, but in the fore wing vein 7 is emitted well before and not at apex of cell, vein 10 runs very close to but does not anastomose with vein 11, and similarly vein 11 does not anastomose with vein 12, the upper discocellular is oblique and very much longer than the middle discocellular; this latter being minute, consequently veins 5 and 6 are closely approximate at base. Hind wing: vein 4 only curved upwards, not obtusely angulate; cell open as in *Thaumantis*, but vein 6 is closer at base to vein 7.

Only a single form, very closely allied to the type if not a race of it, is found within our limits.

229. **Thauria pseudaliris**, *Butler* (Thaumantis), *Journ. Linn. Soc., Zool.* xiii, 1867, p. 115; *M. & de N.* (Thaumantis) *Butt. Ind.* i, 1883, p. 307; *Moore, Lep. Ind.* ii, 1893–96, p. 186, pl. 149, figs. 1, 1 *a*–1 *b*, ♂ ♀.

♂ *Upperside* dark vandyke-brown. Fore wing: the base broadly as far as the apex of the cell clothed with dense, short, dark ochraceous hairs; a broad oblique discal band and two pre-apical spots white, the former tinged with yellow and extending from costa to the termen just above the tornus. Hind wing: the costa and apex broadly and a large posterior area bright ochraceous, the dark ground-colour between veins 5 and 6 produced broadly to the termen. *Underside*: basal third of the wings greyish, somewhat densely studded with short woolly ochraceous hairs and with some spots and lines of dark chestnut-red, followed by a dark chestnut-red irregular band crossing both fore and hind wing, broadest posteriorly on the fore and anteriorly on the hind wing. Fore wing with the oblique white discal band as on the upperside, beyond it a subtriangular area, and beneath it the dorsal margin broadly brown, the apex and termen up to the outer end of the white band very broadly chestnut-red, defined inwardly by an obscure dark line and a white spot below the costa. Hind wing: the dark chestnut-red median band narrowed and sub-interrupted in the middle by a white patch; two large oval, discal, ochraceous-brown, dark-ringed ocelli inwardly lined with white; beyond the ocelli the terminal area very broadly bright ochraceous orange, crossed by a subterminal waved chestnut-red narrow band and an obscure incomplete terminal dark line. Antennæ chestnut-red; head, thorax and abdomen brown. Secondary sex-mark a sub-

costal dark patch of specialized scales, and a yellow glandular pouch close to the dorsal margin on the upperside of the hind wing.— ♀ Similar, of course without the sex-marks; colours brighter, oblique white discal band on fore wing broader.

Exp. ♂ ♀ 120–140 mm. (4·72–5·5″).

Hab. Burma; Tenasserim, extending to the Malay Peninsula.

This and *T. aliris*, Westwood, from Borneo, are closely similar continental and insular forms respectively.

Genus ÆMONA.

Æmona, *Hewitson, Exot. Butt.* iv, 1868, Æmona pl. figs. 3, 4; *M. & de N. Butt. Ind.* i, 1883, p. 302; *Moore, Lep. Ind.* ii, 1893–96, p. 212.

Type, *Æ. amathusia*, Hewitson, from Sikhim.

Range. N.E. India; Assam; Burma; Tenasserim.

♂ ♀. Fore wing broadly triangular; costa arched; apex acutely produced; termen straight; tornus broadly rounded; dorsum straight; cell short, broad, not half length of fore wing; upper and middle discocellulars short, subequal, lower strongly concave; veins 8, 9, 10 out of 7, 11 from well before apex of cell, anastomosed with 12 till just before its apex, 12 terminating about midway on costa. Hind wing pear-shaped; termen somewhat obtusely angulated at vein 4; cell open; vein 8 terminating on costal margin before apex. Antennæ about half length of fore wing, club very long and gradual; eyes large, naked; palpi slender, obliquely porrect, third joint short; legs slender, long, intermediate and posterior femora and tibiæ subequal. Male secondary sex-mark a row of fine hairs along vein 1 on the upperside of the hind wing, at termination overlapping a fold in the membrane of the wing.

Key to the forms of Æmona.

a. Fore wing pale ochraceous yellow on upperside; apex dusky brown	*Æ. amathusia*, p. 196.
b. Fore wing white, shaded on upperside with dusky brown along veins on apical half, apex and termen dusky brown ..	*Æ. lena*, p. 197.

230. **Æmona amathusia**, *Hewitson* (Clerome), *Trans. Ent. Soc.* (3) iv, 1867, p. 566 ♀; *id. Exot. Butt.* iv. 1868, Æmona pl. figs. 3, 4; *M. & de N. Butt. Ind.* i, 1883, p. 303, front plate, figs. 2, 2 *a*, ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 212, pl. 164, figs. 1, 1 *a*–1 *e*, ♂ ♀.
Æmona pealii, *Wood-Mason, J. A. S. B.* 1880, p. 177, pl. 6, figs. 3, 3 *a*; *M. & de N. Butt. Ind.* i, p. 303, front plate, figs. 3–3 *a* ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 214, pl. 165, figs. 1, 1 *a*.

♂. *Upperside* ochraceous yellow, the wings more or less suffused on the basal area in the fore and over the whole of the hind wing

with a dusky light brownish tint; the apex of the fore wing dusky brownish, the transverse narrow dark band from apex of fore wing to tornus of hind wing, the ocelli on both, and the subterminal zigzag band on the underside of the hind wing faintly showing through. *Underside* similar, slightly darker, without the brownish tint. Fore and hind wings with a subbasal and a discal darker ochraceous band from apex of fore to tornus of hind wing, followed by a postdiscal row of ocelli, most of them faint and incomplete, and a subterminal zigzag line very faint on the fore wing; the posterior three ocelli prominently silvery centred. Antennæ, head, thorax and abdomen ochraceous.— ♀ *Upperside*: the brownish suffusion darker. *Underside*: the ground-colour not so bright an ochraceous, the markings better defined, all the ocelli with white centres, the subterminal lines on both wings straight.

Exp. ♂ ♀ 78–94 mm. (3·05–3·75″).

Hab. Sikhim; Bhutan; the hill-ranges of Assam.

Var. *peali*, Wood-Mason, is probably, as suggested by Mr. Doherty, the wet-season form of this insect. It differs chiefly in the apex of the fore wing not being so produced, the termen straighter and slightly convex, and in the markings on the underside showing through on the upperside more plainly than in typical *amathusia*.

231. **Æmona lena**, *Atkinson, P. Z. S.* 1871, p. 215, pl. 12, fig. 1 ♂; *M. & de N. Butt. Ind.* i, 1883, p. 302; *Moore, Lep. Ind.* ii, 1893–96, p. 215, pl. 165, figs. 2, 2 *a*, ♂.

♂ *Upperside*: fore wing and anterior half of hind wing creamy white, posterior half of latter bright canary-yellow. Fore wing: apex somewhat broadly, a transverse slightly inwardly oblique band from apex to vein 1, and broad streaks along the veins from the termen to the transverse band dusky brown. Hind wing: a similar brown transverse band anteriorly, not descending into the yellow area. *Underside* from base to a transverse narrow dark ochraceous discal band crossing the wings from apex of fore to tornus of hind wing yellow, crossed by a subbasal ochraceous broad line; the terminal margins beyond the discal band paler on both fore and hind wing; an indistinct series of ocelli. Antennæ ochraceous; head and thorax dusky creamy white; abdomen yellow, paler beneath. Female not known.

Exp. ♂ 82–88 mm. (3·25–3·45″).

Hab. Burma and Tenasserim.

Genus **ENISPE.**

Enispe, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1851, p. 292; *M. & de N. Butt. Ind.* i, 1883, p. 299; *Moore, Lep. Ind.* ii, 1893-96, p. 198.

Type, *E. euthymius*, Doubleday, from N.E. India.

Range. Sikhim, eastwards through the hills of Assam to Burma and Tenasserim.

♂ ♀. Closely allied to *Discophora*; differs from that genus in the absence of vein 10 in the fore wing, and in the ♂ by the difference in the secondary sex-marks, there being no trace of the patch of specialized scales on the disc of the hind wing, though the glandular pouch and tuft of short hairs at the base of the dorsal margin of the hind wing are present. There is in addition a small patch of specialized scales at the base of the abdomen beneath. Antennæ very long, longer than in *Discophora*; eyes naked; palpi obliquely porrect, third joint short.

Key to the forms of Enispe.

a. Upperside ground-colour ochraceous orange.	
a' Hind wing only with a median black transverse narrow band on upperside ..	*E. euthymius*, p. 198.
b'. Both fore and hind wing with a median black transverse narrow band on underside	Var. *tessellata*, p. 198.
b. Upperside ground-colour brown	*E. cycnus*, p. 199.

232. **Enispe euthymius** (Pl. IV, fig. 31), *Doubleday* (Adolias), *A. M. N. H.* xvi, 1845, p. 179; *M. & de N. Butt. Ind.* i, 1883, p. 300, fig. ♂; *Moore, Lep. Ind.* ii, 1893–96, p. 198, pl. 155, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Enispe tessellata, *Moore, P. Z. S.* 1883, p. 521 ♂ ♀; *id. Lep. Ind.* ii, 1893–96, p. 200, pl. 156, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ *Upperside* rich ochraceous orange. Fore wing: a spot along the upper portion of the discocellulars, two fine lunate spots beyond, an erect series of four discal spots, a subterminal zigzag narrow band, the apical portion of the costa, the apex and the terminal margin broadly black. Hind wing: a discal irregular transversely elongate suffused mark and two series of lunular continuous marks beyond black; termen narrowly fuscous. *Underside* rich bright ochraceous; a broad transverse band across both wings from costa of fore wing to the tornus of the hind wing slightly darker ochraceous, defined inwardly by an irregular sinuous and broken, and outwardly by a straighter complete ferruginous line; some ferruginous spots at the bases of the wings, and on the hind wing a discal series of three or four minute dark ocelli, the lowest white-centred; outer halves of both fore and hind wing uniform, the black markings of the upperside showing faintly through. Antennæ, head, thorax and abdomen bright ochraceous.

Exp. ♂ ♀ 82–87 mm. (3·25–3·42″).

Hab. Sikhim; Assam; Cachar; Burma and Tenasserim.

Var. *tessellata*, Moore, occurs in the same localities. It is a more richly-coloured form than *E. euthymius*. It differs in both sexes in the markings on the upperside of the wings being broader, restricting the orange-ochraceous ground-colour, the bases of the wing also slightly darker. The fore wing with a median black irregular line in continuation of the black line defining the discocellulars.

233. **Enispe cycnus**, *Westwood, in Dbldy., Westw. & Hew. Gen. Di. Lep.* 1851, p. 330; *M. & de N. Butt. Ind.* i, 1883, p. 301; *Moore, Lep. Ind.* ii, 1893–96, p. 201, pl. 157, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂. *Upperside* dark brown. Fore wing with a broad oblique bluish-white band beyond cell from costa to vein 4, deflected inwards below and continued by three large outwardly emarginate spots between the veins; beyond these an erect series of four more or less triangular spots of the same colour. Hind wing: basal area clothed with long hair, a subterminal curved series of obscure small light brown spots, followed by a terminal series of light brown lunular markings between the veins. *Underside* dark ochraceous, paling towards the terminal margins; a darker ochraceous straight discal band across both fore and hind wing from costa of fore wing to tornus of hind wing, defined inwardly and outwardly by sinuous dark ferruginous-brown lines, the basal area inside the band studded with spots and short transverse sinuous streaks of ferruginous brown, and the terminal halves of the wings with three rows of obscure dusky markings between the veins. Hind wing with a minute silvery ocellus in interspace 1 and a small black spot in interspace 5. Antennæ, head, thorax and abdomen brown above; antennæ excepted, ochraceous yellow beneath.

♀ *Upperside*: differs from the ♂ in the fore wing as follows: five inner discal ochraceous spots and the discal band terminating in an ochraceous spot; on the hind wing a discontinuous transverse line, followed by a postdiscal row of large hastate spots; a subterminal series of quadrate spots and a terminal series of lunular marks between the veins bright ochraceous. *Underside* as in the ♂, but the ground-colour uniformly paler ochraceous.

Exp. ♂ ♀ 80–90 mm. (3·17–3·53″).

Hab. Bhutan; Assam; Upper Burma.

Genus **DISCOPHORA.**

Discophora, *Boisduval, Spéc. Gén. Lép.* i, 1836, pl. 12, fig. 3; *Moore, Lep. Ceyl.* i, 1881, p. 35; *M. & de N. Butt. Ind.* i, 1883, p. 294; *Moore, Lep. Ind.* ii, 1893–96, p. 187.

Type, *D. celinde*, Stoll, from Java.

Range. Indo-Malayan Region.

♂ ♀ Fore wing very broadly triangular, costa strongly arched; apex acute, slightly produced; termen straight, tornus well marked, dorsum straight; cell short, not half length of fore wing, moderately broad; middle discocellular the shortest, lower long, oblique, slightly concave; vein 10 anastomosed with 11, vein 11 with 12, 12 terminating about two-thirds from base. Hind wing: costa slightly arched; termen convex or angulate at apex of vein 4; tornus well marked; dorsum long, straight, slightly convex in the middle; vein 8 terminating just before apex, costal margin above it wide. Antennæ about half length of

fore wing, club long, narrow, gradual; palpi slender, slight, oblique, 3rd joint short; body stout, robust. Male secondary sex-mark a more or less rounded, thickly packed, large patch of specialized scales on the disc of the hind wing.

The forms of *Discophora* are all very closely allied. There is little doubt that the variation in the size and colour of the spots on the fore wing is to some extent due to seasonal dimorphism or polymorphism, and that the number of distinct forms is really very small.

Key to the forms of Discophora.

♂ ♂.

a. Upperside suffused with deep indigo-blue	*D. celinde*, p. 200.
b. Upperside brown, not suffused with indigo-blue.	
a'. Spots on upperside of fore wing in two rows, anterior three spots of inner row blue, large, oblique	*D. lepida*, p. 201.
b' Spots on upperside of fore wing in three or four transverse rows.	
a^2. Spots on upperside of fore wing more or less bluish white.	
a^3. Upperside of hind wing without spots, uniform	*D. tullia*, p. 202.
b^3. Upperside of hind wing spotted..	Var. *zal*, p. 203.
b^2. Spots on upperside of fore wing ochraceous . . .	Var. *spiloptera*, p. 203.

♀ ♀.

a. Upperside of fore wing with a distinct preapical broad oblique band.	
a'. This band ochraceous yellow . .	*D. celinde*, p. 201.
b'. This band bluish white....	*D. lepida*, p. 201.
b. Upperside of fore wing without a distinct preapical oblique band or at most anterior two spots of transverse discal series obliquely placed.	
a'. Cell of fore wing on upperside without a patch of ochraceous yellow at apex	*D. tullia*, p. 202.
b' Cell of fore wing on upperside with a patch of yellow at apex.	
a^2. The yellow patch enclosing a black spot	Var. *zal*, p. 203.
b^2. The yellow patch not enclosing a black spot	Var. *spiloptera*, p. 203.

234. **Discophora celinde,** *Stoll* (Papilio), *Suppl. Cram. Pap. Ex.* v, 1790, pl. 37, figs. 1, 1 *a*; *M. & de N. Butt. Ind.* i, 1883, p. 295, fig. ♂ ♀

Discophora necho, *M. & de N.* (*nec Felder*) *Butt. Ind.* i, 1883, p. 296.

Discophora celinde, var. continentalis et adamanensis, *Staudinger*, *Exot. Schmett.* i, 1887, p. 190.

Discophora continentalis, *Moore*, *Lep. Ind.* ii, 1893–96, p. 188, pl. 150, figs. 1, 1 *a*–1 *c*, ♂ ♀, larva & pupa.

♂. *Upperside* purplish brown, the basal four-fifths of both fore and hind wing suffused with dark indigo-blue. Fore wing with two obliquely-placed preapical pale ochraceous-white spots, and a series of four or five subterminal similar spots. Hind wing uniform except for the dark secondary sex-mark on the disc. *Underside* ochraceous shaded with brown, darkest on the outer half of the hind wing; a broad dark brown discal band across both wings from costa of fore to tornus of hind wing; beyond this a lighter ochraceous band, followed on the hind wing by obscure ocelli in interspaces 2 and 6, and a purplish-white diffuse mark at the tornus.—♀ *Upperside* paler purplish brown, the terminal margins of the wings narrowly and evenly yellow; a broad yellow oblique preapical bar on the fore wing, curving downwards and ending in two or three triangular detached spots, two discal spots below middle of bar and an outer series of three subterminal large lunular spots. Hind wing on its anterior half outwardly with some diffuse yellow obscure spots. *Underside* similar to that of the ♂, but much lighter and brighter ochraceous, the brown shading forms obscure transverse bands, of which the discal, broad postdiscal and subterminal crossing both fore and hind wing are the most prominent; an additional ocellus in interspace 3. Antennæ ochraceous; head, thorax and abdomen above brown, beneath more or less ochraceous.

Exp. ♂ ♀ 95–99 mm. (3·75–3·9″).

Hab. Sikhim, the lower and Eastern provinces of Bengal; Assam; Burma; Tenasserim, extending to the Malay Peninsula.

Larva (adult). Anal segment with two slender processes; each segment with dorsal and lateral tubercles studded with tufts of hair; head black; body brown with paler longitudinal dorsal and lateral bands, a short black line on each side of the dorsal line anteriorly on each segment; legs with a spot of dark red on each.

Pupa. "Boat-shaped, broad across the middle; head-piece prolonged and acuminated into a bifid point; colour pale purpurescent-brown." (*Moore.*)

235. **Discophora lepida**, *Moore* (Enispe), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 213 ♀; *id. Lep. Ceyl.* i, 1880, p. 36, pl. 18, figs. 1, 1 *a*, 1 *b*, ♂ ♀; *M. & de N. Butt. Ind.* i, 1883, p. 297; *Moore, Lep. Ind.* ii, 1893–96, p. 190, pl. 151, figs. 1, 1 *a*, 1 *b*, 1 *c*, ♂ ♀; *Davidson, Bell & Aitken, Jour. Bomb. N. H. Soc.* x, 1896, p. 245.

♂ ♀ Resembles *D. celinde*, but in the ♂ the ground-colour on the upperside is dark velvety brown without any blue reflections; the fore wing is crossed preapically by three obliquely-placed, comparatively large, pale-blue spots with an ill-defined series of three or four much smaller subterminal spots; in the ♀ the markings, though similar to those in the ♀ of *celinde*, are on the upperside of the fore wing all pale blue, not yellow, and more numerous, larger, and better defined on the upperside of the hind wing. *Underside.* ♂: similar to that in ♂ of *D. celinde*, but a

more or less prominent diffuse subterminal band irrorated with lilac scales crosses both fore and hind wing.— ♀ similar to the ♀ of *D. celinde*, but much paler.

Exp. ♂ ♀ 80–104 mm. (3·15–4·09″).

Hab. S. India, Ceylon.

Larva. "Cylindrical or slightly fusiform; head large; anal segment furnished with two stout conical processes widely separated, but scarcely divergent; colour of head greenish yellow; eyes black; body brown, with a broad pure white dorsal band flanked with conspicuous black marks, and a yellow lateral mark on segments 6 to 11; head and body clothed with long reddish or brown hair." (*Davidson, Bell & Aitken.*)

Pupa . "head-case produced into two long conical adjoined processes, the thorax slightly convex and carinated dorsally, the wing-cases evenly expanded, abdomen strongly curved dorsally; surface finely rugose; colour semi-transparent yellowish, like a clean white bone, with the dorsal line and the veins of the wings marked in faint flesh-colour, loosely attached by the tail." (*Ibid.*)

236. **Discophora tullia** (Pl. IV, fig. 30), *Cramer* (Papilio), *Pap. Exot.* i, 1775, pl. 81, figs. A, B; *M. & de N. Butt. Ind.* i, 1883, p. 298, fig. ♂ ♀.

Discophora zal, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1851, p. 331, footnote; *M. & de N. Butt. Ind.* i, 1883, p. 299; *Moore, Lep. Ind.* ii, 1893–96, p. 191, pl. 152, figs. 1, 1 *a*–1 *c*, ♂ ♀

Discophora tullia, var. indica, *Staudinger, Exot. Schmett.* i, 1887, p. 190, ♀

Discophora spiloptera, *de N. & Möller, Trans. Ent. Soc.* 1888, p. 331.

Discophora indica et spiloptera, *Moore, Lep. Ind.* ii, 1893–96, pp. 192 & 195, pl. 153, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva & pupa, and pl. 154, figs. 1, 1 *a*, ♂ ♀

♂ *Upperside* dark brown. Fore wing with transverse discal, postdiscal and subterminal series of bluish spots, the latter two series closely approximate. Hind wing uniform except for the prominence of the discal secondary sex-mark, and faint indications of a subterminal series of pale spots. *Underside* dull ochraceous brown, the basal half of the wing darker, defined outwardly by a still darker but obscure transverse band ending in a lilacine diffuse small patch at the tornus of the hind wing; both fore and hind wing irrorated somewhat sparsely with short transverse brown striæ and obscurely tinted with lilac; two ill-defined ocelli on the hind wing as in *D. celinde*. Antennæ ochraceous; head, thorax and abdomen brown, paler beneath.— ♀. *Upperside* purplish brown. Fore wing with three transverse series of white spots, the inner or discal series continued to the costa by two large elongate obliquely-placed white spots. Hind wing also with three transverse rows of somewhat obscure spots, but ochraceous in colour. *Underside* similar to that in the ♂, but paler.

Exp. ♂ ♀ 90–102 mm. (3·55–4·05″).

Hab. Bengal; Sikhim; Bhutan; through Assam, Burma and

Tenasserim to the Malay Peninsula. Described originally from China.

Larva. "On bamboo, living during the day in three or four leaves spun together . full-fed larva 2 inches long, colour black mottled with grey; a rather broad yellowish dorsal line; the junction of the segments marked by a thin irregular yellow line and red spot; body covered with white hairs; head and anus black, the former marked with perpendicular yellow lines. *Pupa* white, suspended by the tail; the labial palpi prominently projected; changing to dark brown a few hours before emergence. The perfect insect remains three weeks in pupa." (*Manders*, Trans. Ent. Soc. 1890, p. 519.)

Var. *zal*, Westwood, differs from the typical form as follows:—

Upperside. ♂ paler brown. Fore wing with an additional spot outside cell; the spots in the three transverse series more numerous, the discal row bluish, the outer two rows ochraceous. Hind wing with three rows of ochraceous somewhat obscure spots. *Underside* differs only in being paler than in the typical form and more uniform in colour. ♀: ground-colour above ochraceous; fore wing—apex of cell yellow with a prominent enclosed black spot; the three series of spots as in typical *tullia*, but only the discal row bluish white, the rest ochraceous, and an additional inner row at the bases of the interspaces. Hind-wing markings similar to those of *tullia*. *Underside* very much paler and more uniform.

It is probable, as Mr. Moore suggests, that *D. zal* is the dry-season form of *D. tullia*.

Var. *spiloptera*, de Nicéville & Möller, closely resembles the variety or dry-season form *D. zal*, but on the upperside it is more heavily marked in both sexes, the spots being larger and in the ♂ entirely ochraceous. The ♀ lacks the black spot enclosed in the yellow patch at the apex of the cell.

Subfamily NYMPHALINÆ.

Egg. "Very large, few, soft, not so high as wide, strongly reticulate with elevated translucent chitinous lines crossing the surface asymmetrically, enclosing pentagonal and hexagonal spaces, and bearing long, acute, often bifid spines at their intersection." (*Doherty.*)

Larva. Variable both in form and armature, but in the large majority of the forms cylindrical and spiny. In *Apatura* and *Charaxes* the larva is smooth, has horn-like processes on the head, which are often branched, and two posteriorly directed processes on the anal segment, recalling the form of the larva in the *Satyrinæ* and *Morphinæ*. The larva of *Euthalia* is very spiny, being armed with a series of long lateral spines, each spine nearly half the length of the larva itself, and fringed along the sides with finer hairs or spines. In *Ergolis*, on the contrary, the spines are short, dorsal, and many-branched.

Pupa. Proportionately to the size of the imago, rather short but broad, with the dorsum more or less curved, and the head and thorax often covered with angular prominences. It is, without any known exception in this subfamily, suspended by the tail and entirely destitute of any medial supporting girth.

Imago. Head of medium or large size and more or less hairy; antennæ close together at base, entirely or partly scaled, never entirely without scales as in the *Danainæ*; club variable, long, narrow and gradual, or short, broad and abrupt, often flattened; eyes naked or hairy; palpi generally broad anteriorly, erect, sometimes subporrect; thorax as a rule robust, in some very broad and stout, remarkably so in *Charaxes* and in some of the forms of *Euthalia*; wings ample, broad in proportion to length. Narrow-winged forms, such as *Callinaga* and some forms of *Neptis*, or forms with feeble flight and delicate wings, such as *Cyrestis*, are very few among the Indian *Nymphalinæ*. The pattern and colour of the wings in this subfamily are most varied; there is no leading type of pattern or coloration common to many genera, such as is found, for instance, in the *Danainæ* in the general similarity between the upper and under sides of the wings, or in the *Satyrinæ* and *Morphinæ* in the very common ocellation of the underside of the hind wing. Discoidal cell in both fore and hind wing very often open or closed only by a slender inconspicuous veinlet; the closed cell often occurs only in the fore wing. Anastomosis of the branches of the subcostal vein in the fore wing (veins 8–11) is rare, and still more rare is the inflation at base of the costal vein (vein 12)—features so common in the *Satyrinæ*. The dorsal margin of the hind wing is channelled to receive the abdomen. The fore legs have the family character of reduction in size very marked. Two exceptions, however, occur: the females of *Pseudergolis* and *Callinaga* have the fore legs functionally perfect and well formed.

"In their habits in the perfect state, they (the forms of the *Nymphalinæ*) are pre-eminently bold, sunshine-loving insects, never skulking in the shade amongst trees and bushes as do the butterflies of the subfamilies *Morphinæ* and *Satyrinæ*. They also usually rest with the wings widely spread open. ." (*de Nicéville.*)

Key to the Genera of the Nymphalinæ.

A. Costa of fore wing serrated.
  a. Cell of both fore and hind wing closed. . . . . CHARAXES, p. 208.
  b. Cell of fore wing closed, of hind wing open. EULEPIS, p. 219.
B. Costa of fore wing not serrated.
  a. Cell of both fore and hind wing closed.
    a' Eyes hairy.
      a^2. Fore wing: vein 10 out of 7, not free DILIPA, p. 235.
      b^2. Fore wing: vein 10 out of subcostal, free.
        a^3. Hind wing without prediscoidal cell.
          a^4. Fore wing: veins 3 and 4 from lower apex of cell.
            a^5. Hind wing: cell very short, barely one-third length of wing. STIBOCHIANA, [p. 249.

b^5. Hind wing: cell proportionately longer, about half length of wing. DICHORRAGIA, [p. 248.

b^4. Fore wing: vein 3 from well before lower apex of cell, 4 from apex .. VANESSA, p. 363.

c^4. Fore wing: veins 3 and 4 stalked, branching well beyond lower apex of cell . ... TERINOS, p. 411.

b^3. Hind wing with a more or less distinct prediscoidal cell CALINAGA, p. 465.

b'. Eyes not hairy.

a^2. Fore wing: vein 12 not swollen at base.

a^3. Hind wing with a prediscoidal cell .. PARTHENOS, p. 287.

b^3. Hind wing without a prediscoidal cell.

a^4. Fore wing: vein 3 from before lower apex of cell, 4 from apex.

a^5. Hind wing: veins 3 and 4 from lower apex of cell.

a^6. Club of antennæ short, broad, abrupt. .. ARGYNNIS, p. 429.

b^6. Club of antennæ long, narrow, gradual.

a^7. Precostal vein in hind wing curved strongly inwards . PENTHEMA, p. 390.

b^7. Precostal vein in hind wing curved strongly outwards . NEUROSIGMA, [p. 247.

b^5. Hind wing: veins 3 and 4 stalked, branching from beyond lower apex of cell.

a^6. Cell of fore wing short, not half length of wing, middle discocellular deeply concave... HYPOLIMNAS, [p. 386.

b^6. Cell of fore wing long, at least half length of wing, middle discocellular straight .. LEBADEA, p. 298.

b^4. Fore wing: veins 3 and 4 from lower apex of cell.

a^5. Hind wing: veins 3 and 4 from lower apex of cell.

a^6. Fore wing: vein 10 free . . DOPHLA, p. 255.

b^6. Fore wing: vein 10 out of 7.

a^7. Fore wing: vein 11 from well before upper apex of cell . . .. ISSORIA, p. 415.

b^7. Fore wing: vein 11 from upper apex of cell.

a^8. Club of antennæ short, broad, abrupt, flat, or concave below . .. ATELLA, p. 412.

b^8. Club of antennæ long, narrow, gradual, not flat or concave below ..... CETHOSIA, p. 399.

b^5. Hind wing: veins 3 and 4 stalked, branching beyond lower apex of cell.

a^6. Fore wing: veins 5 and 6 closely approximate at base AUZAKIA, p. 300.

b^6. Fore wing: veins 5 and 6 well separated at base.
a^7. Hind wing: veins 6 and 7 well separated at base.
a^8. Hind wing with a long narrow tail at apex of vein 1 . ... .. KALLIMA, p. 394.
b^8. Hind wing with a short tail at apex of vein 4 . YOMA, p. 385.
b^7. Hind wing: veins 6 and 7 closely approximate at base. CYRESTIS, p. 348.
c^4. Fore wing: veins 3 and 4 stalked, branching beyond apex of cell. [p. 353.
a^5. Fore wing: vein 10 out of 7 CHERSONESIA,
b^5. Fore wing: vein 10 free. PSEUDERGOLIS, [p. 463.
^{2}. Fore wing: vein 12 swollen at base.
a^3. Posterior tibiæ and tarsi with rows of spines.
a^4. Club of antennæ short, broad, abrupt . BYBLIA, p. 455.
b^4. Club of antennæ long, narrow, gradual . .. . .. ERGOLIS, p. 460.
^{3}. Posterior tibiæ and tarsi without rows of spines .. . . LARINGA, p. 457

b. Cell of fore wing closed, of hind wing open.
a'. Fore wing: vein 10 out of 7, not free.
a^2. Fore wing: veins 3 and 4 from lower apex of cell.
a^3. Eyes not hairy. CUPHA, p. 416.
b^3. Eyes hairy .. . . ARASCHNIA, p. 374.
b^2. Fore wing: vein 3 from before lower apex of cell, 4 from apex . .... MELITÆA, p. 450.
b' Fore wing: vein 10 out of subcostal, free.
a^2. Fore wing: veins 3 and 4 from lower apex of cell.
a^3. Fore wing: vein 10 from upper apex of cell . . .. PANTOPORIA, p. 302.
b^3. Fore wing: vein 10 from well before upper apex of cell.
a^4. Eyes hairy LIMINITIS, p. 293.
b^4. Eyes not hairy... .. . ABROTA, p. 250.
b^2. Fore wing: vein 3 from before lower apex of cell, 4 from apex.
a^3. Fore wing: vein 10 from upper apex of cell . .. . [p. 252.
SYMPHÆDRA,
b^3. Fore wing: vein 10 from well before upper apex of cell.
a^4. Eyes not hairy.
a^5. Fore wing: veins 8 and 9 from beyond middle of 7 . . . MODUZA, p. 291.
b^5. Fore wing: veins 8 and 9 from well before middle of 7.. .. PROTHOË, p. 380.
b^4. Eyes hairy .. .. SYMBRENTHIA, [p. 376.
c^2. Fore wing: veins 3 and 4 stalked, branching well beyond lower apex of cell [p. 419.
CIRROCHROA,

c. Cell of fore wing closed, of hind wing open, but in appearance closed by a fold in the membrane of the wing between veins 4 and 5, well beyond origin of vein 3 — CYNTHIA, p. 405.

d. Cell of both fore and hind wing open.

a' Fore wing: vein 10 out of subcostal, free.

*a*². Hind wing: vein 7 at base closer to vein 6 than to vein 8.

*a*³. Fore wing: vein 9 from before middle of 7.

*a*¹. Club of antennæ long, narrow, cylindrical.

*a*⁵. Fore wing: vein 10 from well before upper apex of cell — APATURA, p. 229.

*b*⁵. Fore wing: vein 10 from upper apex of cell .. .. — HERONA, p. 237.

*b*¹. Club of antennæ short, broad, flat, concave beneath .. .. — JUNONIA, p. 355.

*b*³. Fore wing: vein 9 from beyond middle of 7.

*a*⁴. Hind wing not tailed or lobed . — HESTINA, p. 239.

*b*⁴. Hind wing tailed or lobed or both.

*a*⁵. Hind wing: terminal margin with a broad lobe near tornus and a tail at apex of vein 5 . . — [p. 383. RHINOPALPA,

*b*⁵. Hind wing: terminal margin without lobe, but produced into a broad tail at apex of vein 1 — [p. 392. DOLESCHALLIA,

*b*². Hind wing: vein 7 at base as close to vein 8 as to vein 6 or closer.

*a*³. Fore wing: vein 9 from well before middle of 7, or if from middle of 7 then vein 11 anastomosed with vein 12 .. .. — EUTHALIA, p. 267

*b*³. Fore wing: vein 9 from beyond middle of 7.

*a*⁴. Palpi broad, with a dense clothing of scales ... . — ATHYMA, p. 314.

*b*⁴. Palpi narrower, with a clothing of loose lax scales with numerous fine hairs .. .. — NEPTIS, p. 319.

b'. Fore wing: vein 10 out of 7, not free.

*a*². Intermediate and hind tibiæ without a row of spines beneath ... ... — RAHINDA, p. 343.

*b*². Intermediate and hind tibiæ with prominent rows of spines beneath.

*a*³. Club of antennæ short, broad, abrupt. — HELCYRA, p. 228.

*b*³. Club of antennæ long, narrow, gradual. — [p. 240.

*a*⁴. Eyes hairy . . — PARHESTINA,

*b*⁴. Eyes not hairy.

*a*⁵. Hind wing: terminal margin biemarginate near tornus. .. — EURIPUS, p. 242.

*b*⁵. Hind wing: terminal margin entire — SEPHISA, p. 244.

Genus **CHARAXES.**

Nymphalis, *Latr.* (*nec Linn.*) *Hist. Nat. Crust. Ins.* xiv, 1805, p. 82.
Charaxes, *Ochsenheimer, Schmett. Eur.* iv, 1816, p. 18; *de N. Butt. Ind.* ii, 1886, p. 269; *Moore, Lep. Ind.* ii, 1893–96, p. 248; *Rothsch. & Jordan, Nov. Zool.* vii, 1900, p. 281.
Haridra, *Moore, Lep. Ceyl.* i, 1880, p. 30: *id. Lep. Ind.* ii, 1893–96, p. 229.

Type, *C. jason*, Linn., from Barbary.

Range. Palæarctic, Ethiopian, Indo-Malayan, and Indo-Australian Regions.

♂ ♀ "There is a great diversity in the shape of the outline of the wings of *Charaxes*. The outer margin (termen) of the fore wing varies from being nearly straight to being deeply concave. The hind wing is abdominally always somewhat, often considerably, longer than costally, and has in most species a triangular form." (*Rothsch. & Jord.*)

Typical fore wing: costa widely arched, serrated; apex produced; termen concave above vein 2, straight below; tornus rounded; dorsum straight; cell less than half length of wing, slenderly closed; upper discocellular very short, middle twice length of upper, lower long, erect; vein 4 from lower apex of cell, veins 8 and 9 out of 7, approximate at base, emitted from basal half of vein 7, 10 and 11 free. Hind wing: costa widely arched, apex very broadly rounded; termen straight, more or less scalloped, produced at veins 2 and 4 into long slender tails; tornal angle well-marked; dorsum long, longer than costal margin, straight; cell narrow, less than half length of wing, slenderly closed, lower discocellular very oblique; veins 3 and 4 from lower apex of cell, veins 5, 6, 7 and 8 at base nearly equidistant from one another. Antennæ about half length of fore wing, club long and gradual; palpi obliquely porrect, third joint short; eyes naked; body large and robust.

The venation varies somewhat in the Indian forms of the genus, especially as regards the point of origin of veins 8 and 9 in the fore wing.

Key to the forms of Charaxes.

A. Basal area of wings on upperside bright chestnut-brown ... ... — *C. durnfordi*, race *nicholi*, p. 210.
B. Basal area of wings on upperside fulvous or ochraceous.
  a. Costal margin on underside of fore wing not silvery white.
    a'. With a postdiscal more or less lunular transverse band on upperside of fore wing.
      a^2. Ground-colour on underside of wings purplish tawny.
        a^3. A transverse discal short lunular black line on upperside of both fore and hind wing — *C. polyxena*, race *hemana*, p. 217.

b^3. No transverse discal black line on upperside of either fore or hind wing . . . . . *C. aristogiton*, p. 213.

b^2. Ground-colour on underside of wings ochraceous yellow.

a^3. Interspace between median two dark sinuous lines crossing hind wing on underside of a darker ochraceous than the ground-colour of wing; transverse sinuous lines crossing wings slender . . . . . *C. marmax*, p. 211.

b^3. Interspace between median two dark sinuous lines crossing hind wing on underside rich dark ochraceous chestnut; transverse sinuous lines crossing wings heavily marked *C. kahruba*, p. 212.

b' Without any distinct postdiscal, transverse, lunular band on upperside of fore wing.

a^2. Black terminal margin on upperside of fore wing very broad, occupying more than one-third of wing on dorsal margin.

a^3. Subterminal black band on upperside of hind wing broad and continuous . . . . . *C. psaphon*, p. 214.

b^3. Subterminal black band on upperside of hind wing narrower, broken into detached spots posteriorly . . Race *imna* *, p. 215.

b^2. Black terminal margin on upperside of fore wing narrower, scarcely occupying one-fourth of wing on dorsal margin.

a^1. Males without, females with a broad white or very pale fulvous discal band on upperside of fore wing.

a^4. Minute white spots traversing subterminal black band of spots on upperside of hind wing in centres of black spots †. . } *C. polyxena*, race *hierax=watti*, p. 216.

b^4. Minute white spots traversing subterminal black band of spots on upperside of hind wing placed on inner margin of black spots } Var. *harpax*, p. 215. Var. *corax*, p. 215.

b^3. Both sexes with a broad white or very pale fulvous discal band on upperside of fore wing. } Var. *agna*, p. 216.

a^4. This discal band not extended below vein 5 on hind wing } Var. *hipponax=jalinder*, p. 215.

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* *C. psaphon* and its race *imna* resemble each other so closely, that the above differences only hold good in typical forms.

† The white spots are often absent or indistinct on the upperside, but can be readily made out by holding the insect up to the light, as noted by Messrs. Rothschild and Jordan.

*b*¹. This band extended to vein 4 or even to vein 3 on hind wing	Var. *pleistonax*= *khimalara*, p. 215. Var. *khasianus*, p. 215.
b. Costal margin on underside of fore wing silvery white	*C. distanti*, p. 210.
C. Basal area on upperside of wings black	*C. fabius*, p. 217.

237. **Charaxes durnfordi**, *Distant, Entomologist*, xvii, 1884, p. 191.

Race nicholi (Pl. VIII, fig. 57).

Charaxes nicholii, *Grose Smith* (Nymphalis), *A. M. N. H.* (5) xviii, 1886, p. 150; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 246, pl. 182, fig. 2 ♂; *de Nicéville, Jour. Bomb. N. H. Soc.* xii, 1899, p. 330.
Charaxes durnfordi nicholi, *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 288, pl. 6, fig. 1.

♂ *Upperside* brown, the basal third of fore and nearly the basal half of the hind wing chestnut-brown, the remainder of the fore wing dark brown, of the hind wing white suffused inwardly with pale greenish yellow. Fore wing with a very incomplete discal and a more complete postdiscal transverse series of more or less crescentic white markings, followed by a few terminal white specks. Hind wing: the inner margin of the white area irregularly and deeply crenulate, the brown on the basal half projecting along the veins into the white area; a subterminal row of white-centred brown ocelli without outer rings, increasing in size anteriorly, and a terminal series, often absent, of slender sagittate brown markings on the veins, the points outwards, followed by an anticiliary exceedingly slender brown line. Cilia, fore and hind wing, white alternated with brown. *Underside* purplish brown; a broad discal irregular black-edged darker purple-brown sinuous band across both wings, paler on the hind wing than on the fore, followed by a more or less continuous line of dark lunules, and beyond it a postdiscal series of slightly yellowish-brown lunular markings, bordered outwardly on fore wing by pale purple, on hind wing by the series of ocelli of the upperside showing faintly through. Antennæ blackish brown finely annulated with white; head, thorax and abdomen chestnut-brown; purplish brown beneath.

♀ unknown.

Exp. ♂ 100–104 mm. (3·98–4·10″).

Hab. Recorded within our limits from Tenasserim and the Karen Hills near Taungoo.

238. **Charaxes distanti**, *Honrath, Berl. ent. Zeitsch.* xxix, 1885, p. 277; *Dist. Rhop. Malay.* (*App.*) 1886, p. 434, pl. 36, fig. 2 ♂; *de N. & Martin, J. A. S. B.* 1895, pt. ii, p. 438; *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 309.

♂ *Upperside* bright ochraceous, ground-colour of terminal margins of wings broadly of a darker shade. Fore wing with the following chestnut-red markings: a line on each side of the discocellulars, transverse small lunules or bars near

bases of interspaces 4, 5 and 6, and a terminal series of large inwardly conical spots in the interspaces from 1 to apex of wing, prolonged almost to the base in interspace 7. Hind wing with a subterminal row of minute dark spots, tornal two spots inwardly white, and a terminal very narrow dark ochraceous band. *Underside*: ground-colour similar; basal half of both fore and hind wing crossed by several sinuous broken slender dark lines, followed by a postdiscal ill-defined lunular line. Fore wing: the basal half of the costal margin beyond vein 12 conspicuously snow-white; a subterminal narrow irregular band lilacine white. Hind wing also with a subterminal lilacine transverse band, but much broader than on the fore wing, margined inwardly by a black line and traversed outwardly by a series of small somewhat hastate white spots, all but the apical two with minute black tips; a dark ochraceous narrow terminal band as on the upperside. Antennæ dark brown; head, thorax and abdomen bright ochraceous above and below.—♀. Similar, disc of the wings paler, the white subterminal spots on the underside of the hind wing larger and more clearly defined.

Exp. ♂ ♀ 92-104 mm. (3·65–4·1″).

Hab. Within our limits I procured this beautiful *Charaxes* in the Thaungyin Valley, and it has been recorded from the Dawnat range in Tenasserim. It occurs also in the Malay Peninsula, Sumatra and Borneo.

239. **Charaxes marmax** (Pl. VIII, fig. 55), *Westwood, Cab. Orient. Ent.* 1848, p. 43, pl. 21, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 281; *Elwes, Trans. Ent. Soc.* 1888, p. 368; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 233, pl. 170, figs. 1, 1 *a*–1 *c*, ♂ ♀; *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 312.

Charaxes lunawara, *Butler, Lep. Exot.* 1872, p. 99, pl. 37, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 282; *Elwes, Trans. Ent. Soc.* 1888, p. 368.

♂ *Upperside* rich ochraceous tawny. Fore wing: a black subcostal spot at the discocellulars and a pale chestnut line on either side of them; a very short slightly curved discal narrow band from vein 7 to vein 5, a postdiscal broad oblique band from costa to vein 6, and a broad terminal band from apex to vein 1, jet-black; the extreme margin of the termen touched interruptedly with fulvous tawny; the postdiscal band continued as a curved lunular narrow chestnut band to vein 1, and the black at apex continued along the costa, joining the postdiscal band above. Hind wing: costal margin broadly pale yellow, terminal third of wing of a darker tawny shade than the base, a short discal broken black line from costa to vein 6; a subterminal slightly curved series of outwardly pointed black spots, increasing in size to interspace 6, the tornal two centred with white; the terminal margin somewhat broadly dark reddish brown. *Underside* bright ochraceous yellow. Fore and hind wings crossed by the usual sinuous black lines, the postdiscal line outwardly lunular. Fore wing: the discocellulars defined by dark lines, the apex with two

short white streaks continued as a line of obscure white dots to interspace 1. Hind wing: the space between base of wing and subbasal dark line and between the median two dark lines darker ochraceous than the ground-colour; the postdiscal lunular line with a dark shade beyond, traversed by a series of heavy slate-black lunules, and white, black-tipped obscure dots; the terminal reddish-brown band as on the upperside. Antennæ black annulated with white; head, thorax and abdomen tawny; beneath paler, the palpi white.— ♀. Similar, the ground-colour on the disc paler. Fore wing: the short discal band very broad, continued as a series of lunules in the interspaces to vein 1; the postdiscal lunular line slender above, not joined on to the black on the termen, and sometimes black, sometimes chestnut-coloured; the black on the margin formed into a subterminal series of large black inwardly conical spots, the termen beyond dusky ochraceous. Hind wing: the subterminal row of black spots with white central transverse very short lines. *Underside* much as in the ♂, but the slate-black lunules on the hind wing form a broad obliquely placed line; the subterminal series of white spots larger and more conspicuous both on fore and hind wing; upper tail spatulate, much longer than in ♂

Exp. ♂ ♀ 96–120 mm. (3·8–4·72″).

Hab. Sikhim; Assam; Burma and Tenasserim.

240. **Charaxes kahruba**, *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 235, pl. 171, figs. 1, 1 *a*–1 *c*, ♂ ♀; *Butler*, *Journ. Linn. Soc., Zool.* xxv, 1896, p. 398; *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 310.
Charaxes lunawara, *de N.* (*nec Butler*) *Butt. Ind.* ii, 1886, p. 282; *id.* (*id.*) *in Risley's Gazetteer of Sikhim*, 1894, p. 148.

"Differs from the closely allied species constantly in a number of characters, and is most easily recognized by the strongly pronounced markings of the underside." (*Rothsch. & Jord.*)

♂ ♀ Closely allied to and resembling *C. marmax*, Westw. On the upperside in the ♂ two points of difference are easily observable and seem to be constant—the short oblique portion of the postdiscal band on the fore wing near the costal margin is narrower than in *C. marmax*, and the broad black terminal band on fore wing which in *C. marmax* terminates at vein 1, in *kahruba* extends to the dorsal margin. *Underside*: the ground-colour paler yellow than in *C. marmax*, the transverse black lines crossing both wings more sinuous and more heavily marked, the space between the sinuous transverse lines immediately below apex of cell of fore wing, and the space between the continuations of the same lines on the hind wing, rich dark ochraceous chestnut. On both fore and hind wing the space beyond the lunular, postdiscal, transverse line heavily marked with ochraceous chestnut, especially on the hind wing; the subterminal line of silvery spots on the fore wing forms a continuous band; the terminal narrow reddish-brown band on the hind wing very strongly marked. In the female

the differences on the underside from *C. marmax* are similar in character and as conspicuous and marked as in the male.

Exp. ♂ ♀ 90–115 mm. (3·55–4·5″).

Hab. The Himalayas from Kumaun to Sikhim; Assam hill-ranges; Arrakan and Tenasserim.

241. **Charaxes aristogiton**, *Felder, Nov. Reise, Lep. Rhop.* 1867, p. 445; *de N. Butt. Ind.* ii, 1886, p. 282; *Elwes, Trans. Ent. Soc.* 1888, p. 368; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 236, pl. 173, figs 1, 1 *a*, ♂ ♀; *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 313.

Charaxes desa, *Moore, P. Z. S.* 1878, p. 832; *id.* (Haridra) *Lep. Ind.* ii, 1893–96, p. 235, pl. 172, figs. 1, 1 *a*–1 *c*, ♂ ♀

Haridra adamsoni, *Moore, Lep. Ind.* ii, 1893–96, p. 236, pl. 173, figs. 2, 2 *a*, ♂.

♂ ♀ Closely allied to and resembling *C. marmax*. ♂ *Upperside* differs as follows: the postdiscal transverse band on the fore wing black throughout, much more heavily marked, and above vein 4 fused with the black terminal band, traversed by a subterminal band of lunules of the tawny ground-colour, which decrease in size towards the costal margin. On the hind wing the subterminal black spots often form a continuous band, decreasing in width posteriorly and separated only by the fulvous veins; in many specimens, however, the posterior spots are separate, but the apical two spots are *always* fused together and each bears outwardly a more or less conspicuous white spot. *Underside*: the ground-colour differs from that in *C. marmax* in being a purplish tawny with no trace of yellow, but suffused with an iridescent chalybeous tint; the usual slaty-black transverse highly sinuous lines are present; a series of subterminal obscure dark spots anteriorly on the fore wing; on the hind wing the oblique postdiscal slaty-black lunular line better defined anteriorly than in *C. marmax*. — ♀ *Upperside*: the postdiscal transverse lunular band on the fore wing more heavily marked throughout and much broader anteriorly than in *C. marmax* ♀ *Underside*: ground-colour purplish tawny as in the ♂ but much paler, the basal half of both fore and hind wing a shade darker than the terminal half, the oblique postdiscal slate-black band on the hind wing broad and outwardly diffuse.

Exp. ♂ ♀ 94–114 mm. (3·7–4·45″).

Hab. Sikhim; Bhutan; Sylhet; Assam; Cachar; Burma; Tenasserim.

Vars. *desa* and *adamsoni*, Moore, from Tenasserim differ slightly in the width and in the direction of the inner edge of the black terminal band, characters which are very variable even in the forms from Sikhim.

242. **Charaxes psaphon** (Pl. VIII, fig. 56), *Westwood, Cab. Orient. Ent.* 1848, p. 43, pl. 21, figs. 1, 2, ♂; *Moore* (Haridra), *Lep. Ceyl.* i, 1880, p. 30, pl. 15, fig. 2 ♂; *de N. Butt. Ind.* ii, 1886, p. 284; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 230, pl. 168, figs. 1, 1 *a*–1 *c*, ♂ ♀; *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 336.
Haridra serendib, *Moore, Lep. Ceyl.* i, 1880, p. 30, pl. 15, fig. 3 ♀.

Race imna.

Charaxes imna, *Butler, Trans. Ent. Soc.* 1870, p. 122, pl. 4, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 285; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, p. 278, pl. A, figs. 4, 4 *a*, larva & pupa; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 231, pl. 169, figs. 1, 1 *a*–1 *c*, ♂ ♀, larva & pupa.
Charaxes psaphon imna, *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 337.

♂. *Upperside* deep reddish fulvous. Fore wing: a short bar defining the discocellulars and the apical half jet-black. Hind wing: a short sinuous black line from the costa to vein 7, a broad posteriorly much narrower subterminal black patch from apex of wing to interspace 3, with a black detached spot below it in interspace 4, and two inwardly white-margined black spots at tornus; the fulvous terminal margin beyond the black patch very narrow at apex, gradually widening to the tail at apex of vein 4. *Underside* purplish brown, suffused with a shining chalybeous tint in parts. Fore and hind wings crossed transversely by a number of highly sinuous fine dark purple lines more or less narrowly margined with white; the interspace between the outer two of these lines forms an irregular discal band, bordered outwardly towards the tornal area in the fore wing, and along its whole length in the hind wing, by a dark reddish-brown shade; this is exteriorly defined on the latter wing by a broad dark purplish-black line, beyond which is a minute row of white, succeeded by a row of black dots; terminal portion of both fore and hind wing ochraceous brown.—♀. *Upperside*: ground-colour similar; a broad slightly oblique white discal band transversely crossing fore wing and continued on hind wing to vein 6, posteriorly both on fore and hind wing suffused with pale fulvous, with some of the dark markings of the underside showing through on the white ground as pale blue lunules; the broad black terminal portion of fore wing and the black subterminal patch on the hind wing much as in the ♂, but the former with a fulvous diffuse spot near the tornus, the latter continued in detached spots to the tornal angle and traversed by a series of small white spots; the terminal margin of the hind wing dark reddish brown; the tail at apex of vein 4 spatulate. *Underside* paler than in the ♂, but similarly crossed by several highly sinuous dark purple lines; the discal band pale yellow, the dark shading beyond it inwardly bordered with yellow, forming a sinuous band from apex of fore to tornus of hind wing; the dark reddish-brown terminal margin is on the fore wing traversed by an obscure ochraceous line and on the

hind wing bordered inwardly by a band of the same colour. Antennæ black; head, thorax and abdomen reddish fulvous; paler beneath.

Exp. ♂ ♀ 92–106 mm. (3·63–4·2″).

Hab. Ceylon.

Race **imna**.—"♂. The black colour in most specimens a little more restricted than in Ceylonese examples, tail shorter on an average, submedian and median bars less obviously bordered white. ♀ Wings above brighter tawny orange than in *psaphon*, discal band of fore wing posteriorly more extensively shaded over with orange-ochraceous; postdiscal tawny interspaces of fore wing more often developed than in the Ceylonese form, the outer edge of the wing often somewhat tawny." (*Rothschild & Jordan.*)

Exp. ♂ ♀ 92–110 mm. (3·63–4·35″).

Hab. Lower Bengal to South India.

Larva. "Of the usual shape (*i. e.* slug-shaped); head very broad, outer pair of horns longest, last segment flat, square, and ending in two points; last pair of legs almost aborted; colour rich dark green, with a large semicircle of pinkish-white in the middle of the back and a yellow lateral line; horns and sides of face rusty-brown." (*Davidson & Aitken.*) Food-plant, *Aglaia roxburghiana.*

Pupa. "Thick, cylindrically oval; dorsum much arched; head obtuse; colour green." (*Moore.*)

It is very doubtful whether *imna* can be kept separate from *psaphon* even as a race, the points of difference are so very slight.

243. **Charaxes polyxena**, *Cramer* (Papilio), *Pap. Exot.* i, 1779, pl. 54, figs. A, B, ♀

Race hierax.

Charaxes hierax, *Felder*, *Novara Reise*, *Lep. Rhop.* 1867, p. 442; *de N. Butt. Ind.* ii, 1886, p. 290; *Elwes*, *Trans. Ent. Soc.* 1888, p. 369; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 239, pl. 176, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Charaxes hipponax, *Felder*, *t. c.* p. 443; *de N. Butt. Ind.* ii, 1886, p. 290; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 242, pl. 178, figs. 1, 1 *a*, ♂ ♀.

Charaxes pleistonax, *Felder*, *t. c.* p. 443; *de N. Butt. Ind.* ii, 1886, p. 292; *Elwes*, *Trans. Ent. Soc.* 1888, p. 369; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 244, pl. 181, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Charaxes corax, *Felder*, *t. c.* p. 444; *de N. Butt. Ind.* ii, 1886, p. 287; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 238, pl. 175, figs. 1, 1 *a*, 1 *b*, larva & pupa, ♂ ♀.

Charaxes harpax, *Felder*, *t. c.* p. 444; *de N. Butt. Ind.* ii, 1886, p. 288, pt.; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 237, pl. 174, figs. 1, 1 *a*, ♂ ♀.

Charaxes khimalara, *Butler*, *Lep. Exot.* 1872, p. 97, pl. 37, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 292.

Charaxes khasianus, *Butler*, *Lep. Exot.* 1872, p. 98, pl. 37, fig. 6; *de N. Butt. Ind.* ii, 1886, p. 293; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 245, pl. 182, figs. 1, 1 *a*, ♂ ♀

Charaxes jalinder, *Butler*, *Lep. Exot.* 1872, p. 98, pl. 37, fig. 4;

de N. Butt. Ind. ii, 1886, p. 291; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 243, pl. 179, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Charaxes hindia, *Butler, Lep. Exot.* 1872, p. 99, pl. 37, fig. 5; *de N. Butt. Ind.* ii, 1886, p. 291; *Moore* (Haridra jalinder, seasonal form), *Lep. Ind.* ii, 1893–96, p. 244, pl. 180, figs. 1, 1 *a*, ♂.

Charaxes agna, *Moore, P. Z. S.* 1878, p. 832; *de N. Butt. Ind.* ii, 1886, p. 289.

Charaxes watti, *Butler, P. Z. S.* 1880, p. 148, pl. 15, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 287.

Charaxes polyxena hierax, *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 331.

Race hemana.

Charaxes bernardus, *Kollar* (nec *Fabr.*), *in Hügel's Kaschmir*, iv, 2, 1844, p. 434, pl. 11, fig. 2 ♂

Charaxes hemana, *Butler, Trans. Ent. Soc.* 1870, p. 122, pl. 4, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 283; *Moore* (Haridra), *Lep. Ind.* ii, 1893–96, p. 240, pl. 177, figs. 1, 1 *a*, 1 *b*, ♂ ♀

Charaxes polyxena hemana, *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 334.

Race **hierax**, Felder.— ♂ *Upperside* rich fulvous tawny. Fore wing with the discocellulars defined with black on either side; outer portion of the wing from a little beyond midway on the costa to a point on the apical third of the dorsum jet-black, the inner margin of the black portion below vein 2 diffuse and showing a tawny obscure spot. Hind wing with a subterminal band of black spots, decreasing in size towards the tornus, the apical three fused together and studded with two small white dots, the posterior spots separate, outwardly acutely angular. *Underside* purplish tawny, suffused with iridescent chalybeous broadly on apex and along a subterminal band on the fore and over the whole of the hind wing except on a postdiscal oblique band and along the terminal margin. Fore and hind wings with the usual transverse highly sinuous black lines; the transverse discal interspace between the outer two lines somewhat irregularly margined with bright ochraceous on the inner side; postdiscal and terminal sinuous bands dark ochraceous brown, the former broad on the fore, narrowing posteriorly on the hind wing; a subterminal series of white dots on the hind wing, the posterior five or six each margined outwardly with a blue and then a black speck. Antennæ black; head, thorax and abdomen fulvous; beneath paler, the palpi white. — ♀ *Upperside:* tawny fulvous, paler than in the ♂, the basal area of both fore and hind wing with a brownish tint. Fore wing: a broad white discal transverse band, the terminal portion of the

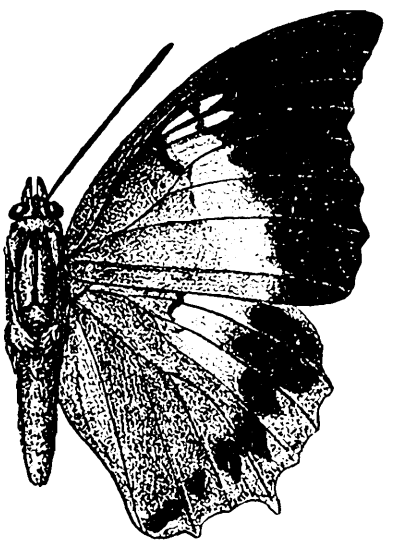

Fig. 39.—*Charaxes polyxena*, race *hierax*, ♂.

wing black traversed inwardly by an irregular incomplete row of yellowish-white lunules. Hind wing as in the ♂, but the white discal band of fore wing continued on to vein 4 somewhat tinted with yellow posteriorly, the black subterminal band or series of spots as in the ♂, but traversed throughout its length by a series of white spots. *Underside* much as in the ♂ but paler, the discal band outwardly shaded with ochraceous.

Exp. ♂ ♀ 92–118 mm. (3·61–4·65″).

Hab. Sikhim; Bhutan; Sylhet; Assam; Manipur; throughout the hills of Burma and Tenasserim.

A highly variable race of the Chinese *C. polyxena*. I have followed Messrs. Rothschild and Jordan in considering the forms with white or pale discal bands as mere varieties of *C. polyxena* race *hierax*. The differences between the chief varietal forms are briefly noticed in the key.

Race **hemana**, Butler.— ♂ *Upperside* bright ochraceous. Fore wing with dark chestnut lines defining the discocellulars; a short transverse discal series of slender chestnut lunules in interspaces 2–4; a postdiscal transverse, somewhat diffuse, lunular, dusky fascia from vein 5 to dorsum; the apex broadly above vein 6, and a subterminal broad band black, the former margined on the inner side with two subquadrate spots, and the latter with a series of detached lunules of the ochraceous ground-colour. Hind wing: the outer third darker ochraceous, traversed by a subterminal black band or series of spots exactly as in *hierax*; and a short transverse lunular dark chestnut line not extending below vein 5. *Underside* as in *hierax* but paler. Antennæ dark chestnut-brown; head, thorax and abdomen pale ochraceous brown; beneath paler, palpi white.— ♀ *Upperside* very bright ochraceous. Fore wing: an irregular short series of broad black lunules beyond apex of cell, bordering the discocellulars and continued to vein 1; followed by a broad discal interspace or band, white anteriorly and bearing a subcostal short black bar, a postdiscal black zigzag line below vein 5 and an anteriorly broadening black subterminal wide band; a series of triangular spots of the ground-colour are included between the postdiscal line and subterminal band; lastly a narrow band on the termen of dark ochraceous brown. Hind wing with a short discal lunular line, and subterminal band or series of spots as in the ♂ *Underside* pale yellow suffused with pale purple on the basal area and along a broad subterminal band; otherwise the markings in character similar to those in the ♂ but much paler.

Exp. ♂ ♀ 94–100 mm. (3·72–3·95″).

Hab. The N.W Himalayas; Mussoorie; Kumaun; Nepal.

244. **Charaxes fabius**, *Fabr.* (Papilio) *Spec. Ins.* ii, 1781, p. 12; *Moore, Lep. Ceyl.* i, 1880, p. 29, pl. 15, fig. 1; *de N. Buct. Ind.* ii, 1886, p. 280; *Elwes, Trans. Ent. Soc.* 1888, p. 368; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 278, pl. A, figs. 3, 3 *a*, larva & pupa; *Moore, Lep. Ind.* ii, 1893–96, p. 249, pl. 183, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva & pupa.

Charaxes fabius sulphureus et fabius fabius, *Rothsch. & Jord. Nov. Zool.* vii, 1900, p. 468.

♂ ♀ *Upperside* black; basal area of wings suffused with brown. Fore and hind wings crossed by a conspicuous sinuous discal band of sulphur-yellow spots, separate on fore, continuous on hind wing, and a subterminal series of similar but smaller spots, often incomplete towards apex of fore wing. The spots of the discal band increase in size posteriorly on the fore wing, the spot in interspace 1 being the largest; on the hind wing they are subequal, but the spots in interspaces 7 and 8 are conspicuously paler, almost white. Fore wing, in addition, with a sulphur-yellow spot beyond lower apex of cell, and a costal spot obliquely beyond, traversed by veins 8 and 9. Hind wing with an outer subterminal incomplete line of sulphur spots posteriorly, ending in a larger blue spot at the tornal angle. *Underside* lilacine grey; basal area with two series of broken interrupted black lines; the discal band of spots and spots beyond apex of cell on fore wing as on the upperside, but white, diffuse outwardly and margined on the inner side by short black lines. This is followed by an irregular sinuous transverse row of ochraceous spots surrounded by black shading, crossing both fore and hind wing; on the fore wing the lower spots are margined, beyond the black, with diffuse white, and on the hind wing the posterior spots are margined inwardly by white lunules. The hind wing bears in addition an inner subterminal series of white dots, an outer subterminal series of ochraceous spots lined inwardly with black, followed by a few white spots, and a posterior terminal black line.

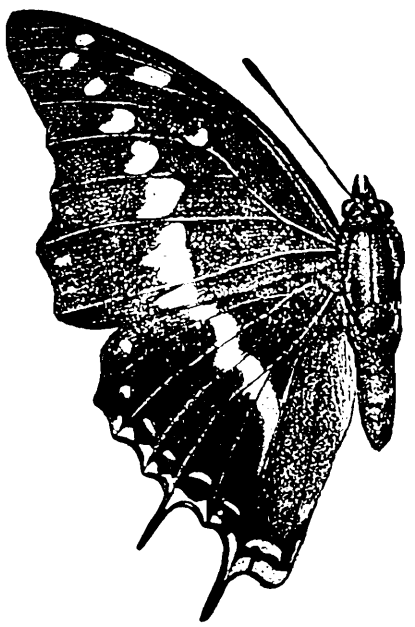

Fig. 40.
Charaxes fabius, ♂ ½.

Exp. ♂ ♀ 82–94 mm. (3·21–3·7″).

Hab. The Himalayas from Chamba to Sikhim; Oudh; Bhutan; Central Provinces; W India; Bombay; S. India; Ceylon; Burma and Tenasserim.

Larva. "Bluish green, with a small semicircle of white in the middle of the back." (*Davidson & Aitken.*)

Pupa. "Like that of *C.* (*Eulepis*) *athamas* but uniformly green." (*Iidem.*)

Messrs. Rothschild and Jordan have separated the Burmese form as a subspecies. The discal band of spots in this form is, as a rule, of a paler yellow than in the Continental form.

Genus **EULEPIS.**

Charaxes, pt., *Ochsenheimer, Schmett. Eur.* iv, 1816, p. 18; *Felder, Ein Neues Lep.* 1861, p. 39; *de N. Butt. Ind.* ii, 1886, p. 269.
Eulepis, *Moore, Lep. Ceyl.* i, 1880, p. 29.

Type, *E. athamas*, Drury, from India.

Range. Indo-Malayan Region.

♂ ♀ Closely allied to *Charaxes*, but can at once be distinguished by the cell of the hind wing being entirely open. Other minor points of difference are "the costal edge of the fore wing is never so highly specialized as in the large species of *Charaxes*" (*Rothschild & Jordan*); the colour-pattern is absolutely different; and there are considerable differences in the genitalia, the *Eulepis* group having the genitalia more uniform, *Charaxes* more variable.

Key to the forms of Eulepis.

A. Ground-colour on upperside black or deep indigo-blue.
  a. Discal area or band on upperside of fore and hind wings not margined outwardly with blue.
    a' Discal area or band pale yellow.
      a^2. Fore-wing underside: inner black margining line of chocolate-brown band bordering discal area on inner side very oblique, terminating on subcostal vein close to upper apex of cell. — *E. athamas*, p. 220.
      b^2. Fore-wing underside: inner black margining line of chocolate-brown band bordering discal area on inner side straighter, terminating about middle of subcostal vein, remote from upper apex of cell .. .. — Var. *agrarius*, p. 221.
    b'. Discal area or band pale greenish white. — *E. arja*, p. 222.
  b. Discal area or band on upperside of fore and hind wings margined outwardly with blue. — *E. schreiberi*, p. 222.

B. Ground-colour on upperside yellowish white.
  a. Fore-wing upperside with only one or two, often without white spots on black apex of wing; no postdiscal row of spots.
    a' Fore-wing underside: a prominent chocolate-brown band on inner side of discal area.
      a^2. Black on terminal margin on upperside of fore wing decreasing in width towards tornus .. .. .. — *E. jalysus*, p. 223.
      b^2. Black on terminal margin on upperside of fore wing not decreasing in width towards tornus . .... — *E. moori*, p. 224.
    b' Fore-wing underside with no chocolate-brown band .. ... — *E. delphis*, p. 224.
  b. Fore-wing upperside with one or two prominent transverse postdiscal series of white spots.
    a' One transverse postdiscal series of white spots — *E. dolon*, p. 226.

b'. Two transverse postdiscal series of white spots.

*a*². A short, yellowish-brown, oblique, black-margined band on underside of fore wing from base of vein 2 to upper apex of cell defining discocellulars . . . . . *E. nepenthes*, p. 226.

*b*². A short, brown, oblique, black-margined band on underside of fore wing from base of vein 2 to lower apex of cell, there forked, upper branch defining discocellulars, lower bounding the basal portion of vein 4. *E. eudamippus*, p. 227.

245. **Eulepis athamas**, *Drury* (Papilio), *Ill. Exot. Ent.* i, 1770, p. 5, pl. 2, fig. 4; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 275; *Elwes* (Charaxes), *Trans. Ent. Soc.* 1888, p. 367; *Moore, Lep. Ind.* ii, 1893–96, p. 252, pl. 184, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva & pupa *Rothsch. & Jord. Nov. Zool.* v, 1898, pl. 10, figs. 1–5 & 7–11, & pl. 11, figs. 1–12; vi, 1899, p. 245.
Charaxes bharata, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 438.
Charaxes samatha, *Moore, P. Z. S.* 1878, p. 831; *id.* (Eulepis) *Lep. Ceyl.* i, 1880, p. 29, pl. 14, figs. 2, 2 *a*, 2 *b*, ♂, larva & pupa.
Eulepis hamasta, *Moore, P. Z. S.* 1882, p. 238.
Charaxes agrarius, *Swinhoe, P. Z. S.* 1886, p. 425, pl. 40, fig. 3 ♂

♂ ♀ *Upperside* black. Fore and hind wings with a discal broad transverse area from below vein 4 in fore wing to vein 2 on hind wing, a moderately large spot in interspace 5, a minute preapical dot beyond in interspace 6 on fore wing, and a subterminal row of spots with two or three spots beyond them on the tornal angle of the hind wing, pale yellow, sometimes with an ochraceous, sometimes with a greenish tinge. The discal area on the fore wing nearly as broad in interspace 3 as on the dorsum, on the hind wing narrowing to an acute point on vein 2 at two-thirds of its length from base of wing. Tails touched with bluish grey. *Underside* with the discal transverse area and spot in interspace 5 as on the upperside; base and costal margin of the fore wing to apex, and base and dorsal margin of the hind wing broadly lilacine brown, on fore wing with two small black spots near base. Bordering the transverse discal area on the inner side, where it is margined with black lines, and above, is a broad chocolate curved band, continued more narrowly along the outer side of the discal area; beyond this on the fore wing is a concave series of dusky black lunules, on the hind wing the band itself is traversed by a line of obscure pale lunules; finally,

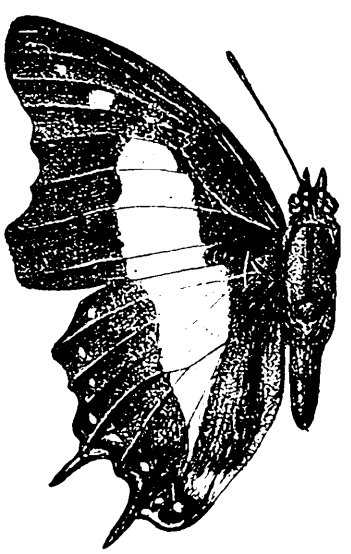

Fig. 41.
Eulepis athamas. ½.

on the hind wing there is a subterminal series of internally white-bordered black spots followed by an obscure ochraceous terminal line, and above the tornal angle a slender transverse black line from vein 1 to dorsal margin.

Exp. ♂ ♀ 64–85 mm. (2·5–3·35″).

Hab. The Himalayas from Kashmir to Sikhim; hills of Central India and Eastern Ghats; Western and Southern India; Ceylon; Assam; Cachar; Burma; Tenasserim; extending far into the Malayan Subregion.

Larva. "Elongated, slug-shaped, dark green; head large, wide and surmounted by four divergent curved fleshy spinous processes; anal segment with two short naked terminal points; the segments with an oblique yellowish-white lateral stripe, most prominent on the 7th, 9th and 11th segments, and beneath these a lower series of small white spots." (*Moore.*)

Pupa. "Thick, cylindrically oval; green streaked with white; dorsum and thorax convex; head broad, truncated, obtusely pointed in front." (*Moore.*)

"The species exhibits considerable seasonal variation, especially in South and North India; for we find that the specimens obtained in March and April in North and North-west India have the discal band much widened and the underside pale, while the individuals flying in May and June have the band narrower, and those found in Sikhim from August to November have it narrowest. In South India there are two well distinguished forms, the one corresponding to the spring form of North India, but with the band less broad and representing most likely the dry-season brood, respectively a form that inhabits dry districts, and the second having the band narrower and the underside brighter in tint. In Burma broad-banded, pale specimens occur also, besides narrow-banded ones The differences exhibited by the pale and the narrow-banded forms have often been treated as being of specific value; for instance, the pale South Indian form has been described as *E. agrarius*, while the darker form is referred to as *E. samatha*; the North Indian spring form has been designated as *E. hamasta*, the form May to June as *E. bharata*, and the summer form as *E. athamas* As the species is so susceptible to climatical differences, it is self-evident that the individuals caught in the same month at the same locality, but in different years, are not always identical in the width of the band, and that, further, in different localities of the same country one may meet with somewhat different forms of *athamas* in one year, and identical forms in another year. This one must bear in mind in working with the individuals of *athamas* from a certain country." (*Rothschild & Jordan.*)

Messrs. Rothschild and Jordan in their monograph of *Charaxes* and allied Prionopterous genera divide the forms of *athamas* occurring within our limits into two subspecies—(1) *E. athamas athamas*, the Northern and Eastern race, with three seasonal forms; and (2) *E. athamas agrarius*, the Southern Indian and

Ceylon race, with two seasonal forms. The differences between the subspecies seem to me not sufficient to necessitate detailed descriptions in the present work.

Following Messrs. Rothschild and Jordan, I keep, with much doubt, however, the next form separate from *athamas*, of which it is possibly only a dimorph.

246. **Eulepis arja,** *Felder* (Charaxes), *Novara Reise, Lep. Rhop.* 1867, p. 438; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 278; *Elwes* (Charaxes), *Trans. Ent. Soc.* 1888, p. 368; *Moore, Lep. Ind.* ii, 1893–96, p. 258, pl. 186, figs. 1, 1 *a*, ♂ ♀; *Rothsch. & Jord. Nov. Zool.* v, 1898, pl. 10, fig. 6 ♂; vi, 1899, p. 244.

♂ ♀. Closely resembles *E. athamas*. Can be recognized at once by the discal area being conspicuously white or pale greenish white, never yellowish, in either dry- or wet-season forms. These latter differ slightly from each other in the width of the area or band.

Exp. ♂ ♀ 74–92 mm. (2·92–3·61″).

Hab. Sikhim; Assam; Burma, and Tenasserim.

247. **Eulepis schreiberi** (Pl. VIII, fig. 58), *Godart* (Nymphalis), *Encycl. Méth.* ix. *Suppl.* 1823, p. 825; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 274; *Moore, Lep. Ind.* ii, 1893–96, p. 261, pl. 188, figs. 1, 1 *a*; *Rothsch. & Jord. Nov. Zool.* v, 1898, pl. 12, figs. 1, 2, & 39; vi, 1899, p. 220.

Eulepis wardii, *Moore, Lep. Ind.* ii, p. 262, pl. 188, figs. 2, 2 *a*, ♂.

♂ *Upperside* black, glossed slightly with dull indigo-blue, or, in some specimens, light green at the base of the wings. Fore and hind wings with a broad white discal bar from interspace 4 in fore wing to just below the apex of the median vein in the hind wing, narrowing on the latter wing to a point. This bar has, on the outer side on both fore and hind wings, an irregular border of smalt-blue, which is narrowest anteriorly and broadens posteriorly respectively on both fore and hind wings. Fore wing with, in addition, a white rectangular spot in interspace 5 and a small whitish speck above it. Hind wing with a subterminal row of small white dots, a terminal row of deep ochraceous spots, and some smalt-blue markings on the tails and margins near the tornal angle. *Underside* pearly white, broadly brownish pink along the dorsal margin of hind wing. Fore wing: two black spots at base of cell; a broad olive-green band edged on both sides with black, followed by a discal bluish-white band, as on the upperside, and beyond it by a transverse series of black lunules placed on a purplish ground; the lunule in interspace 1 half obliterated by a large black spot; apex and terminal margin broadly olive-green. Hind wing: a broad black-edged transverse olive-green band in continuation of that on the fore wing, terminating on vein 1, followed by a broad discal, posteriorly narrowing, white bar as on the upperside. Beyond this a postdiscal series of deep Indian-red lunules, placed on an olive-green ground, and margined on the inner side by an interrupted broad black line; finally, a sub-

terminal narrow green band and terminal ochraceous lunules. Tails black touched with smalt-blue; above tornal angle a black line from vein 1 to dorsum. Antennæ, head, thorax and abdomen black; thorax and abdomen on the sides and beneath whitish.—♀ Differs very slightly from the ♂; but can be distinguished at once by the greater width of the transverse discal band, and also by the two spots above it being larger and joined on to the band.

Exp. ♂ ♀ 92–116 mm. (3·62–4·58″).

Hab. South India; Assam; Burma; Tenasserim to Java in the Malayan Subregion.

The above description is of the South Indian form (*Eulepis wardi*, Moore; *E. schreiber wardi*, Rothsch. & Jord.). The Assam form (*E. schreiber assamensis*, Rothsch. & Jord.) typically wants the spots in interspaces 6 and 7 of the fore wing, but a specimen from Shillong in the British Museum has these spots, only they are placed prominently in échelon with one another as in the form from the Malay Peninsula, Borneo and Sumatra. Burmese and Tenasserim specimens resemble the Assam form.

Larva green, with a yellow band on 7th segment. Head with four curved and tuberculated processes.

Pupa green, with a longitudinal row of red dots on each side.

248. **Eulepis jalysus**, *Felder* (Charaxes), *Novara Reise, Lep. Rhop.* 1867, p. 438, pl. 59, fig. 59; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 278, footnote; *Moore, Lep. Ind.* ii, 1893–96, p. 259, pl. 187, figs. 1, 1 *a*, ♂; *Rothsch. & Jord. Nov. Zool.* vi, 1899, p. 261, pl. 7, fig. 7 ♂.

♂ *Upperside* greenish or yellowish white. Fore wing: base and cell irrorated with bluish and dusky black scales; costal margin black above apex of cell and above vein 4 beyond cell; the whole apex broadly black, on the termen gradually narrowing up to the tornus, bearing in interspace 5 a large greenish-white spot. Hind wing: extreme base irrorated slightly with bluish scales, terminal margin comparatively broadly black, traversed by a subterminal series of slender short white lunules, and a terminal series of broader ochraceous lunules. *Underside*: ground-colour similar. Fore wing: terminal margin broadly brown, bordered inwardly by a double series of slender black lunules, obsolescent towards apex of wing; subapical greenish-yellow spot as on upperside, but margined inwardly with black; costal margin, from base to transverse series of slender black lunules, broadly lilacine grey, increasing in width slightly towards apex; a prominent chocolate-coloured band starting from base of interspace and curving round cell and between veins 4 and 6 up to the transverse series of slender black lunules. Hind wing: the chocolate-coloured band on fore wing continued downwards parallel to the thorax and body two-thirds of the length of vein 2, below this an oblique and a transverse short black line on dorsal margin; a postdiscal transverse diffuse chocolate-coloured band, traversed by a double row of slender black lunules, and outwardly margined with delicate lilacine grey, followed by a row of minute black dots, a subterminal

row of short pale yellow bars in the interspaces, and a terminal slender black line. Antennæ black; head and thorax blackish; abdomen brown, white beneath.—♀ Upper and under sides similar to those in the ♂, but the greenish-white discal area on fore and hind wings and terminal black band on hind wing broader. Markings similar.

Exp. ♂ ♀ 64–84 mm. (2·5–3·3″).

Hab. Within our limits recorded from Lower Burma and Tenasserim, extending into the Malayan Subregion to Sumatra and Borneo.

249. **Eulepis moori**, *Distant* (Charaxes), *Rhop. Malay.* 1883, p. 108, pl. 13, fig. 3; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 277, footnote; *Moore, Lep. Ind.* ii, 1893–96, p. 260, pl. 187, figs. 2, 2 *a*, ♂ ♀; *Rothsch. & Jord. Nov. Zool.* v, 1898, pl. xii, figs. 3–7; vi, 1899, p. 237.

♂ ♀ Closely resembles *E. jalysus*. A Tenasserim specimen of *moori* differs from *jalysus* as follows:—*Upperside*: fore wing with bluish-white scaling on the outer margin of the discal greenish-white area, the outer broad black area on terminal margin not narrowing posteriorly, margin of nearly equal width at tornus and anteriorly. Hind wing: the blue scaling at base and along middle of outer margin of discal greenish-white area much broader; black along terminal margin irregular, much broader above than in *E. jalysus*, narrowing in the middle, where it is subinterrupted by the blue scaling, and widening again between veins 2 and 4; the row of white spots traversing it transverse and larger, the transverse ochraceous series of lunules paler, almost white, and barely indicated between veins 2 and 4. *Underside*: the discal greenish-white area on both fore and hind wing narrower than on the upperside, the chocolate-coloured band on fore wing curving round parallel to the costa not so well defined on the outer margin as in *jalysus*, the costal margin beyond it, the base of the wings and the dorsal margin broadly lilacine reddish-brown as in *E. arja*, not grey as in *jalysus*, as is also the space between the postdiscal series of lunules and the terminal series of ochraceous markings.

Exp. ♂ ♀ 74–82 mm. (2·9–3·25″).

Hab. Assam; Burma; Tenasserim; Malay Peninsula.

E. moori was described from the Malay Peninsula; the Assam, Burmese and Tenasserim form has been separated from typical *moori* by Messrs. Rothschild and Jordan (*l. c.*) as a subspecies with two forms, *E. moori sandakanus* f. *sandakanus* and *E. moori sandakanus* f. *marginalis*.

250. **Eulepis delphis**, *Doubleday* (Charaxes), *Ann. Soc. Ent. Fr.* 1843, p. 217, pl. 7; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 272 *Moore* (Murwareda), *Lep. Ind.* ii, 1893–96, p. 266, pl. 190, figs. 1, 1 *a*, ♂; *Rothsch. & Jord. Nov. Zool.* vi, 1899, pp. 283–286, figs. 40, 41, & 42, ♂

♂ ♀ *Upperside* white, suffused with pale sulphur-yellow.

Fore wing: apical area from about middle of costa to apex of vein 2, in Tenasserim specimens to apex of vein 1, jet-black, the inner margin of the black area very sinuous and irregular, occasionally the black in interspace 2 is subterminally separated into two portions; a conspicuous whitish-yellow preapical spot. Hind wing: a subterminal series of bluish-black lunules with whitish

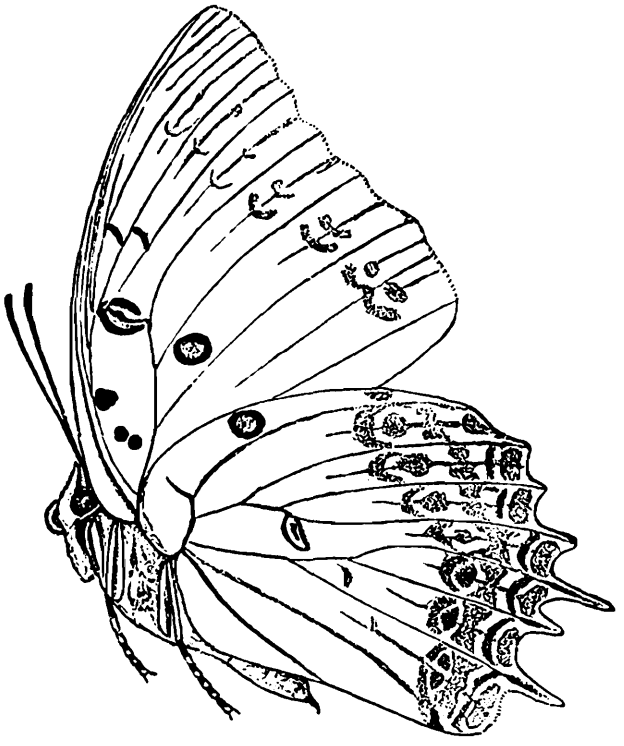

Fig. 42.—*Eulepis delphis*. ½.

centres; the tails with median streaks of pale blue. *Underside* silvery white. Fore wing: three black spots in cell, a crescentic black mark at its apex with a short black line beyond it, and a round black mark at base of interspace 2, the latter diffusely bluish in centre, two slender black lunules below middle of costa, followed by a postdiscal transverse series of bluish lunules, beyond them a row of ochraceous spots. Hind wing: a subcostal bluish diffuse spot surrounded by a slender black line; a slender black loop near apex of open cell with short slender transverse lines below in interspaces 1 *a*, 1 and 2, followed by a transverse series of blue lunules; a series of red spots, the anterior two yellow; a postdiscal sinuous yellowish band; a subterminal series of blue lunules and a terminal series of large yellow spots, narrowly margined with pale bluish, this colour also suffuses the tails. Antennæ black; head and thorax anteriorly brown, thorax posteriorly greyish; abdomen whitish yellow; beneath, the palpi, thorax and abdomen white.

Exp. ♂ ♀ 96–112 mm. (3·8–4·4″).

Hab. Assam; Cachar; Arrakan; Burma; Tenasserim, extending south to the Malayan Subregion.

251. **Eulepis dolon**, *Westwood* (Charaxes), *Cab. Or. Ent.* 1848, p. 55, pl. 27, figs. 2, 3; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 272; *Elwes* (Charaxes), *Trans. Ent. Soc.* 1888, p. 367; *Moore* (Murwareda), *Lep. Ind.* ii, 1893–96, p. 263, pl. 189, figs. 1, 1 *a*, ♂; *Rothsch. & Jord. Nov. Zool.* vol. v, 1898, pl. 9, figs. 1, 2; vi, 1899, p. 271.

♂ ♀ *Upperside* very pale yellowish white. Fore wing: costa, a short bar defining the discocellulars, the apical area of the wing beyond and a curved line from the middle of the costa to the tornus, black; a postdiscal oblique band of yellowish-white spots in interspaces 1 to 6; the two spots in interspace 1 lunular. Hind wing: a postdiscal brownish-black curved band parallel to the margin of the termen, traversed by a series of bluish-white irregular spots, and the terminal margin above the tail at apex of vein 2 narrowly bluish black. *Underside* pearly white with a slight yellowish tint, the apical half only of the fore wing not yellowish. Fore wing: costa for about three-fourths of its length, a short black-edged band marking the discocellulars and reaching just below vein 2, an oblique postdiscal band outwardly margined with black reaching from costa to tornus, and the terminal margin rich brown. Hind wing: an inwardly curved, anteriorly black-edged band reaching from costa to near tornal angle, in continuation of the short band on the discocellulars of fore wing, a postdiscal curved band with its outer margin sinuous and a terminal band rich brown. The postdiscal band traversed by a series of slender black lunules, the tornal angle with a whitish spot and a series of minute black dots between postdiscal and terminal bands. Antennæ, head and pronotum rich brown, rest of thorax and abdomen blackish brown; beneath, the thorax white, the abdomen brown.

Exp. ♂ ♀ 90–126 mm. (3·55–5″).

Hab. The Himalayas from Kulu to Sikhim; Bhutan; Assam; Cachar; Burma; Tenasserim, extending into the Malayan Subregion.

Forms from the N.W. Himalayas, from Nepal to Tenasserim, and from the Shan States of Burma have been separated as subspecies by Munro, and by Rothschild and Jordan, but the differences seem to me very slight.

252. **Eulepis nepenthes**, *Grose Smith* (Charaxes), *Ent. Monthly Mag.* xx, 1883, p. 58; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 274 (note); *Rothsch. & Jordan, Nov. Zool.* v. 1898, pl. 9, fig. 3 ♂; vi, 1899, p. 269.

♂ ♀ *Upperside* closely resembles on the fore wing the upperside of some specimens of *E. eudamippus*, but the black streak at base of interspace 3, which in *eudamippus* is always present and joined on to the black over the apical area, is in the present form entirely absent. Hind wing in *nepenthes* with only a postdiscal series of black lunules followed by a series of detached black, short, transverse lines, and a narrow black line along the terminal margin

from apex of vein 2 upwards; tornal angle slightly ochraceous. *Underside* resembles the underside of *E. dolon*, but in the fore wing there are two spots at base of cell, and two spots beyond its apex at bases of interspaces 5 and 6, there is no brown band along the costal margin, the band defining the discocellulars is incomplete, while the postdiscal band and the bands on the hind wing are light ochraceous not rich brown in colour; the terminal band on both fore and hind wing also is very narrow. Antennæ, head and thorax black, the thorax posteriorly with long yellowish-white hairs; the abdomen above and below and thorax beneath yellowish white.

Exp. ♂ ♀ 102–108 mm. (4·02–4·32″).

Hab. Recorded within our limits from the Shan States; Siam; Tonkin.

253. **Eulepis eudamippus** (Pl. VIII, fig. 59), *Doubleday* (Charaxes), *Ann. Soc. Ent. Fr.* 1843, p. 218, pl. 8; *de N.* (Charaxes) *Butt. Ind.* ii, 1886, p. 273; *Elwes* (Charaxes), *Trans. Ent. Soc.* 1888, p. 367; *Moore* (Murwareda), *Lep. Ind.* ii, 1893–96, p. 264, pl. 189, figs 2. 2 *a*, ♂; *Rothsch. & Jord. Nov. Zool.* v, 1898, pl. 8, figs. 1–6; vi, 1899, pp. 263–269.

♂ ♀ *Upperside* pale yellowish white. Fore wing: the costal margin, the cell anteriorly, a transverse bar at its apex, joining a broad line at base of interspace 3, and the whole apical half of the wing purplish black; the black area narrows posteriorly, extends to the tornus and bears the following yellowish-white spots: a spot beyond apex of cell, followed by two obliquely placed spots beyond, a postdiscal oblique and a subterminal erect series of spots. Hind wing: a postdiscal black band narrowing posteriorly, its inner margin slightly, its outer margin highly sinuous, traversed by an inner series of blue lunules, and an outer series of prominent yellowish-white spots; this is followed by a subterminal narrow band of blue and a terminal black line, both of these stop short of the tornus, which beyond the end of the postdiscal black band is conspicuously yellowish white. *Underside* silvery white. Fore wing: two black spots in cell, followed by a short isolated **Y**-shaped mark, a discal oblique and a terminal erect band olivaceous brown; the **Y**-shaped mark has its fork at the lower apex of the cell, is more or less bordered on both sides by conspicuous broken black lines, and does not extend either to the costa or below vein 2; the discal band is outwardly margined by a series of detached black lunules. Hind wing with three transverse brownish-yellow bands as follows: an excurved baso-median band, bordered anteriorly on both sides by broken black lines, meeting above the tornus a postdiscal band, outwardly bordered by a series of black lunules with whitish centres, a detached row of black spots in the interspaces, and a subterminal irregular band outwardly bordered with greenish; tails black with a median streak of pale blue; tornus conspicuously ochraceous; a subtornal short transverse black line crossing from the dorsum to the baso-median band. Antennæ and head black, thorax dusky

greyish black, abdomen yellowish white; beneath, the palpi, thorax and abdomen white, the thorax with a conspicuous obliquely transverse black line on each side.

Exp. ♂ ♀ 98–121 mm. (3·85–4·75″).

Hab. Sikhim; Assam; Burma; Tenasserim.

Genus **HELCYRA**.

Helcyra, *Felder, Sitzungsb. Ak. Wiss. Wien*, xl, 1860, p. 450; *de N. Butt. Ind.* ii, 1886, p. 45; *Moore, Lep. Ind.* ii, 1893–96, p. 267.

Type, *H. chionippe*, Felder, from Amboina.

Range. Sikhim; the hills of Assam and Upper Burma, extending to China, Java and Amboina.

♂ ♀ Fore wing broadly triangular; costa moderately arched; apex subacute; termen straight; tornus broadly rounded; dorsum straight; cell open, upper and middle discocellulars in an oblique line; vein 9 from middle of vein 7, 10 from 7 well beyond origin of latter vein, 11 free. Hind wing irregularly ovate; costa slightly arched; apex well marked; termen arched slightly, scalloped, produced into a well-marked tooth at apex of vein 4, with shorter projections at apices of veins 1, 2 and 3; tornus bluntly angular, dorsum forming a broad abdominal fold; cell open; veins 5, 6 and 7 from a point well removed from base of 8. Antennæ long, over half length of fore wing; club broad, abrupt, flattened, spatular; palpi broad in front, third joint conical; eyes naked; thorax moderately robust; intermediate and posterior legs long, tibiæ only sparsely spined, spines very short.

254. **Helcyra hemina**, *Hewitson, Trans. Ent. Soc.* (3) ii, 1864, p. 245, pl. 15, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 45, pl. 19, fig. 83 ♂; *Elwes, Trans. Ent. Soc.* 1888, p. 338; *Moore, Lep. Ind.* ii, 1893–96, p. 268, pl. 190, figs. 2, 2*a*, ♂

♂ ♀ *Upperside* silvery white. Fore wing: a minute spot at origin of vein 7, a transversely oval spot obliquely below it, and a postdiscal spot in interspace 1 black; the apical third of the wing also black, with an outwardly curved, irregular, sinuous inner margin from just beyond middle of costa to tornus, and two preapical spots of the ground-colour, the lower the larger. Hind wing with the following black markings: three subtornal spots, two in interspace 1, one in interspace 2; two postdiscal, in échelon to the others, and three subcostal in line further inwards in interspaces 5, 6 and 7 respectively; finally a slender sinuous subterminal line. *Underside* silvery white with a slight bluish tinge; markings of upperside more or less showing through by transparency. Fore wing with a short, transverse, postdiscal, slender, dark brown line in each of the

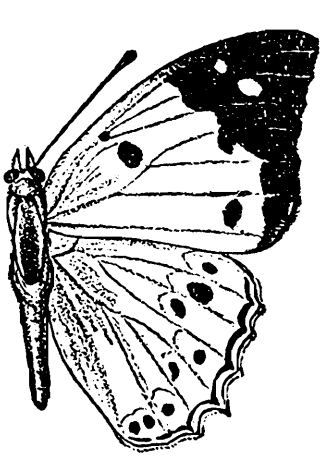

Fig. 43.
Helcyra hemina. ½.

interspaces 1, 3 and 4. Hind wing with the postdiscal series of spots of the upperside represented by the three subtornal spots, the upper one of these crowned with yellow and a somewhat diffuse spot in interspace 6; on the inner side of these spots a very slender, highly sinuous, transverse lunular line crosses the disc of the wing. Antennæ pale brown ringed with white, club black tipped with ochraceous; thorax bluish; abdomen white; beneath, the palpi, thorax and abdomen white.

Exp. ♂ ♀ 65–75 mm. (2·55–2·98″).

Hab. Sikhim; the hills of Assam and Upper Burma.

Genus **APATURA.***

Apatura, *Fabr. Illig. Mag.* 1807, p. 280; *Leach, Edinb. Encycl.* 1815, p. 718; *de N. Butt. Ind.* ii, 1886, p. 48.

Eulaceura, *Butler, P. Z. S.* 1871, p. 726; *de N. Butt. Ind.* ii, 1886, p. 55; *Moore, Lep. Ind.* iii, 1896–99, p. 20.

Rohana, *Moore, Lep. Ceyl.* i, 1880, p. 27; *id. Lep. Ind.* iii, 1896–99, p. 16.

Potamis, Mimathyma, Chitoria, Dravera, Narsenga, *Moore, Lep. Ind.* iii, 1896–99, pp. 3, 8, 10, 14 & 15.

Type, *A. iris*, Linn., from Europe.

Range. Both hemispheres.

♂ ♀ Fore wing: costa slightly arched; apex rounded, somewhat produced; termen concave in the middle; tornus broadly rounded, dorsum straight; cell open, upper and middle discocellulars only being present and very short; vein 8 out of 7 in apical third of wing, 9 out of 7 from about middle of wing, 10 and 11 free, 12 terminating well beyond origin of 9. Hind wing ovate; costa slightly arched; apex blunt, truncate; termen scalloped, nearly straight; tornus well-marked, dorsum arched; cell open, veins 5, 6 and 7 approximate at base. Antennæ long, well over half length of fore wing; club well-marked, rounded or quadrate, not flattened; palpi thick, short, porrect, third joint pointed at apex; eyes naked, hairy in a few forms; thorax robust; intermediate and posterior femora fringed with long hair posteriorly, tibiæ shorter than femora, scaled.

Key to the forms of Apatura.

♂ ♂.

A. Eyes naked.
  a. Upperside of wings brilliantly glossed with iridescent blue.
    a' Ground-colour black.
      a^2. Cell of fore wing on upperside uniform, without a streak ... ... *A. ambica*, p. 230.
      b^2. Cell of fore wing on upperside with a broad white streak ... . *A. chevana*, p. 232.
    b'. Ground-colour ochraceous yellow *A. here*, p. 231.

* Dr. Moore, following Scudder, gives priority to *Potamis*, Hübner ('Tentamen,' 1806). Hübner's 'Tentamen is a list of genera with the types indicated but no diagnoses; I have preferred therefore to follow Distant and de Nicéville in retaining Fabricius' widely known name for the genus of which *A. iris* is the type.

b. Upperside of wings not glossed with iridescent blue.
a'. Upperside deep velvety black, uniform, with only from one to three white specks preapically on fore wing.
a^2. One preapical white speck — *A. parisatis*, p. 233.
b^2. Three preapical white specks — Race *camiba*, p. 233.
b'. Upperside ground-colour brown .. — *A. sordida*, p. 232.
c' Upperside ground-colour ochraceous yellow — *A. ulupi* *, p. 234.

B. Eyes hairy.
a'. Upperside: wings with a broad white discal transverse band not extending to costa of fore wing .. .. — *A. osteria*, p. 235.
Upperside: wings with a narrow macular ochraceous band extending to costa of fore wing, but interrupted between veins 4 and 6 . . — *A. parvata*, p. 234.

♀ ♀.

A. Eyes not hairy.
a. Ground-colour brownish black on upperside.
a'. Cell of fore wing on upperside uniform, without streak.
a^2. A discal white band on upperside of hind wing . .. . — *A. ambica*, p. 230.
b^2. No discal white band on upperside of hind wing . ... — *A. sordida*, p. 232.
b' Cell of fore wing on upperside with a broad white streak .. .. — *A. chevana*, p. 232.
b. Ground-colour ochraceous yellow on upperside . — *A. here*, p. 231.
c. Ground-colour brown on upperside — *A. parisatis*, p. 233. / Race *camiba*, p. 233.

B. Eyes hairy.
a. Ground-colour, basal area of underside of wings pale lavender .. .. — *A. osteria*, p. 235.
b. Ground-colour, basal area of underside of wings ochraceous brown . — *A. parvata*, p. 234.

255. **Apatura ambica** (Pl. VII, fig. 49), *Kollar, Hügel's Kaschmir*, iv, pt. 2, 1844, p. 431; *Moore* (Potamis), *Lep. Ind.* iii, 1896–99, p. 4, pl. 191, figs. 1, 1 *a*–1 *e*, ♂ ♀.
Apatura namouna, *Doubleday, A. M. N. H.* xvi, 1845, p. 178 ♂; *de N. Butt. Ind.* ii, 1886, p. 50, pl. 20, fig. 91 ♂; *Elwes, Trans. Ent. Soc.* 1888, p. 339.
Apatura zanoa, *Hewitson, Exot. Butt.* iv, 1869, Apatura, pl. 1, figs. 7, 8.
Apatura bhavana, *Moore, Trans. Ent. Soc.* 1881, p. 307.

♂ *Upperside* brownish black; a broad white, inwardly oblique, discal band from vein 3 of the fore to vein 1 of the hind wing, this band bordered broadly on both sides by brilliant iridescent blue and meeting anteriorly 3 white outwardly oblique spots in

* ♀ unknown.

interspaces 3, 4, 5 of fore wing. Three preapical small spots and an obscure subterminal series of dots on the fore, and a better defined, slightly curved, subterminal series of spots on the hind wing, all white, also on the latter wing an apical and a tornal fulvous-yellow spot. *Underside* pearly bluish white, the discal band and spots of the upperside showing through pinkish white, the discal spots and band on the fore wing bordered interiorly with black, and some black marks in the cell. Fore wing: an oblique somewhat sinuous postdiscal, and a more even broad terminal band rich brown, the former ending at the tornus in a fulvous-yellow patch bearing a black spot with some black outer markings, the latter white-spotted at the tornal angle. Hind wing with postdiscal straight and terminal broad bands of the same rich brown, a black white-bordered subtornal spot, and another in interspace 2 placed on the brown postdiscal band. Antennæ brown; head, thorax and abdomen brown above, white beneath.—♀. Similar with similar markings, but ground-colour above dusky brown, the markings yellowish white.

Exp. ♂ ♀ 67–77 mm. (2·65–3·0″).

Hab. The Himalayas from Kashmir to Sikhim; hill-ranges of Assam; hill-ranges of Northern and Eastern Burma, and Siam.

256. **Apatura here** (Pl. VII, fig. 54), *Felder, Wien. ent. Monat.* vi, 1862, p. 27; *Leech, Butt. China, Jap. & Corea*, i, 1892–94, p. 163, pl. 15, fig. 8♂, 7♂ var.

Apatura ilia, var. serarum, *Oberthür, Étud. d'Ent.* xv, 1891, p. 11, pl. 1, fig. 8♂.

♂. *Upperside* bright ochraceous yellow, basal area of both fore and hind wings and below cell of fore wing shaded with dark brown, cell of fore wing with four round brown spots; a discal broad curved irregular transverse pale brown fascia, the margins irregularly sinuous on the fore and diffuse on the hind wing. On the latter wing this fascia bears an arched series of seven darker brown spots, and on the former it is outwardly bordered by large dark brown spots in interspaces 1 and 2, a white spot in interspace 3, and obliquely placed pale yellow spots in interspaces 4, 5 and 6; beyond these there is a preapical brown patch followed by three pale yellow spots: lastly, both fore and hind wings are crossed by a prominent subterminal dark brown line, and shaded over their whole area, but most conspicuously on the disc, with beautiful iridescent blue. *Underside* pale ochraceous, shaded with brighter ochraceous on the disc and apex of fore wing. Fore wing with four black spots in pairs in the cell; beyond apex of latter an oblique discal series of four and a preapical series of three white spots; below the cell two large white spots, inwardly margined with black, in interspaces 1 and 2, followed by a diffuse blackish spot in interspace 1, and a prominent white-centred black spot in interspace 2. Hind wing crossed by a short median and a postdiscal straight ferruginous band, the latter bearing a subtornal silvery spot with a pale spot

above it. Both fore and hind wings with a somewhat diffuse lunular subterminal line outwardly bordered with obscure whitish marks in the interspaces. Antennæ dark brown; head, thorax and abdomen ochraceous, paler beneath.—♀ similar, larger, usually without the iridescent blue on upperside.

Exp. ♂ ♀ 68–84 mm. (2·69–3·3″).

Hab. Western China, extending into the most eastern parts of the North Shan States, Upper Burma.

257. **Apatura sordida**, *Moore*, *P. Z. S.* 1865, p. 765, pl. 41, fig. 2 ♂; *de N. Butt. Ind.* ii, 1886, p. 52; *Elwes*, *Trans. Ent. Soc.* 1888, p. 340; *Moore* (Clitoria), *Lep. Ind.* iii, 1896-99, p. 10, pl. 192, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ *Upperside* brown. Fore wing darkening towards the apex, the apical two-thirds much darker brown, an oblique discal white fascia from interspace 6 to tornal angle formed of more or less rectangular spots; a small spot beyond in interspace 4 and two preapical spots white. Hind wing uniform, a lunular subterminal dark line inwardly bordered by a row of dark spots, and a terminal row of pale lunules. *Underside* pale brownish grey. Fore wing with the discal band and spots more or less as on the upperside; a black, blind, yellow-ringed ocellus, with a dark brown shade in the interspace below it; ocellus and brown shading bordered inwardly by white; a subterminal dark line, and some diffuse white marks on termen below apex and at tornus. Hind wing with an incomplete discal white band and a series of white spots beyond, ending in a well-marked, broadly yellow-ringed, blue-centred, black ocellus in interspace 2; lastly, a subterminal dark line as in the fore wing. Antennæ brown, paler below the club; head, thorax and abdomen brown, paler beneath.—♀ similar; the hind wing is more rounded and the oblique discal band on the fore wing is very much broader.

Exp. ♂ ♀ 68–80 mm. (2·69–3·15″).

Hab. Sikhim.

258. **Apatura chevana**, *Moore* (Athyma), *P. Z. S.* 1865, p. 763, pl. 41, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 52; *Elwes*, *Trans. Ent. Soc.* 1888, p. 340; *Moore* (Mimathyma), *Lep. Ind.* iii, 1896-99, p. 8, pl. 192, figs. 1, 1 *a*, ♂

♂ ♀. *Upperside* very dark brownish black, with the following somewhat creamy-white markings:—Fore wing: a slightly clavate anteriorly notched streak in the discoidal area, followed by two elongate spots, a curved irregular discal series of large and small spots, the posterior three the largest, a subterminal sinuous band of spots, and a terminal line of smaller dots. Hind wing: a subbasal transverse very broad band, a postdiscal sinuous row of large spots, and a terminal line of very small, somewhat obscure, short, transversely linear spots. In the ♂ the disc of the fore wing on either side of the white spots is suffused with brilliant iridescent blue. *Underside* pearly bluish white, the white spots and markings as on upperside but less well defined; the brown bands on both fore and hind wing as in *A. ambica*, but the disc of the fore wing on either

side of the white spots suffused with brown, shaded with fuscous; some brownish markings in the discoidal area. Antennæ blackish brown; head, thorax and abdomen dark brown above, whitish beneath, the abdomen above banded with white.

Exp. ♂ ♀ 80–87 mm. (3·18–3·4″).

Hab. Sikhim; the hill-ranges of Assam and Upper Burma.

259. **Apatura parisatis** (Pl. VII, fig. 50 ♀), *Westwood, in Dbldy. Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 305; *Moore* (Rohana), *Lep. Ceyl.* i, 1880, p. 27; *de N. Butt. Ind.* ii, 1886, p. 54, pl. 20, fig. 92 ♂ ♀; *Elwes, Trans. Ent. Soc.* 1888, p. 340; *Moore* (Rohana), *Lep. Ind.* iii, 1896–99, p. 17, pl. 194, figs. 2, 2*a*–2*c*, ♂ ♀.

Race camiba.

Rohana camiba, *Moore, Lep. Ceyl.* i, 1880, p. 27, pl. 14, figs. 1, 1*a*–1*c*, ♀ ♂, larva & pupa; *de N.* (Apatura) *Butt. Ind.* ii, 1886, p. 54; *Moore, Lep. Ind.* iii, 1896–99, p. 19, pl. 194, fig. 3, larva & pupa.

♂. *Upperside* deep velvety black, with one minute snow-white preapical spot on the fore wing; the cilia of both fore and hind wing alternately black and white. *Underside* dark purplish brown, shaded at base of wings and along costal margin and apex of fore wing with dark ferruginous; both fore and hind wing with two black spots in the discoidal area, followed by an auriform mark and an irregular median band, crossing both wings, of dark brown markings outwardly obscurely and interruptedly bordered with lilacine; beyond the discal area both wings are shaded transversely with dark brown, succeeded by a subterminal dark line bordered inwardly with purple; fore wing with the white preapical spot larger; hind wing with a black white-centred minute subtornal spot. Antennæ black; head, thorax and abdomen velvety black, dark brown beneath.—♀ *Upperside* yellowish brown. Fore and hind wings: basal half shaded and marked with brown, with an angulated transverse broad brown median fascia and a postdiscal transverse brown shading; on the hind wing traversed by a series of obscure dark spots; on the fore wing with three, sometimes four, minute subapical white spots; a transverse series of dark lunular markings on both wings, followed by a subterminal dark line. *Underside* yellowish brown; markings somewhat similar to those in the ♂, but more clearly defined. Antennæ, head, thorax and abdomen light brown, yellowish beneath.

♂ ♀ *Exp.* 46–52 mm. (1·8–2·04″).

Hab. The Himalayas from Kumaun to Sikhim; the low hills of Assam, Burma and Tenasserim, extending to China and Siam.

Race **camiba**, Moore, is absolutely identical except for the constant minute difference of the fore wing on the upper and under sides; this has in the ♂ three, in the ♀ five subapical white dots.

Exp. ♂ ♀ as in *A. parisatis*.

Hab. Southern India, Ceylon.

260. **Apatura ulupi,** *Doherty* (Potamis-Apatura), *J. A. S. B.* 1889, p. 125, pl. 10, fig. 2 ♂ ; *Moore* (Dravira), *Lep. Ind.* iii, 1896–99, p. 14, pl. 193, figs. 2, 2 *a*, ♂.

Upperside: fore wing black, a broad oblique bar from the costa across apical two-thirds of cell to apex of vein 1, a second very oblique discal bar from costa to tornal angle, angulated outwards on vein 4 and traversed by black veins; two preapical spots and a blackish suffused streak along the costal margin, ochraceous yellow; a large very prominent postdiscal jet-black round spot in interspace 2. Hind wing ochraceous yellow, shaded with fuliginous on its posterior half; a postdiscal jet-black spot in interspace 2, followed by a transverse row of small black angulated marks, decreasing in size posteriorly; a subterminal black line widening at the veins, and a terminal slender black line. *Underside* pale ochraceous; the jet-black spot in fore wing as on the upperside, on hind wing centred largely with silvery white; two white preapical spots on fore wing and a silvery-white discal band, with silvery-white spots beyond, on hind wing; both fore and hind wing with very obscure subterminal dusky brown narrow bands. Posterior half of hind wing suffused with very pale greenish. Antennæ, thorax and abdomen dark brown, the antennæ subapically and the head ochraceous; beneath, head, thorax and abdomen white. Female unknown.

Exp. ♂ 68 mm. (2·7″).

Hab. Recorded only from Margherita in Assam.

261. **Apatura parvata,** *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 202, pl. 6 *a*, fig. 6 ♂ ; *de N. Butt. Ind.* ii, 1886, p. 53; *Elwes, Trans. Ent. Soc.* 1888, p. 340; *Moore* (Narsenga), *Lep. Ind.* iii, 1896–99, p. 15, pl. 194, figs. 1, 1 *a*, ♂.

♂ *Upperside* brown. Fore wing with three subbasal, and at apex of cell a large transverse dark brown spot; an angulated discal series of ochraceous-white spots; a subapical row of five pure white dots; a discal brown blind ocellus; a more or less lunular postdiscal transverse dark band, and a subterminal dark, somewhat obscure line, the border on the inner and outer sides of it paler. Hind wing more uniform, the ochraceous-white discal series of spots continued on from the fore wing; an ochraceous-ringed blind black ocellus in interspace 2; a postdiscal series of dark lunules inwardly bordered with pale ochraceous, and a subterminal pale-margined line as in the fore wing. *Underside*: fore wing more or less ochraceous; hind wing a very pale brown: markings on both as on the upperside, but faint and ill-defined. Antennæ dark brown; head, thorax and abdomen brown, paler beneath.—♀. *Upperside*, similar, paler brown, the angulated discal series of ochraceous spots merged into an irregular, outwardly diffused, inwardly well-defined band, the subapical white spots reduced to three. *Underside* similar to that of the ♂, but the wings subterminally lilacine.

Exp. ♂ ♀ 51–55 mm. (2·04–2·3″).

Hab. Sikhim; Bhutan; Assam, Khási Hills.

262. **Apatura osteria**, *Westwood, in Dbldy., Westw. & Hew. Gen. Di. Lep.* 1850, p. 305; *Butler* (Eulaceura), *P. Z. S.* 1871, p. 726; *de N.* (Eulaceura) *Butt. Ind.* ii, 1886, p. 55 (footnote); *Moore* (Eulaceura), *Lep. Ind.* iii, 1896-99, p. 21, pl. 195, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ *Upperside* purplish brown. Fore and hind wings with a purplish-white, posteriorly broadening, discal bar, commencing in interspace 4 of fore wing and terminating in interspace 1 of the hind wing, throughout its length parallel to the terminal margin; followed by a postdiscal series of obscure oval, dark brown, pale-ringed spots, with an ocellus in interspace 2 of both fore and hind wings. Hind wing with a subterminal, somewhat sinuous, very obscure dark line; the dorsal margin broadly pale. *Underside* pale purple; the discal band, the ocelli, and subterminal dark line as on the upperside; a spot in cell, a line along the discocellulars, the costal margin except at base on fore wing, a transverse line bordering the discal band on the inner side and a postdiscal dark shade across both fore and hind wing, pale ochraceous brown. The postdiscal markings much broken and interrupted. Antennæ, head and thorax dark brown; abdomen brown, paling to sullied white posteriorly; beneath, head, thorax and abdomen white.—♀ *Upperside* brown, basal half of wings suffused with ochraceous; a transverse discal white band of spots, interrupted and outwardly angulated on vein 4 of fore wing, followed by a series of postdiscal elongate, outwardly pointed, pale oval marks with brown centres, better defined on the hind than on the fore wing, and an obscure subterminal dark line; the two ocelli as in the ♂; the discal band on the hind wing posteriorly ochraceous. *Underside* as in the ♂ but paler, the postdiscal markings better defined. Antennæ, head, thorax and abdomen as in the ♂. Eyes in both sexes hairy.

Exp. ♂ ♀ 70–75 mm. (2·77–2·97″).

Hab. The Malay Peninsula, creeping up into the extreme south of Tenasserim.

Genus **DILIPA**.

Dilipa, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 201; *de N. Butt. Ind.* ii, 1886, p. 47; *Moore, Lep. Ind.* iii, 1896-99, p. 11.

Type, *D. morgiana*, Westw., from Northern India.

Range. N. India, the Himalayas; Assam; Upper Burma.

♂ ♀ Fore wing: costa widely and slightly arched; apex somewhat produced; termen slightly concave; dorsum straight; cell slenderly closed, short, not half the length of wing; upper discocellular minute, middle short, deeply concave, lower straight; vein 10 from upper apex of cell; vein 11 free, from upper fourth of subcostal vein. Hind wing: costa arched at base, then nearly straight; apex broadly rounded; termen slightly arched; dorsum long, tornus produced. Antennæ long, more than half the length

of fore wing; club well marked, long and gradual; palpi subporrect, rounded in front, third joint long, acute at apex; eyes hairy.

263. **Dilipa morgiana**, *Westwood* (Apatura), *in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1851, p. 355; *de N. Butt. Ind.* ii, 1886, p. 48, pl. 20, fig. 86 ♂; *Moore, Lep. Ind.* iii, 1896–99, p. 12, pl. 193, figs. 1, 1 *a*–1 *c*, ♂ ♀

♂. *Upperside* black, more or less suffused with rich golden scales, especially dense at the base of cell of fore wing. Fore wing with a broad bar at apex of cell, a broad band in two parts in échelon across the disc, joined by a narrow obliquely transverse spot in interspace 3, a large spot subterminally in the same interspace, spreading upwards and downwards, and a diffuse patch below the apex, golden yellow; finally a small round white preapical spot with a minute white dot below it. Hind wing: a very broad transverse discal area, a subapical and a tornal terminal patch golden yellow. *Underside*: fore wing with the markings much as on the upperside, but the yellow of much greater extent, filling the whole of the cell except a central black spot and joining on to the discal band, which is continuous and very much broader than on upperside, and is, in turn, joined on to the subterminal spot in interspace 3; apex broadly golden light brown with a lilacine streak and two white spots as on upperside; a quadrate lilacine spot at tornal angle. Hind wing pale ochreous brown, the precostal area and posterior third of wing above and along dorsal margin lilacine, an oblique spot in cell and a large patch, extending from apex of wing to apex of cell and to vein 4, pale golden.—♀. Similar, with similar markings both on the upper and under sides, but on the former, except the subapical golden patch on the fore wing and a narrow golden terminal margin on the hind wing, the markings are lilacine white, narrower and more restricted, the upper and lower portions of the discal band being quite separate. On the underside, the base of the cell in the fore wing is golden yellow, which colour extends along veins 3 and 4 and joins a broad transverse patch connecting the upper and lower white portions of the discal band; a postdiscal sinuous line of white spots in the interspaces, those in interspaces 1 and 3 the largest, the apex of the wing broadly golden brown. Hind wing pale ochreous brown as in the male, but the dorsal lilacine area broader, spreading along the base of the wing and postdiscally to the apex, an anterior discal white patch, and the termen below vein 7 broadly ochreous brown. Antennæ brown, the club ochraceous; head, thorax and abdomen brown, beneath whitish.

Exp. ♂ ♀ 76–82 mm. (3–3·25″).

Hab. The Himalayas from Dharmsála to Sikhim; the hill-ranges of Assam and Upper Burma. Nowhere common.

Genus **HERONA.**

Herona, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 293, pl. 41; *de N. Butt. Ind.* ii, 1886, p. 60; *Moore, Lep. Ind.* iii, 1896-99, p. 22.

Type, *H. marathus*, Doubleday, from Sikhim.

Range. Sikhim to Tenasserim, extending to Sumatra and Borneo.

♂ ♀ Venation very similar to that of *Apatura*, but in the fore wing vein 9 is emitted out of 7 well before the middle of the wing, veins 10 and 11 closer to the base of 7, and consequently proportionately shorter, as is also vein 12. The tornus of the hind wing is more rounded, not produced, and the club of the antennæ is flattened, not rounded as in *Apatura*. For the rest *Herona* closely resembles that genus in structure.

Key to the forms of Herona.

a. Upperside of wings with broad markings; transverse bands on hind wing coalescing near termen	*H. marathus*, p. 237.
b. Upperside of wings with comparatively narrow markings; transverse bands on hind wing not coalescing.	
a' ♂ & ♀. Markings on both fore and hind wing ochraceous	Race *angustata*, p. 238.
b' ♂. Anterior markings pale ochraceous, posterior markings and markings on hind wings orange-yellow. ♀. All markings white.	Race *andamana*, p. 238.

264. **Herona marathus**, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 294, pl. 41, fig. 3 ♂; *de N. Butt. Ind.* ii, 1886, p. 61; *Moore, Lep. Ind.* iii, 1896-99, p. 22, pl. 195, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Race angustata.

Herona angustata, *Moore, P. Z. S.* 1878, p. 829 ♀; *de N. Butt. Ind.* ii, 1886, p. 62; *Moore, Lep. Ind.* iii, 1896-99, p. 24, pl. 196, figs. 1, 1 *a*, ♂ ♀

Race andamana.

Herona andamana, *Moore, P. Z. S.* 1877, p. 585; *de N. Butt. Ind.* ii, 1886, p. 62; *Moore, Lep. Ind.* iii, 1896-99, p. 24, pl. 196, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ *Upperside* black, with the following markings:—Fore wing: a broad streak in interspace 1, the tornus bordered with three irregular spots and a series of three oblique, almost parallel bands orange-yellow—the first crossing the cell into interspace 2; the second discal, its outer margin irregular, uneven; the third short, preapical, not reaching either costa or termen, and with a white spot below it. Hind wing: two broad transversely oblique bands

converging and meeting subapically, a subterminal posterior fine line, the dorsum broadly, the tornal angle and termen posteriorly yellow. *Underside* ochraceous, the markings more or less as on the upperside, but the black areas pale brownish, dusky black only in interspaces 2, 3 and 4 of the fore wing, and the orange markings pinkish white, the white subapical spot on the fore wing produced diffusely to the termen. Antennæ black, apical half of the club white; head, thorax and abdomen ochraceous brown, paler beneath.— ♀ *Upper* and *under sides* similar to those in the male, but on the upperside the bands narrower, of a paler and less bright yellow; on the underside the markings better defined.

Exp. ♂ ♀ 71–93 mm. (2·8–3·68″).

Hab. Sikhim; Bhutan; Assam; Upper Burma, not ascending to any great elevation.

Race **angustata**, Moore, the South-eastern geographical form, differs in the orange band on the upperside in both sexes being narrower and paler than in typical *marathus*, and in the female in

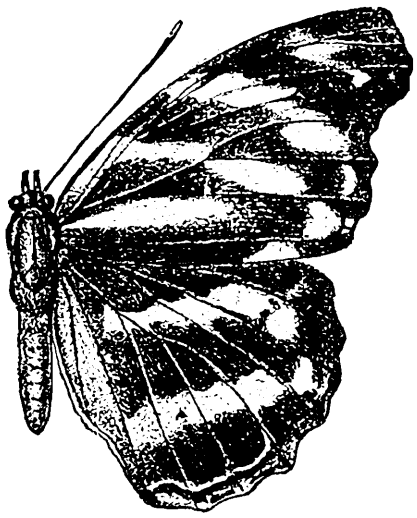

Fig. 44.—*Herona marathus*, race *angustata*. ½.

the preapical band or large spot on the fore wing being white. *Underside* generally paler than in *H. marathus*.

Exp. ♂ ♀ slightly smaller than in the typical form.

Hab. Lower Burma; Tenasserim down to Tavoy.

Race **andamana**, Moore.—An insular race more clearly differentiated from typical *H. marathus*. ♂ *Upperside* black, with markings similar in character to those in the typical form, but on the fore wing anteriorly pale ochraceous, almost white; the discal oblique band composed of very elongate, outwardly pointed, separate spots; the preapical band reduced to a large spot.— ♀ The markings similar to those in the male, but with the exception of the streak in interspace 1 of the fore wing and part of the two transverse bands on the hind wing, which are tinged with cream-colour, the markings are pure white. *Underside* in both sexes very similar to the underside in *H. marathus*, but the

ground-colour in the female white, not ochraceous, shaded with dusky black.

Exp. ♂ ♀ as in race *angustata*.

Hab. The Andamans.

Genus **HESTINA**.

Hestina, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 281; *de N. Butt. Ind.* ii, 1886, p. 55; *Moore, Lep. Ind.* iii, 1896-99, p. 31.

Type, *H. nama*, Dblday., from the Himalayas.

Range. The Himalayas; Assam; Burma and Tenasserim, extending eastwards to China and south to Sumatra and Java.

♂ ♀ Closely allied to *Apatura*, with the cells of both fore and hind wing open and the venation somewhat as in that genus; the fore wing is, however, proportionately longer and narrower, the apex and termen of the hind wing more rounded, vein 9 in the fore wing emitted closer to the apex of the wing, veins 10 and 11 closer to the base of 7, and vein 12 distinctly shorter than in that genus. Hind wing: veins 5, 6, 7 very closely approximate at base. Eyes naked.

265. **Hestina nama**, *Doubleday* (Diadema), *A. M. N. H.* xvi, 1845, p. 232; *de N. Butt. Ind.* ii, 1886, p. 56, pl. 22, fig. 99 ♀; *Moore, Lep. Ind.* iii, 1896-99, p. 32, pl. 200, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside*: fore wing deep blue-black, with subhyaline bluish-white streaks and spots in the cell and interspaces as follows: a broad diffuse streak in interspace 1 *a*, two streaks with two pairs of spots beyond in 1, one streak in 2 and one in 3 bifurcate at apex, each with one bifurcate and two sublunular spots beyond; a broad clavate streak, half-divided, near the apex in cell, three small subcostal spots above, and an acutely pointed triangular spot beyond, followed by three inwardly acute, outwardly bifurcate, short streaks, each with three spots beyond; finally two or three obscure preapical spots. Hind wing dark chestnut; broad, subhyaline, bluish-white streaks along dorsal margin and in cell, and narrower streaks in the interspaces, followed by an irregular series of small spots and some obscure terminal white markings. *Underside* similar, with similar more clearly defined markings, most of the spots outwardly bifurcate; fore wing suffused with chestnut at apex. Antennæ black; head, thorax and abdomen black above, the sides bluish green, beneath spotted with white.

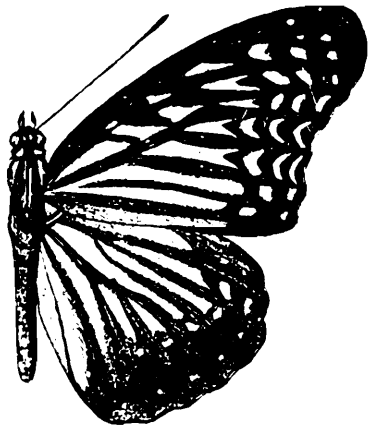

Fig. 45.—*Hestina nama*. ½.

Exp. ♂ ♀ 94–110 mm. (3·72–4·4″).

Hab. The Himalayas; the hill-ranges of Assam; Burma and Tenasserim, at no great elevation, extending to the Malay Peninsula; Sumatra; Siam and Western China.

Genus **PARHESTINA**.

Parhestina, *Moore, Lep. Ind.* iii, 1896–99, p. 34.

Type, *P. persimilis*, Westw., from Sikhim.

Range. Indo-Malayan Region, extending to China.

♂ ♀ Very closely allied to *Hestina*, but, in the fore wing, vein 11 only is emitted before the apex of the cell, vein 10 from well beyond the apex. In the hind wing veins 5, 6, 7 not closely approximate at base. Eyes hairy.

Key to the forms of Parhestina.

a. Hind wing above and below without any trace of yellow tint.	
a'. Dorsal margin of fore wing not two-thirds length of costal margin; black markings along veins broad and heavy ..	*P. persimilis*, p. 240.
b' Dorsal margin of fore wing well over two-thirds length of costal margin; black markings along veins less broad and heavy.	Race *zella*, p. 241.
b. Hind wing above and below suffused along dorsal margin with sulphur-yellow	*P. nicevillei*, p. 241.

266. **Parhestina persimilis**, *Westwood* (Hestina), *in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 281; *de N.* (Hestina) *Butt. Ind.* ii, 1886, p. 58; *Moore, Lep. Ind.* iii, 1896–99, p. 34, pl. 201, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Race zella.

Hestina zella, *Butler, Trans. Ent. Soc.* 1896, p. 91, fig. ♂; *de N. Butt. Ind.* ii, 1886, p. 58; *Moore* (Parestina), *Lep. Ind.* iii, 1896–99, p. 35, pl. 201, figs. 2, 2 *a*, 2 *b*, ♂ ♀

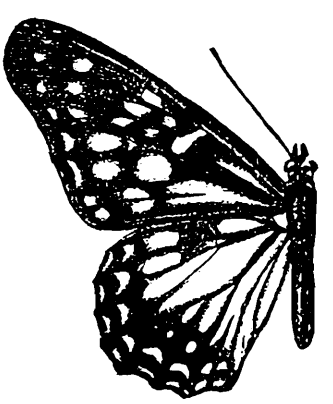

Fig. 46.
Parhestina persimilis. ½.

♂ *Upperside* fuliginous black, with white streaks and spots as follows:—Fore wing: two streaks from base in interspace 1, with two pairs of rectangular spots beyond; a short streak in cell, with a transverse spot beyond, followed by three small spots in oblique series and a large rectangular spot at base of interspace 2 with two spots beyond; interspaces 3, 4, 5 and 6 with three spots in each and a faint elongate spot at base of interspace 7 Hind wing: broad streaks in cell and in all the interspaces, followed by a postdiscal posterior series of three small spots, a complete subterminal series

of spots, and a terminal row of minute dots. The streak in interspace 7 is broadly divided, and the fuliginous black ground-colour there forms a conspicuous subcostal mark. *Underside* similar; the white markings larger and more clearly defined, sometimes tinged with blue. Antennæ black; head, thorax and abdomen fuliginous black, speckled beneath with white.—♀ similar; the white streaks and spots, especially on the hind wing, longer and broader.

Exp. ♂ ♀ 64–70 mm. (2·54–2·75″).

Hab. Eastern Himalayas.

Race **zella,** Butler, from the Western Himalayas, is similar, but all the markings are broader, the streaks longer, the spots larger. *Upperside*, ♂ ♀ Fore wing: the cell white crossed by a black bar, the two streaks in interspace 1 coalescing, only forked outwardly, the streaks in the interspaces more or less produced to the inner of the two spots beyond in each. Hind wing: the streaks in the interspaces similarly produced, the black ground-colour being much restricted, especially on the anterior half of the wing.

Exp. ♂ ♀ 68–76 mm. (2·70–3″).

267. **Parhestina nicevillei**, *Moore, Lep. Ind.* iii, 1896-99, p. 37, pl. 202, figs. 2, 2 *a*, ♂.

Hestina zella, *de N.* (*nec Butler*) *Butt. Ind.* ii, 1886, p. 65, pl. 1, fig. 2.

♂ Closely resembles typical *P. persimilis*, but is much larger. *Upperside* white, the veins and terminal margins of the wings heavily marked with black, the latter bearing postdiscal and subterminal series of white spots; on the fore wing the postdiscal series consists of four spots in interspaces 2, 4, 5 and 6, and the subterminal series is complete; on the hind wing, the anterior spots in the postmedial series are more or less lunular, and the subterminal series of spots does not extend beyond interspace 5, while all the spots in both series are washed with yellow, as is also the dorsal margin. *Underside* similar, the outer series of white spots more complete, the postdiscal series anteriorly on both fore and hind wing lunular. Hind wing: the interspaces near base above subcostal vein, the dorsal margin broadly and the anterior spots of the postdiscal series washed with yellow. Antennæ black; head, thorax and abdomen sullied white; beneath pale ochraceous brown.

Exp. ♂ 91 mm. (3·6″).

Hab. A single specimen recorded from the N.W Himalayas, Chamba, by the late Mr. de Nicéville.

This seems to be an exceedingly rare form, and is probably the Western representative of the Chinese *Parhestina mena*, Butler.

Genus **EURIPUS.**

Euripus, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 293; *de N. Butt. Ind.* ii, 1886, p. 15; *Moore, Lep. Ind.* iii, 1896-99, p. 39.

Type, *E. halitherses*, Westw., from Sikhim.

Range. Sikhim eastward through Assam, Burma, and Tenasserim to China, and southward to the Malay Peninsula and Sumatra.

♂ Fore wing triangular, costa arched; apex well marked, subacute; termen convex, anteriorly concave in the middle, bluntly angulate at apex of vein 2; tornus obtuse, dorsum nearly straight; cell open, in length nearly one-third of wing; upper discocellular minute, middle concave, short, lower wanting; veins 8, 9, 10 out of 7, latter two touching, 11 free, 10 touching but not anastomosed to 11. Hind wing subquadrate, costa arched, apex rounded; termen scalloped, truncately produced at tornus and between veins 4 and 5, biemarginate between veins 2 and 4; dorsum slightly convex; cell open, narrow, vein 7 at base equidistant from 6 and 8. Antennæ long, stout; club long and gradual; palpi erect, stout, parallel, third joint very short, slender; eyes naked; front tarsus one-jointed; claws of intermediate and posterior tarsi with long slender paronychia and large pulvilli.

Key to the forms of Euripus.

a. Both sexes without red spots on hind wing .. *E. halitherses*, p. 242.
b. Both sexes with one or more red spots on hind wing ... .. . *E. consimilis*, p. 244.

268. **Euripus halitherses**, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 293, pl. 41, fig. 2 ♂; *de N. Butt. Ind.* ii, 1886, p. 18, pl. 20, fig. 90, ♂ ♀; *Moore, Lep. Ind.* iii, 1896-99, p. 40, pl. 203, figs. 1, 1 *a*–1 *e*, ♂ ♀, & pl. 204, figs. 1, 1 *a*–1 *c*, ♀.
Euripus cinnamomeus, *Wood-Mason, J. A. S. B.* 1881, p. 272, pl. 4, fig. 4 ♀.
Euripus alcathoëoides, *de N. Butt. Ind.* ii, 1886, p. 20 ♀

Fig. 47.
Euripus halitherses, ♂. ½.

♂ *Upperside* deep blue-black. Fore wing with the following creamy-white markings: a streak from base in interspace 1, a shorter streak with a spot below it in cell, a transverse spot at apex of same, a very large spot at base of interspace 2, a much smaller one in interspace 3, three rectangular short streaks above towards the costa, a post-discal series of paired streaks in the interspaces curving inwards opposite the tornus, and a line of obscure dots along terminal margin near tornus. Hind wing with similar streaks in cell and in all the interspaces from 1 *a* to 6, followed

by somewhat irregular subterminal and terminal rows of purer white small spots; the spots in the subterminal row are paired, and in both rows are incomplete towards apex of wing. *Underside* dark hair-brown, deep blue-black along posterior half of termen of both fore and hind wing; markings as on upperside, but larger and more clearly defined, the streak from base in interspace 1 on the fore wing wanting, additional streaks in interspaces 7 and 8 and at apex in hind wing. Antennæ black; head, thorax and abdomen black above; the abdomen conspicuously barred with white on the sides; thorax spotted with white beneath.

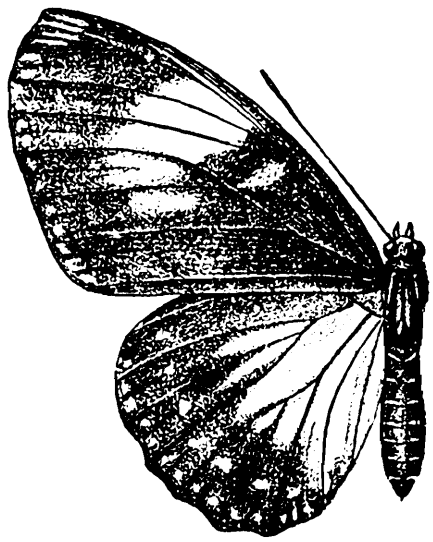

Fig. 48.—*Euripus halitherses*, ♀. (First form.)

The ♀ is polymorphic.

First form.—Upperside fuliginous bluish black. Fore wing: a transverse white obscure spot at apex of cell, a short very broad oblique white discal band or patch from costa to interspace 2, and a terminal series of obscure white dots. Hind wing: white streaks in cell and interspaces 1 *a* to 6, and subterminal and terminal rows of obscure white spots. *Underside* similar, the markings somewhat larger and more clearly defined.

Second form.—Closely resembles the first form, but the white markings, especially on the hind wing, more extensive.

Third form.—Upperside. Fore wing deep indigo-blue, the apical half of the wing suffused with purple, traversed by the dark veins and by a terminal series of obscure purplish-white spots. Hind wing dark cinnamon-brown, an obscure terminal series of white specks, more distinct at the tornal angle. *Underside* dark cinnamon-brown, the terminal series of spots on both fore and hind wing far more clearly defined, in addition a subterminal row of white spots on the hind wing; the abdomen beneath marked transversely with white.

Fourth form (alcathoëoides, de N.).—Similar to the above, but on the upperside the fore wing hair-brown, very slightly suffused with purple, the hind wing with subterminal and terminal series of white spots, the subterminal spots sometimes elongate, more often round.

Fifth form (nyctelius, Dblday., A. M. N. H. xvi, 1845, p. 182).—Similar to *cinnamomeus*, Wood-Mason, but fore wing with a terminal series of obscure and ill-defined white streaks; hind wing with the posterior half white, traversed by the dark veins, the white curving upwards, reaching the apex of the wing, some obscure dark terminal marks between the veins.

Exp. ♂ ♀ 66–84 mm. (2·6–3·3″).

Hab. Sikhim; the hills of Assam; Cachar; Manipur; Burma; Tenasserim, extending to the Malay Peninsula.

269. **Euripus consimilis**, *Westwood* (Diadema), *in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 281 ♀ ; *de N. Butt. Ind.* ii, 1886, p. 17 ; *Moore, Lep. Ind.* iii, 1896–99, p. 44, pl. 205, figs. 1, 1 *a*–1 *d*, ♂ ♀.

Euripus hallirothius, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1850, p. 293 ♂.

Euripus consimilis, var. meridionalis, *Wood-Mason, J. A. S. B.* 1881, p. 86, pl. 4, fig. 2.

♂ *Upperside*: fore wing black with the following white streaks and spots: a long streak from base, outwardly broadened and diffuse in interspace 1, a short slender streak in cell with a minute elongate spot below it, a broad, short, very oblique, in the middle broadly interrupted, median band, an oblique short row of slender paired streaks beyond in interspaces 3, 4 and 5, followed by a more complete postdiscal series of similar streaks from costa to interspace 2, and a terminal row of small dots turning into obscure streaks towards the apex. Hind wing white, traversed by the black veins, with the termen anteriorly narrowly, posteriorly broadly black, the broad portion traversed by a subterminal series of four or five crimson spots, and beyond by a terminal row of white spots. *Underside* similar; the markings broader, larger, and more clearly defined, the hind wing with a small patch and two spots of crimson at base. Antennæ black; head, thorax and abdomen above black; the head and thorax beneath, the abdomen beneath and on the sides marked with white.— ♀ *Upperside*: fore wing similar, the white streaks much broader, single, not paired. Hind wing also similar, but the black on the terminal margin not at all or very slightly widened posteriorly, entirely without the crimson spots; there is instead a marked dilatation of the black bordering the veins 2, 3 and 4. *Underside* similar to the upperside.

Exp. ♂ ♀ 70–88 mm. (2·69–3·48″).

Hab. Sikhim, and westward to Kumaun; found also in Southern India; Assam; Burma, and Tenasserim.

Genus **SEPHISA**.

Sephisa, *Moore, P. Z. S.* 1882, p. 240; *de N. Butt. Ind.* ii, 1886, p. 45; *Moore, Lep. Ind.* iii, 1897–99, p. 25.

Type, *S. dichroa*, Kollar, from Kashmir.

Range. The Himalayas and the hill-ranges of Assam and Burma, extending to China.

♂ ♀ Fore wing: costa arched, apex well marked but obtuse; termen highly sinuous, convex below apex, concave in the middle, then angulate at or below apex of vein 2; tornus obtuse, dorsum slightly convex; cell open; upper discocellular minute, middle short, bent inwards, lower absent; veins 8, 9, 10 out of 7, 11 free, 9 touching 10, 10 touching 11 but no anastomosis. Hind wing:

costa slightly arched; termen rounded, scalloped; tornus well marked; dorsum convex, slightly emarginate above tornus; cell open. Antennæ long, massive; club gradual, slightly flattened, blunt at apex; palpi short, porrect, third joint short, conical, acute at apex; eyes naked; intermediate and posterior legs short, femora and tibiæ subequal.

Sephisa is very closely allied to *Euripus*; the points of difference are, however, noted in the key to the genera.

Key to the forms of Sephisa.

a. Discal series of spots on upperside of fore wing in both sexes orange-yellow ... . *S. dichroa*, p. 245.

b. Discal series of spots on upperside of fore wing in ♂ white, in ♀ white with lower spots sometimes blue *S. chandra*, p. 246.

270. **Sephisa dichroa**, *Kollar* (Limenitis), *Hügel's Kaschmir*, iv, 1844, pt. 2, p. 429, pl. 8, figs. 1, 2; *de N. Butt. Ind.* ii, 1886, p. 47, pl. 20, fig. 93 ♂; *Moore, Lep. Ind.* iii, 1896–99, p. 26, pl. 197, figs. 1, 1 *a*–1 *e*, ♂ ♀, larva & pupa.

♂ *Upperside* black; fore wing with the following tawny-yellow markings: an oblique spot with sinuous margins across cell, a short streak in middle of interspace 1 *a*, four large spots round a quadrate black area on the disc, three elongate oblique spots above them, not reaching the costa, three subapical smaller spots and a more or less obscure, sometimes partially obsolescent series of subterminal spots. Hind wing: the dorsal margin to vein 1 dull ochraceous; a broad streak in the cell and narrower streaks in the interspaces with a curved subterminal series of more or less quadrate spots beyond rich tawny yellow; lastly, two dusky-black spots in cell, an inner bluish small spot in interspace 2 and a line of obscure pale terminal markings. *Underside* similar, with similar markings, but the terminal series of markings on both fore and hind wing more distinct; the cell-spot and four large discal spots on the fore wing, the dorsal margin and subterminal series of spots on the hind wing only yellow; the rest of the markings bluish white, with, in addition, some bluish-white spots at the base of the wings and similarly-coloured streaks at the apex of the fore wing. Antennæ black; head, thorax and abdomen above black, beneath bluish white.— ♀ similar, the markings paler, the subapical three and generally the subterminal series of spots on fore wing white.

Exp. ♂ ♀ 64–77 mm. (2·54–3·1″).

Hab. The Himalayas from Kashmir to Kumaun.

Larva. Green, attenuate towards anal segment, latter with two apparently pointed tails, head with two pale ochraceous branched processes, the anterior segments with two subparallel pale yellow dorsal lines, followed on the posterior segments with oblique streaks of the same colour; the streaks on the 6th and 9th segments end in a pair of pointed flaps or projections with a crimson spot between them.

Pupa. "Emerald-green, covered with a white powdery bloom. In general appearance it is somewhat boat-shaped . . . sides compressed, and the back highly arched and keeled."

The above descriptions of larva and pupa are condensed from Major Harford's MS. notes as given by Dr. Moore in his 'Lepidoptera Indica.'

271. **Sephisa chandra** (Pl. VI, fig. 44), *Moore* (Castalia), *Cat. Lep. Mus. E. I. C.* i, 1858, p. 200, pl. 6 *a*, fig. 4; *de N. Butt. Ind.* ii, 1886, p. 46: *Moore, Lep. Ind.* iii, 1896-99, p. 29, pl. 198, figs. 1, 1 *a*–1 *c*, ♂ ♀, pl. 199, figs. 1, 1 *a*–1 *c*, ♀

♂. *Upperside* deep velvety black. Fore wing with a curved median series of four large rich tawny-yellow spots, followed by an oblique discal series of five, and two preapical smaller snow-white spots, and an obscure subterminal sinuous row of blue dots. Hind wing with the markings as in *S. dichroa*, but of a richer deeper tawny yellow, the dorsal margin to vein 1 greyish or purplish white. *Underside* similar, with the following additional markings:—Fore wing: blue spots at bases of interspace 1 and discoidal cell, three minute blue spots beyond, tawny-yellow spot in cell, and a double subterminal row of brilliant blue spots, the apical three or four elongate, the posterior more or less lunular. Hind wing as in *S. dichroa*, but the terminal series of spots larger and brilliant blue. Antennæ black; head, thorax and abdomen black above, spotted with blue and pale ochraceous beneath.

♀ polymorphic. *First form.—Upperside* similar to that of the male, but the ground-colour and markings paler, the latter in the cell and interspaces of the hind wing are white washed with ochraceous. *Underside* similar to the underside in the ♂.

Second form.—Upperside similar to that of the ♂, but on the fore wing only the uppermost of the median series of spots yellow, the others and the whole of the markings on the hind wing white. *Underside* as in the ♂, but the posterior spots of the median and discal bands of the fore wing and the markings on the hind wing more or less as on the upperside; a few of the spots washed with ochraceous.

Third form.—Upperside: the ground-colour of the same dark rich shade as in the ♂, the uppermost spot of the median series yellow, the rest of the spots and the markings on the hind wing blue. In most specimens the markings in the cell absent, those in the interspaces faint and much restricted. One specimen from Sikhim has a broad white preapical bar on the fore wing. *Underside.* Fore wing as on the upperside. Hind wing: a spot in the cell, a subcostal spot and the inner half of some of the postdiscal series of spots ochraceous, the rest of the markings faintly bluish white.

Exp. ♂ ♀ 88–100 mm. (3·45–3·94″).

Hab. Nepal; Sikhim and eastward through the hill-ranges of Assam to Upper Burma and Siam.

Genus **NEUROSIGMA.**

Acontia, *Westw.* (*nec Horsf.*) *Cab. Or. Ent.* 1848, p. 76.
Neurosigma, *Butler, P. Z. S.* 1868, p. 615 ; *de N. Butt. Ind.* ii, 1886, p. 150; *Moore, Lep. Ind.* iii, 1896-99, p. 78.

Type, *N. doubledayi*, Westw., from Sikhim.

Range. From Sikhim eastward through the hill-ranges of Assam to Burma.

♂ ♀ Closely allied in structure and neuration to *Dophla* (p. 255), but the discoidal cells in both fore and hind wing are comparatively longer; in the fore wing the lower discocellular is slightly sinuous, not strongly concave, and in the hind wing more oblique, also vein 7 is distinctly closer at base to vein 6 than to vein 8. The type of coloration, however, is very distinct from that of any *Dophla*, the ochraceous or white ground-colour being covered by a striking pattern of spots, bars and streaks of black.

Two forms only are recorded, both occurring within our limits.

Key to the forms of Neurosigma.

a. Ochraceous colour on upperside of fore wing confined to base of cell and bases of interspaces 1, 2 and 4. ... . *N. doubledayi*, p. 247.
b. Ochraceous colour on upperside of fore wing extended to termen below vein 4 *N. fraterna*, p. 248.

272. **Neurosigma doubledayi**, *Westwood* (Acontia), *Cab. Orient. Ent.* 1848, p. 76, pl. 37, fig. 4 ♀ ; *Moore, Lep. Ind.* iii, 1896-99, p. 79, pl. 218, figs. 1, 1 *a*, 1 *b*, ♂ ♀.
Adolias siva, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 291 ; *de N.* (Neurosigma) *Butt. Ind.* ii, 1886, p. 151, pl. 19, fig. 80 ♂

♂. *Upperside* white with a faint stramineous tint. Fore wing: basal half of interspace 1, the extreme base of interspace 2, and the lower half of cell extending to a little beyond its apex light orange ochraceous; three large spots in basal half of interspace 1, three irregular transverse bars across cell with two spots beyond, a discal and a postdiscal transverse series of continuous lunules, the costa, apex, termen and dorsum black; the costa with a streak of ochraceous at base and two slender white streaks near the apex, dorsum with a postmedial white slender streak. Hind wing: veins 1 *a* and 1 margined with black; a series of subcostal transverse bars, two crossing cell, a zigzag discal mark and the terminal third of the wing black, the last with two curved series of white spots. *Underside* similar, the black markings narrower. Antennæ and head black; thorax and abdomen black, marked with ochraceous and white; beneath ochraceous white.— ♀ similar; differs in the comparatively broader black markings and in the ochraceous colouring at the bases of interspaces 4 and 5 on the hind wing.

Exp. ♂ ♀ 84–108 mm. (3·3–4·25″).

Hab. Sikhim ; through the hills of Assam to Burma.

273. **Neurosigma fraterna,** *Moore, Lep. Ind.* iii, 1896-99, p. 80, pl. 218, figs. 2, 2 *a*, ♂
Adolias siva, *Moore* (*nec Westw.*), *Trans. Ent. Soc.* 1859, p. 85.

♂. Very closely resembles *N. doubledayi*, but on the fore wing the ochraceous-orange colour is darker and covers the whole of the wing up to the discal lunular band, extending beyond it, below vein 4, to the terminal black margin, interrupted only by the black markings. On the hind wing the ochraceous colour occupies the cell, extending beyond it in interspaces 2 to 6, up to the black on the terminal third of the wing. Female unknown.

Exp. ♂ 82–100 mm. (3·24–3·94″).

Hab. Bhutan ; Assam and Chittagong hills.

Genus **DICHORRAGIA.**

Adolias, pt., *Felder, Ein Neues Lep.* 1861, p. 34.
Dichorragia, *Butler, P. Z. S.* 1868, p. 614; *de N. Butt. Ind.* ii, 1886, p. 141 ; *Moore, Lep. Ind.* iii, 1896-99, p. 74.

Type, *D. nesimachus,* Boisduval.

Range. Indo-Malayan Region : in the Himalayas from Kulu to Sikhim ; Assam ; Burma ; Tenasserim, extending to China and to the Malayan Subregion as far as Amboina and Ceram.

♂ ♀ Fore wing broadly triangular ; costa evenly arched, apex obtuse, termen and dorsum nearly straight, tornus rounded ; cell closed, a little under half length of fore wing ; upper discocellular minute, middle very little less than lower, deeply concave, lower slightly concave ; vein 3 from just before lower apex of cell, 10 and 11 free. Hind wing subquadrate, costa nearly straight, apex rounded ; termen arched, scalloped, tornus rounded, dorsum arched ; cell closed, comparatively long ; veins 3 and 4 from lower apex of cell ; the discocellulars oblique ; vein 7 nearer 6 than 8, vein 8 reaching apex ; precostal spur straight, simple, truncate at apex. Antennæ long, over half length of fore wing ; club long, gradual ; palpi obliquely porrect ; eyes slightly hairy.

A single wide-spread form, the type of the genus, is found within our limits.

274. **Dichorragia nesimachus,** *Boisduval, Crochard's edit. Cuv. Règ. Anim., Ins.* ii, 1836, pl. 139 bis, fig. 1 ; *de N. Butt. Ind.* ii, 1886, p. 141, pl. 19, fig. 82 ; *Moore, Lep. Ind.* iii, 1896-99, p. 75, pl. 217, figs. 1, 1 *a*, ♂ ♀.

♂ ♀ *Upperside* dark green, the apex and terminal margin of fore and anterior third of hind wing purplish black. Fore wing : cell and wing posteriorly up to vein 4 with green basal and outward white spots, a discal oblique series of narrow stripes from costa to interspace 4, a postdiscal transverse row of white spots succeeded by a series of slender white stripes forming inwardly-

pointed loops, and a subterminal row of minute transverse white spots; the row of white slender loops in the ♀ is doubled, and sometimes also in the ♂ Hind wing: apex of cell and disc of wing with bluish-green spots; the anterior subcostal spot large and white; a postdiscal series of elongate oval velvety-black spots, succeeded by a series of slender white loops and beyond by a row of slender transverse white spots as on the fore wing, the space enclosed by the loops and the outer row of transverse white spots or short lines velvety black. *Underside*: fore wing purplish black; hind wing dull opaque black; the markings much as on the upperside but larger, more clearly defined, except the spots on the disc of the hind wing, which are obscure. On the fore wing the spots in the cell join and form prominent transverse purplish-blue bars, and on the hind wing the postdiscal series of velvety-black spots are more conspicuous. Antennæ, head, thorax and abdomen dull black.

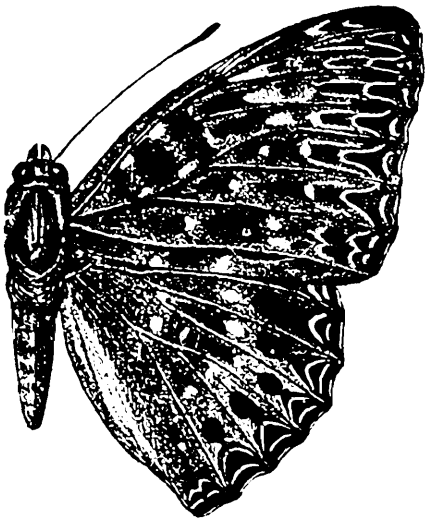

Fig. 49.
Dichorragia nesimachus. ½.

Exp. ♂ ♀ 76–88 mm. (3–3·48″).

Hab. The Himalayas from Kulu to Sikhim; the hill-ranges of Assam, Burma and Tenasserim, extending to the Malayan Subregion, China and ? Japan (*Leech*).

Genus **STIBOCHIANA**.

Adolias, pt., *Felder, Ein Neues Lep.* 1861, p. 35.
Stibochiana, *Butler, P. Z. S.* 1868, p. 614; *de N. Butt. Ind.* ii, 1886, p. 120; *Moore, Lep. Ind.* iii, 1896–99, p. 76.

Type, *S. coresia*, Hübner, from Java.

Range. The Himalayas from Kulu to Sikhim; the hill-ranges of Assam, Burma and Tenasserim, extending to Western China and the Malayan Subregion.

♂ ♀ I have retained this genus, following Messrs. Butler, Moore, and de Nicéville, but it is very closely allied to *Dichorragia*. The only structural difference I can find is that in *Stibochiana* the discoidal cell in both fore and hind wings is very much shorter proportionately than it is in *Dichorragia*, measuring barely a third of the length of the fore wing. In shape and neuration of the wings, in length and form of the antennæ and palpi, and in possessing hairy eyes, *Stibochiana* is identical with *Dichorragia*. As in that genus, only a single form is recorded from within our limits.

275. **Stibochiana nicea** (Pl. VI. fig. 46), *Gray* (Adolias), *Lep. Ins. Nepal*, 1833–46, p. 13, pl. 12, fig. 1; *Butler*, *P. Z. S.* 1868, p. 614; *de N. Butt. Ind.* ii, 1886, p. 120, pl. 19, fig. 81; *Moore*, *Lep. Ind.* iii, 1896-99, p. 77, pl. 217, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ *Upperside* deep velvety black. Fore wing: cell with three somewhat obscure light blue transverse short lines, a curved series of four discal and of five postdiscal minute white spots anteriorly, and a complete series of subterminal similar spots, bordered inwardly by a row of paired blue marks on each side of veins 1 to 6. Hind wing: a postdiscal blue transverse sinuous line not reaching the costa or dorsum, followed by a subterminal series of blue circular marks with black centres, their rims outwardly snow-white. Cilia of both fore and hind wing white, alternated with black on the fore, continuous on the hind wing. *Underside* purplish black. Fore wing: the cell-marks better defined, the discal and postdiscal series of spots sinuous, each of seven spots; the subterminal row of spots as on the upperside, but larger, the line of blue paired marks on the veins bordering the subterminal row on the inner side above absent. Hind wing: three obliquely placed subbasal spots and a transverse sinuous line of discal spots blue, followed by a series of five or six postdiscal dots and a subterminal line of transverse inwardly crescentic bars in the interspaces lilacine white. Antennæ, head, thorax and abdomen black.—♀ Similar, but on the upperside the ground-colour dull black suffused with green, the cell-markings and the inner subterminal paired spots on the fore wing and the postdiscal sinuous band on the hind wing metallic green. *Underside*: ground-colour fuliginous black, the markings as in the ♂ but larger.

Exp. ♂ ♀ 72–80 mm. (2·85–3·18″).

Hab. The Himalayas from Kulu to Sikhim; the hill-ranges of Assam, Burma and Tenasserim, extending to Western China.

Genus **ABROTA.**

Abrota, *Moore*, *Cat. Lep. Mus. E. I. C.* i, 1857, p. 176; *de N. Butt. Ind.* ii, 1886, p. 182; *Moore*, *Lep. Ind.* iii, 1896–99, p. 81.

Type, *A. ganga*, Moore, from Sikhim.

Range. Limited apparently to Sikhim and Bhutan.

♂ ♀. Fore wing: costa moderately arched, termen slightly concave; tornus rounded, dorsum slightly sinuous; cell not half length of fore wing; upper discocellular minute, middle <-shaped with a short spur at the angle, lower very slender, obtusely angulated inwards; veins 3 and 4 from lower apex of cell, 10 and 11 free. Hind wing subtriangular, cell open; veins 5 and 6 approximate at base, 7 midway between 6 and 8. Antennæ about half length of wing; club slender, long and gradual; palpi broad, with the third joint very short, acute; eyes naked.

Key to the forms of Abrota.

a. ♂ Discal and subterminal transverse black bands on upperside of hind wing well apart. ♀: yellow transverse bands on hind wing comparatively narrow, under 95 mm. in breadth ... . *A. ganga*, p. 251.

b. ♂ Discal and subterminal transverse black bands on upperside of hind wing close together, separated only by a narrow yellow line. ♀: yellow transverse bands on upperside of hind wing comparatively broad, over 95 mm. in breadth *A. jumna*, p. 252.

276. **Abrota ganga**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 178, pl. 6 *a*, fig. 1, ♂ only; *id. Lep. Ind.* iii, 1896–99, p. 81, pl. 219, figs. 1, 1 *a*, ♂ ♀.

? Papilio mirus, *Fabr. Ent. Syst.* iii, 1793, pt. 1, p. 48.

Abrota mirus, *de N. Butt. Ind.* ii, 1886, p. 183, pl. 24, fig. 110, ♀ only.

♂ *Upperside* rich ochraceous. Fore wing: cell with a subcostal spot and the discocellulars defined in black; dusky-black markings along the upper edge of cell joining a large oblique, somewhat diffuse black patch beyond its apex, this patch extending to vein 4, there bent acutely inwards and continued as an inwardly

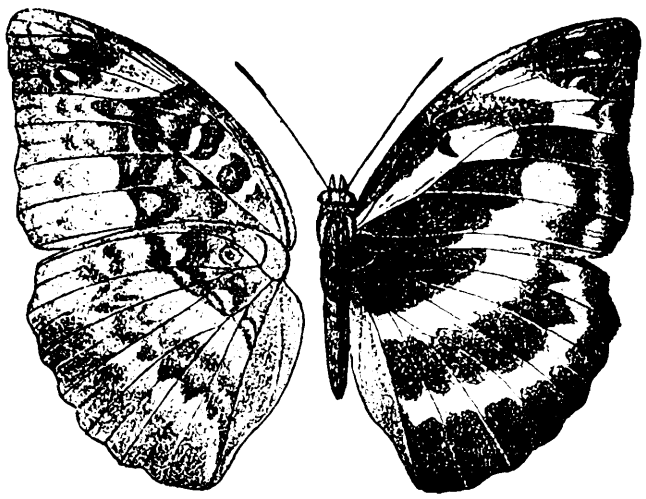

Fig. 50.—*Abrota ganga*. ⅔.

oblique zigzag diffuse band; beyond this, a very incomplete postdiscal row of black diffused markings, followed by a subterminal, similarly diffused, black, transverse, somewhat lunular band; costal and terminal margins and apex black. Hind wing crossed by a basal, a discal, a subterminal and a broader terminal black band; bases of both wings irrorated with dusky-black scales. *Underside* paler yellow. Fore and hind wings with a common, anteriorly broad, inwardly oblique, discal fascia, a row of somewhat obscure postdiscal spots and a lunular subterminal obscure band chestnut-red. Fore wing: basal portion inside of the discal band with a medial and a terminal cell-bar and a transverse highly sinuous band beyond of the same colour. Hind wing: basal area inside the discal band with two slender rings, followed by a sinuous transverse irregular line, chestnut-brown. Antennæ, head, thorax

and abdomen dark brown, somewhat ochraceous on the abdomen, beneath very pale ochraceous.— ♀. *Upperside* black. Fore wing with the following yellow, sometimes orange, markings :—a streak in lower half of cell produced well beyond its apex and interrupted only by the black margins of the discocellulars; a spot below its apex at base of interspace 3; a much-curved interrupted discal band of spots (three anteriorly outwardly oblique, three posteriorly inwardly oblique), no spot in interspace 3; a subterminal incomplete irregular band from vein 5 to dorsum, and two preapical spots, these last white. Hind wing with a subbasal and a postdiscal orange-yellow band. *Underside* purplish red shaded with pale purple; the cell of fore wing yellow, with two transverse bands of the ground-colour, the yellow curved discal band and subterminal band less distinct than on the upperside. Hind wing with the yellow subbasal and postdiscal bands as on the upperside, but less well-defined.

Exp. ♂ ♀ 78–92 mm. (3·07–3·62″).

Hab. Sikhim.

277 **Abrota jumna**, *Moore, P. Z. S.* 1865, p. 764, ♂ only; *de N. Butt. Ind.* ii, 1886, p. 184, pl. 24, fig. 110, ♂ only; *Moore, Lep. Ind.* iii, 1896–99, p. 83, pl. 219, figs. 2, 2 *a*, ♂ ♀.

Abrota ganga, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 178, pl. 6 *a*, fig. 1, ♀ only.

♂ ♀ Closely resembles *A. ganga* in both sexes and also on the upper and under sides, but in the ♂ the ground-colour on the upperside is paler, and on the hind wing the discal and subterminal bands are very close together, separated only by a sinuous line of the ground-colour. In the ♀ the yellow bands on the upperside are distinctly broader, especially on the hind wing, so that the black interspaces of the ground-colour are conspicuously narrowed. *Underside* in both sexes similar to the underside in *A. ganga*.

Exp. ♂ ♀ 80–98 mm. (3·13–3·88″).

Hab. Sikhim; Bhutan.

Genus **SYMPHÆDRA.**

Symphædra, *Hübner, Verz. bek. Schmett.* 1816, p. 39; *de N. Butt. Ind.* ii, 1886, p. 185.

Lexias, *Boisduval, Voy. Astr., Lép.* 1832, p. 125.

Adolias, pt., *Boisduval, Spéc. Gén. Lép.* i, 1836, pls. 3 & 8.

Type, *S. æropus*, Linn., from the Moluccas.

Range. Indo-Malayan Region.

♂ ♀ Fore wing short, broad, triangular; costa strongly arched, apex obtusely pointed, termen straight, tornus obtuse, dorsum straight; cell closed, veins 6 and 7 from a point, hence upper discocellular nearly obsolete, middle strongly concave, short, lower three times as long as the middle one, slender, concave; vein 9 out of 7 from opposite the middle of the costa, 10 and 11 free, 10 from upper third of subcostal, 11 from middle of subcostal, anastomosed with 12 towards apex. Hind wing subquadrate, costa arched,

apex obtuse, termen slightly arched and scalloped; cell open; vein 7 equidistant from 6 and 8. Antennæ very long, considerably more than half length of fore wing; club long, gradual, obtuse at apex; palpi short, porrect, third joint short, conical; eyes naked; tibiæ and femora of intermediate and posterior legs scaled, subequal.

Key to the forms of Symphædra.

♂ ♂.

a. Band on terminal margin on upperside of fore wing broad, extending to margin, metallic green in colour . . . . . *S. dirtea*, p. 253.
b. Band on terminal margin on upperside of fore wing much narrower and shorter, not extending to margin, metallic blue or green. [p. 254.
a' Underside: ground-colour rich indigo-green. Race *cyanipardus*,
b'. Underside: ground-colour dark ferruginous. Race *khasiana*, p. 254.

♀ ♀.

a. Spots on upperside of fore wing ochraceous . . *S. dirtea*, p. 253.
b. Spots on upperside of fore wing pale bluish white.
a' Underside: ground-colour of hind wing bluish green. . . . . [p. 254.
Race *cyanipardus*,
b'. Underside: ground-colour of hind wing ochraceous Race *khasiana*, p. 254.

278. **Symphædra dirtea**, *Fabr.* (Papilio) *Ent. Syst.* iii, pt. 1, 1793, p. 59; *de N. Butt. Ind.* ii, 1886, p. 189; *Moore* (Adolias), *Lep. Ind.* iii, 1896–99, p. 68, pl. 213, figs. 2, 2 *a*, ♂ ♀.

Race cyanipardus.

Symphædra cyanipardus, *Butler*, *P. Z. S.* 1868, p. 613; *de N. Butt. Ind.* ii, 1886, p. 190, pl. 21, fig. 96, ♂ ♀; *Moore* (Adolias), *Lep. Ind.* iii, 1896–99, p. 71, pl. 215, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Race khasiana (Pl. V, fig. 34).

Symphædra khasiana, *Swinhoe*, *Trans. Ent. Soc.* 1893, p. 284; *Moore* (Adolias), *Lep. Ind.* iii, 1896–99, p. 70, pl. 214, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂. *Upperside* rich velvety black. Fore wing with some rather obscure small pale ochraceous spots at base below cell and in one or two of the interspaces; a row of similar better-defined spots along the costal margin; the preapical spot whitish; terminal margin with a broad band of greenish blue, decreasing in width from tornus to apex. Hind wing: a much broader band on terminal half of wing, anteriorly metallic blue, not reaching the margin, posteriorly green, diffusedly extending right up to the margin; this band traversed by a subterminal row of black spots; abdominal fold dusky black; cilia of both wings black alternated with white. *Underside* rich ochraceous. Fore wing: interspaces 1, 1 *a*, and terminal half of 2 purplish black; an ≈-shaped mark in cell, two spots on the discocellulars, discal, postdiscal and subterminal series of spots ochraceous white; none of the series

is complete, one or more spots in each being absent. Hind wing: four spots in cell and a curved series of spots in the interspaces beyond, ochraceous white; the subterminal series of black marks of the upperside showing indistinctly through. Antennæ black, ochraceous at apex; head, thorax and abdomen black, beneath ochraceous.— ♀. *Upperside* fuliginous black spotted with ochraceous black as follows:—Fore wing: interspace 1 with two or three spots and short streaks, a spot in cell and two on the discocellulars, a series of spots along the costal margin, a discal curved series of four spots, a postdiscal inwardly oblique series of seven spots, and a subterminal more obscure series of paired short streaks. Hind wing: two lines of ochraceous spots crossing the wing from the dorsal margin, followed by a postdiscal series of double crescentic marks, enclosing more or less detached round spots of the dark ground-colour, and a subterminal series of short paired streaks as in the fore wing. *Underside*: fore wing fuliginous black; hind wing bluish green, the spots and markings as on the upperside; the apical half of the fore wing with a suffusion of greenish scales. Antennæ black; head, thorax and abdomen brownish black spotted with yellow; beneath ochraceous white.

Exp. ♂ ♀ 86–110 mm. (3·4–4·3″).

Hab. Burma and Tenasserim; the Malay Peninsula; Sumatra; Borneo; Java.

Race **cyanipardus**, Butler.— ♂ ♀. Closely resembles the typical form, but is very much larger and differs as follows:— ♂ *Upperside*: the spots on fore wing greenish white, the metallic green band on the terminal margin very much narrower, shorter and subterminal, not reaching the margin; on the hind wing the broad band on the terminal half also subterminal throughout its length, not extending to the margin posteriorly; green only at the tornal angle. *Underside*: the ground-colour rich dark indigo-green, the spots on the fore wing much fewer in number, confined, except a prominent preapical white spot, to the cell and disc; on both fore and hind wing all the spots are bluish green, not ochraceous. Antennæ, head, thorax and abdomen black; thorax and abdomen beneath brownish. The female resembles the typical form more closely than does the male, the ground-colour and arrangement of the spots and markings being almost identical; the latter are, however, bluish not ochraceous.

Exp. ♂ ♀ 111–142 mm. (4·4–5·6″).

Apparently confined to the hill-ranges of Assam.

Race **khasiana**, Swinhoe.—Has the appearance of a small form of *cyanipardus*, differing in both sexes from *dirtea* in the manner that *cyanipardus* differs. It can be distinguished, however, from *cyanipardus* by its smaller size; in the ♂ on the *upperside* the fore wing is without spots, the subterminal band is blue not green, the band on the hind wing is violaceous anteriorly, merging into blue posteriorly, and on the *underside* the ground-colour is a rich dark ferruginous. The female more closely resembles the ♀ of *cyanipardus* on the upperside, the spots being,

as in that race, bluish white, and not ochraceous as in *dirtea*. On the underside, however, the ground-colour is rich ochraceous.

Exp. ♂ ♀ 80–112 mm. (3·15–4·41′).

Hab. Sikhim; Bhutan; hill-ranges of Assam.

Genus **DOPHLA**.

Adolias, pt., *Felder, Ein Neues Lep.* 1861, p. 35.
Euthalia, pt., *de N. Butt. Ind.* ii, 1886, p. 191.
Dophla, *Moore, Lep. Ceyl.* i, 1880, p. 33; *id. Lep. Ind.* iii, 1896–99, p. 103.
Bassarona, Rangasa, Limbusa, Mahaldia, Zalapia, Labranga, *Moore, Lep. Ind.* iii, 1896–99, pp. 59, 65, 130, 132, 135 & 139.

Type, *D. evelina*, Stoll, from Ceylon.

Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa strongly arched, apex rounded and produced; termen deeply concave below apex, then convex; tornus rounded, dorsum straight; cell closed; upper discocellular very short, middle and lower together concave, the latter very slender; vein 3 from just before apex of cell, 4 from apex, 9 from basal third of vein 7, 10 and 11 free, from apical half of subcostal vein. Hind wing: costa arched at base, then nearly straight, apex broadly rounded, termen convex, dorsum arched, tornus slightly produced; cell slenderly closed, very short, about one-third length of wing; veins 3 and 4 from lower apex of cell. Antennæ long, over half length of wing; club slender; palpi broad, third joint very acute; eyes naked.

Key to the forms of Dophla.

A. Upperside ground-colour: ♂ dark brownish black; ♀ similar or paler brown.
  a. White or yellowish-white macular discal band crossing wings complete, slightly curved; underside ground-colour ochraceous brown.
    a′. Without a crimson spot at tornal angle of hind wing.
      a^2. Anterior three spots of discal band smaller than rest .... — *D. teuta*, p. 257.
      b^2. Anterior three spots of discal band in ♂ smaller than rest; in ♀ of equal size with rest or larger... . — Race *teutoides*, p. 258.
    b′. With a crimson spot at tornal angle of hind wing ... ... — Race *recta*, p. 258.
  b. White or yellowish-white macular discal band crossing wings: ♂ complete; ♀ incomplete and with spots separate. Underside either ochraceous white or pale lilacine grey.
    a′. ♂ underside pale ochraceous white; ♀ discal band not continued below interspace 4 on hind wing .. — *D. goodrichi*, p. 258.
    b′. ♂ underside pale lilacine grey; ♀ macular discal band confined to fore wing .. — Race *gupta*, p. 259.

B. Upperside ground-colour some shade of green.

a. Fore wing: upperside without a crimson spot in cell.

a' Fore and hind wings with a broad, slightly curved snow-white discal band.

*a*². Lateral margins of discal band on hind wing sinuous .. . . .. — *D. durga*, p. 260.

*b*². Lateral margins of discal band on hind wing even .... — *D. duda*, p. 260.

b'. Fore wing only with an oblique white or whitish discal band. Hind wing without a complete discal band.

*a*². ♂: upperside of hind wing with a broad yellow patch anteriorly; ♀: underside of fore wing with the whole posterior area up to interspace 2 purplish black. ... . — *D. nara*, p. 261.

*b*². ♂: upperside of hind wing without a broad yellow patch anteriorly; ♀: underside of fore wing without any purplish black, or such colour much restricted.

*a*³. Fore wing: spot in interspace 2 short, broad, quadrate, subquadrate or round, not longer than broad.

*a*¹. Underside ground-colour ochraceous green; ♂ expanse over 80 mm. . .. . — *D. sahadeva*, p. 262.

*b*¹. Underside ground-colour greenish blue; ♂ expanse under 60 mm. .. . . — Race *narayana*, p. 263.

*b*³. Fore wing: spot in interspace 2 long and narrow, much longer than broad.

*a*⁴. Hind wing: underside with white or pale blue spots widely separate — *D. iva*, p. 263.

*b*⁴. Hind wing: underside with white or pale blue spots more or less continuous, separated only by the veins.

*a*⁵. Fore wing: interspace 1 without any white spot . .. — *D. patala*, p. 264.

*b*⁵. Fore wing: interspace 1 with a geminate sometimes single white spot always present in apical half... . .. — Race *taooana*, p. 264.

b. Fore wing: upperside with a crimson spot in cell.

a'. Fore wing: upperside ♂ without a subcostal blue patch; ♀ without any broad blue discal band .. .. — *D. evelina*, p. 265.

b'. Fore wing: upperside ♂ with a subcostal blue patch; ♀ with a broad blue discal band — Race *laudabilis*, p. 265

C. Upperside ground-colour rich hair-brown, no shade of black.
a. Fore wing: upperside with a crimson spot in cell .. .. *D. derma*, p. 266.
b. Fore wing: upperside without a crimson spot in cell .. .. . *D. dunya*, p. 266.

279. **Dophla teuta**, *Doubleday* (Adolias), *in Dbldy., Westw. & Hew. Gen. Di. Lep.* ii, p. 291, pl. 44, fig. 2 ♂; *de N.* (Symphædra) *Butt. Ind.* ii, 1886, p. 187; *Moore* (Bassarona), *Lep. Ind.* iii, 1896–99, p. 60, pl. 210, figs. 1, 1 *a*, 1 *b*, ♂ ♀

Race teutoides.

Symphædra teutoides, *Moore, P. Z. S.* 1877, p. 586; *de N. Butt. Ind.* ii, 1886, p. 188; *Moore* (Bassarona), *Lep. Ind.* iii, 1896–99, p. 61, pl. 210, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Race recta.

Symphædra recta, *de N. Butt. Ind.* ii, 1886, p. 188; *Moore* (Bassarona), *Lep. Ind.* iii, 1896–99, p. 64, pl. 212, figs. 3, 3 *a*, ♂ ♀.
Bassarona monilis, *Moore, Lep. Ind.* iii, 1896–99, p. 64, pl. 212, figs. 2, 2 *a*, ♂.

♂. *Upperside* very dark blackish brown. Fore and hind wings with a comparatively broad cream-coloured discal band composed of a continuous series of more or less rectangular spots in the interspaces, separated broadly on the fore wing by the veins; the inner margin of the spots on the hind wing even, on the fore wing irregular, their outer margin obtusely angulated on the hind wing, irregular on the fore wing; the series of spots on the fore wing extends up to interspace 6, which has also a second spot nearer the apex; the spots on this wing decrease in size anteriorly. *Underside* pale brown, the basal area on fore wing below cell, a postdiscal diffuse shade on both fore and hind wing, broadening on the fore wing near tornus, darker brown; the discal yellowish-white band across both wings and the preapical spot on the fore wing as on the upperside, but defined on both sides by fine reddish-brown lines, continuous on the hind wing, encircling each spot on the fore wing. Cell of fore wing with a medial round spot and an apical transverse narrow bar, crimson, both prominently defined by black lines; cell of hind wing with a similar but much narrower transverse bar; finally, a postdiscal row of short black streaks in the middle of the interspaces on both fore and hind wing.— ♀ *Upperside*: ground-colour similar to that in the ♂, but much paler on terminal half of wings beyond the discal band; discal band as in the ♂, but pale bluish white, its inner margin on the hind wing crenulate. Fore and hind wings with a postdiscal series of large lunular spots dark brown. *Underside* as in the ♂, but with a purplish tint, the transverse discal band defined with dark not reddish brown, the interspaces

on the hind wing, inside the postdiscal series of black spots, touched with pale purple.

Exp. ♂ ♀ 82–98 mm. (3·23–3·78″).

Hab. Recorded from Assam ; Sylhet ; Khási Hills ; Arrakan.

Race **teutoides**, Moore.— ♂ ♀ Differs from the typical form on the *upperside* in the slightly straighter discal band; on the *underside* by the paler ground-colour and by the crimson cellular marks being represented only by a few diffuse scales.— ♀ *Upperside* much paler than in *D. teuta*, the spots composing the discal band acutely pointed on the outer side, the anterior two spots on the fore wing elongate, very large, the posterior two on the same conspicuously smaller, and narrowed transversely. *Underside* paler, the lilacine tint on the terminal half of the wings more decided. Antennæ, head, thorax and abdomen as in the sexes of the typical form.

Exp. ♂ ♀ 72–88 mm. (2·83–3·45″).

Hab. S. Andamans.

Race **recta**, de Nicéville, is a closely allied but sufficiently distinct form. It is doubtful, however, whether it is more than a well-marked race, possibly a dimorph of *teuta*. ♂ ♀. *Upperside*: differs from that of the typical form as follows:—Discal band on both fore and hind wings with the inner and outer margins more even, barely sinuous. Hind wing with, in the ♂, one, in the ♀ two crimson dots always present on the tornal angle. *Underside*: ground-colour a more uniform deep purple-brown, the black edgings to the discal band, especially in the ♀, strongly defined, the crimson cellular marks on the fore wing as in the typical form, the crimson dots at tornal angle of hind wing as on the upperside.

Exp. ♂ ♀ 74–93 mm. (2·94–3·7″).

Hab. Assam ; Siam.

This form probably occurs also in Burma, though it has not yet been recorded from that country.

280. **Dophla goodrichi**, *Distant* (Euthalia), *Entomologist* (*January*), 1886, p. 11 ♀; *Moore* (Bassarona), *Lep. Ind.* iii, 1896–99, p. 63, pl. 212, figs. 1, 1 *a*, ♂ ♀

Euthalia bellata, *Distant* (*nec Druce*), *Rhop. Malay.* 1886, p. 436, pl. 37, fig. 4 ♂, & pl. 43, fig. 12 ♀.

Race gupta.

Symphædra gupta, *de N. Butt. Ind.* ii (*December*), 1886, p. 189 ♀; *Moore* (Bassarona), *Lep. Ind.* iii, 1896–99, p. 62, pl. 211, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Bassarona ira, *Moore, Lep. Ind.* iii, 1896–99, p. 61, pl. 211, figs. 1, 1 *a*, ♂

♂. Closely resembles *D. teuta* ♂ *Upperside* differs in the spots that compose the macular discal band crossing the wings being outwardly more pointed and the three anterior spots very small. *Underside* differs in the very much paler tint of the ground-

colour; the bases of the wings, the costal margin preapically of the fore wing, and the terminal half of both fore and hind wings slightly suffused with grey. Antennæ dark ochraceous; head, thorax and abdomen very dark brown, beneath brownish white, paler than in *D. teuta* ♂.—♀ "Larger and very much paler than the male; anterior wings above with the transverse pale spots with a slight bluish tinge, the lowermost broken and duplex, the dark submarginal fascia (as in male) broken into a series of spots in female, and placed in a more or less bluish-grey area; posterior wings above with the pale spots very small, and not extending beneath the upper median nervule, a small dark spot at end of cell and a waved submarginal dark fascia placed on a somewhat paler area. Wings beneath much paler than above; anterior wings with the spots in the cell larger and brighter, greyish-white spots as above, followed by a series of dark purplish spots, much smaller than those above; posterior wings with a small spot in cell as above, and a discocellular spot at end of cell, the series of pale spots as above but continued to abdominal margin a little above anal angle, the last spot being longest, the waved fascia above being replaced by a series of small dark spots as on anterior wings." (*Distant.*)

Exp. ♂ ♀ 78–81 mm. (3·08–3·20″).

Hab. Malay Peninsula, extending to the extreme south of Tenasserim within our limits.

Race **gupta**, de Nicéville.— ♂ Differs from the ♂ of the typical form in being much smaller. *Upperside*: ground-colour slightly paler; the postdiscal series of dark spots on both wings more conspicuous; the spots composing the macular discal band with their inner margins more even; the anterior three spots of the band on the fore wing proportionately not so small. *Underside*: ground-colour more uniform, of a pale lilacine brown, the lilac tint iridescent, strong only in certain lights. Antennæ ochraceous; head, thorax and abdomen brown; beneath, the palpi, thorax and abdomen pale ochraceous.

♀ "Differs from the same sex of *Symphædra teuta* in its smaller size; the *upperside* has the ground-colour paler. *Fore wing* with the discal macular white band reduced to five decreasing triangular spots, of which the largest is placed beneath the subcostal nervure, the two subcostal spots obsolete, and the submarginal diffuse spots very small. *Hind wing* with no trace whatever of the broad white band present in *S. teuta*, the submarginal black dentated band reduced to a fine dentated line with the diffused obsolescent whitish spots above and below it in each interspace. *Underside*: *fore wing* with the same differences as above. *Hind wing* with a small white spot on the middle of the costa below the costal nervure, followed by five discal small indistinct blackish spots, one in each interspace, with white linear mark in continuation from the middle of the submedian interspace to the inner margin, and the dentate line of the upperside obsolescent, represented by an

obscure diffuse dentate mark on the middle of each interspace." (*de Nicéville.*)

Exp. ♂ ♀ 62–81 mm. (2·46–3·20″).

Hab. Recorded from Lower Burma and Tenasserim.

281. **Dophla durga**, *Moore* (Adolias), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 196; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 199; *Moore* (Labranga), *Lep. Ind.* iii, 1896-99, p. 139, pl. 246, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* very dark green; a short transverse black line and two very broad, incurved, slender black loops in cell of fore wing; two short transverse black lines at apex of cell in hind wing; a broad, slightly curved, pure white macular discal band across both fore and hind wings, narrowing posteriorly and terminating on vein 1 of the latter, its outer and inner margins very sinuous and irregular, especially on the fore wing, on which the spots in interspaces 2 and 4 project beyond the others. This band inwardly bordered with pale blue, on the hind wing well defined by sinuous black lines on both sides. Beyond the band posteriorly on the fore and along its whole length on the hind wing is a broad shading of blue extending posteriorly to the dorsal margin of the latter. Fore and hind wings with a broad, postdiscal, dark obscure band, on the fore wing with two superposed, preapical, snow-white, obliquely placed spots, followed by a transverse band of the green ground-colour from apex to dorsal margin; on the hind wing the postdiscal band is followed by a much narrower interrupted transverse band of pale blue; both wings with the terminal margin velvety black; cilia white, alternated with black. *Underside*: the broad, white, macular discal band as on the upperside, but on both fore and hind wings defined by sinuous black lines; these lines somewhat obsolescent anteriorly on the fore wing; basal area within the band bright metallic greenish blue, this colour on the hind wing extending a little diffusedly below and beyond the discal band; ground-colour of terminal portion of wings beyond the discal band dark ochraceous green. Fore and hind wings with the usual basal black markings; fore wing with the preapical white spots and postdiscal dark band as on the upperside, the latter narrower, sinuous, much more clearly defined and broadening posteriorly; postdiscal band on hind wing less distinct, terminating at tornal angle in a black ⌐¬-shaped mark. Antennæ dark ochraceous brown; head, thorax and abdomen dark greenish brown; palpi, thorax and abdomen beneath, white.

Exp. ♂ ♀ 110–123 mm. (4·35–4·85″).

Hab. Sikhim; Bhutan.

282. **Dophla duda**, *Staudinger* (Euthalia), *Exot. Schmett.* 1886, p. 152, pl. 53; *Moore* (Labranga), *Lep. Ind.* iii, 1896-99, p. 140, pl. 247, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂. Very closely resembles *D. durga* ♂. It is smaller, with a

proportionately narrower discal band that differs from that in *D. durga* in the shape and arrangement of the spots on the fore wing as follows:—Posterior three spots diffuse, decreasing in size upwards (in *D. durga* they are nearly of the same width). On the hind wing the discal band is not bordered by black lines and its inner and outer margins are more even. *Underside*: ground-colour entirely metallic greenish blue, the terminal halves of the wings concolorous with the basal portions within the discal band. ♀ unknown.

Exp. ♂ 78–80 mm. (3·08–3·11″).

Hab. Sikhim; Bhutan; Assam, the Khási Hills.

283. **Dophla nara**, *Moore* (Adolias), *Trans. Ent. Soc.* new ser. v, 1859, p. 78, pl. 8, fig. 1 ♀; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 197; *Moore* (Limbusa), *Lep. Ind.* iii, 1896–99, p. 130, pl. 240, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Adolias anyte, *Hewitson, Exot. Butt.* iii, Ad. 1862, pl. 2, fig. 5; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 198 ♂.

♂ ♀ Fore wing differs from that of the typical form in the more acute apex and the slightly, not deeply, concave termen. The hind wing has the tornus more produced. ♂ *Upperside* dusky olive-green. Fore wing: cell with a medial and an apical pair of short, transverse, black, sinuous lines, the medial pair extending into base of interspace 1; a dark-shaded very diffuse and broad discal, somewhat curved area, margined on the outer side anteriorly by four pale spots placed obliquely, below these interspace 1 is broadly pale; a dark incurved postdiscal band and a terminal slender dark line. Hind wing: the discal dark-shaded area and postdiscal band of the fore wing continued as diffuse discal and postdiscal bands; a large conspicuous subcostal pale yellowish patch in interspaces 6 and 7, divided longitudinally by vein 7, the lower portion divided transversely by the discal band. *Underside* greenish ochraceous. Fore wing: the markings as on the upperside, but the pale markings are much more clearly defined, and form a prominent, posteriorly widening, oblique discal band. Hind wing with slender, black, loop-like basal markings and a nearly straight pale yellow discal band, defined on both sides by rather diffuse black lines; the postdiscal band as on the upperside. Antennæ ochraceous; head, thorax and abdomen dusky greenish; beneath paling to yellowish.—♀. *Upperside* similar, but darker. Fore wing: a broad oblique discal band from costa to interspace 2, composed of elongate detached white spots in the interspaces, two white spots beyond, nearer apex; the discal dark-shaded area and postdiscal dark diffuse band as in the ♂. Hind wing: no discal diffuse band or yellow subcostal patch; a subcostal white spot in interspace 7 and another in 6; postdiscal dark band as in the ♂. *Underside* olive-green. Fore wing: cellular markings, oblique white discal band, preapical costal white spots, and postdiscal dark band as on the upperside; a large discal area up to bases of interspaces 1, 2 and 3 purplish

dark brown. Hind wing with the usual slender basal black markings; a sinuous, comparatively broad, macular transverse discal band followed by a faintly marked postdiscal dark diffuse band as on the upperside. Antennæ, head, thorax and abdomen as in the ♂

Exp. ♂ ♀ 74–97 mm. (2·92–3·83″).

Hab. Sikhim; Nepal; Assam, the Nága Hills.

284. **Dophla sahadeva**, *Moore* (Adolias), *Trans. Ent. Soc.* new ser. v, 1859, p. 80, pl. 8, fig. 3; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 199; *Moore* (Mahaldia), *Lep. Ind.* iii, 1896–99, p. 132, pl. 241, figs. 1, 1 *a*–1 *c*, & pl. 242, figs. 1, 1 *a*, 1 *b*, ♂ ♀

Race narayana.

Euthalia narayana, *Grose-Smith & Kirby, Rhop. Exot.* 1891, Euth. p. 6, pl. 2, figs. 4, 5, ♀; *Moore* (Mahaldia), *Lep. Ind.* iii, 1896–99, p. 133, pl. 242, figs. 2, 2 *a*, ♀

♂ ♀ Shape of fore wing differs from that of the typical form in the apex, which, though rounded, is not produced or subfalcate; termen only very slightly concave. Termen of both fore and hind wing, but especially of the latter, conspicuously scalloped. ♂ *Upperside* dark velvety green. Fore wing: a slender black circular loop at base of interspace 1; a basal, two medial, and two apical, velvety-black, short, sinuous transverse lines in cell, the space between the medial and apical pair of lines brownish yellow; a broad, brownish-yellow, oblique discal band from interspace 6 to 2 divided by the dark veins and outwardly margined by a pale area traversed by an anteriorly broad, posteriorly narrow, dark postdiscal band, above which are two obliquely placed subcostal spots before apex of wing, the lower spot the larger and white. Hind wing: a slender loop-like black mark at apex of cell; a discal, outwardly pale-bordered series of from three to six detached brownish-yellow spots, decreasing in size posteriorly, and a black lunular postdiscal transverse fascia; cilia white alternated with brown. *Underside* ochraceous green. Fore wing with the markings much as on the upperside; interspaces 1 *a* and 1 purplish black, joining on to the postdiscal black fascia, which is diffused and ill-defined. Hind wing: the usual loop-like slender black markings at base, the discal transverse series of spots as on the upperside, but pale green, and the black postdiscal transverse fascia reduced to a series of diffuse spots.—The ♀ differs from the ♂ as follows:—*Upperside*: ground-olour darker green. Fore wing: the discal band pure white, the postdiscal dark fascia macular. Hind wing: ground-colour

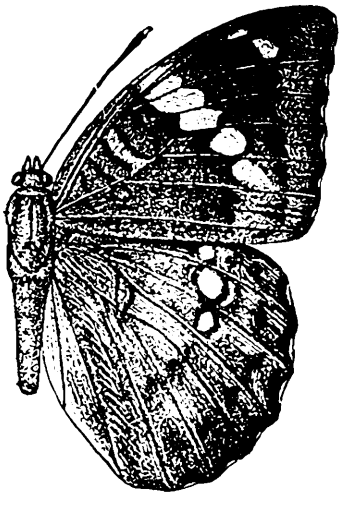

Fig. 51.
Dophla sahadeva.

of terminal third paler green, the discal spots white, reduced to two or entirely absent, and the postdiscal lunular black curved fascia better defined. *Underside* similar but paler, the purplish black in interspaces 1 *a* and 1 less uniform. In both sexes the antennæ are dark brown with the apex ochraceous; head, thorax and abdomen dark green; beneath greenish white.

Exp. ♂ ♀ 88–110 mm. (3·49–4·35″).

Hab. Nepal; Sikhim; Assam, the Nága and Khási Hills.

The ground-colour in this form varies as it does in *D. evelina*.

Race **narayana**, Grose-Smith and Kirby, is known only from a single specimen, a ♀, in the collection of Mr. H. Grose-Smith. It is described as smaller, paler, with the white discal spots on fore wing smaller than in the typical form. On the upperside of the hind wing the discal spots are reduced to two, as in some specimens of the ♀ of the typical form. On the underside the ground-colour differs; it is entirely greenish blue over both fore and hind wing, getting slightly paler towards the terminal margin of the fore wing.

"*Exp.* ♀ 2·2 in." (56 mm.).

Hab. Recorded from the Ruby Mines, Upper Burma.

285. **Dophla iva**, *Moore* (Adolias), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 195: *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 197; *Moore* (Mahaldia), *Lep. Ind.* iii, 1896–99, p. 134, pl. 243, figs. 1, 1 *a*, ♀

♂ ♀ *Upperside* very dark green. Fore wing with the usual transverse short black lines across cell, followed by a broad, curved, obscure, black, discal, more or less diffuse band; this bears a series of pure white elongate outwardly-pointed spots extending from the costa to interspace 2; interspace 1 with two small white spots, sometimes absent in the ♀, and a diffuse whitish patch near its apex; two obliquely placed preapical white spots, followed by an obscure, postdiscal, broad black transverse band. Hind wing with a slender black loop-like mark at apex of cell, discal and postdiscal obscure dark bands; the former bears anteriorly three or four pure white spots. *Underside*: the greater part of the fore wing and the apical area broadly of the hind wing yellowish green, the base of the fore and the rest of the hind wing greenish blue; the usual basal black markings. Fore wing: the discal series and the preapical two white spots as on the upperside, each spot defined narrowly in black; the greater portion of interspace 1 purplish black; the postdiscal dark band as on the upperside, but narrower, better defined and macular. Hind wing with a regular curved series of six black discal spots encircled with white, the postdiscal dark band indicated by a row of somewhat obscure small black spots. Antennæ reddish brown, ochraceous at apex; head, thorax and abdomen dark brownish green; beneath, the palpi, thorax and abdomen ochraceous white.

Exp. ♂ ♀ 107–120 mm. (4·2–4·75″).

Hab. Sikhim; Manipur.

286. **Dophla patala,** *Kollar* (Adolias), *Hügel's Kaschmir,* iv, 2, 1844, p. 435; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 196; *Moore* (Zalapia), *Lep. Ind.* iii, 1896–99, p. 135, pl. 244, figs. 1, 1 *a*–1 *c*, ♂ ♀

Race taooana.

Adolias taooana, *Moore*, *P. Z. S.* 1878, p. 831; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 197; *Moore* (Zalapia), *Lep. Ind.* iii, 1896–99, p. 137, pl. 243, figs. 2, 2 *a*, ♂

♂ ♀. *Upperside* pale olive-green; basal area of wings with the usual slender black markings. Fore wing with an oblique white discal macular band, from costa to near apex of interspace 2, the spots of irregular width, the inner and outer margins, therefore, of the band irregular, sinuous; one or two of the spots defined on the outer or the inner side by black; below the band, towards apex of interspace 1, two short diffuse transverse black obscure marks; beyond the discal band two obliquely placed small white spots and below them a postdiscal dark sinuous diffuse transverse band. Hind wing more uniform; a quadrate, outwardly emarginate, large white spot midway in interspaces 6 and 7, and a curved, somewhat obscure, dark postdiscal band. *Underside* similar with similar markings, with the addition on the fore wing of two small bluish-white spots in interspace 1 below the termination of the discal band, and on the hind wing three bluish-white spots in continuation posteriorly of the white spots in interspaces 6 and 7 Antennæ ochraceous brown; head, thorax and abdomen pale olive-green, beneath pale ochraceous white.

Exp. ♂ ♀ 100–110 mm. (3·95–4·32″).

Hab. Himalayas; Chamba to Nepal.

Race **taooana,** Moore, very similar to the typical form, but larger, with proportionately larger spots in the discal band; ground-colour darker. On the *upperside*, in all the specimens I have seen, there is a small oval white spot in interspace 1, below termination of discal band; on the underside are two, not one, white spots in the same position; the basal and postdiscal black markings more prominent on both fore and hind wing; and on the latter an additional white spot in interspace 5 with two dark spots in continuation in interspaces 3 and 4. *Underside* pale greyish green. Fore wing with the macular discal band and black markings as on the upperside, but somewhat blurred and paler. Hind wing with the usual slender black basal markings, and a discal macular pale band of five spots in interspaces 3 to 7, the posterior three narrow. Female unknown.

Exp. ♂ ♀ 115 mm. (4·54″).

Hab. The higher ranges of hills in Lower Burma and Tenasserim, extending into the Malay Peninsula.

287 **Dophla evelina** (Pl. V, fig. 37), *Stoll* (Papilio), *Cramer's Pap. Exot. Suppl.* v, 1790, p. 132, pl. figs. 2, 2 B, ♂; *Moore, Lep. Ceyl.* i, 1881, p. 34, pl. 17, figs. I, 1 *a*, ♂; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 195, ♂ only; *Moore, Lep. Ind.* iii, 1896–99, p. 104, pl. 228, figs. 1, 1 *a*–1 *c*, ♂ ♀

Race laudabilis.

Euthalia laudabilis, *Swinhoe, A. M. N. H.* (6) v, 1890, p. 355; *Moore* (Dophla), *Lep. Ind.* iii, 1896–99, p. 104, pl. 229, fig. 1, larva & pupa, figs. 1 *a*, 1 *b*, ♂ ♀; *Davids. Bell & Aitk. Jour. Bomb. N. H. Soc.* x, 1896, p. 255.

Euthalia evelina, *de N.* (*nec Stoll*) *Butt. Ind.* ii, 1886, p. 195, ♀ only.

♂ *Upperside* somewhat dark metallic green. Fore wing: cell with two median sinuous short black transverse lines with a crimson spot between them, two similar lines beyond, one before, one after apex of cell; followed by a dark irregular transverse shading between the veins; apex of wing broadly and termen narrowly edged with an obscure dark shading. Hind wing with a slender black loop in cell; very obscure discal and subterminal dark macular bands and the anterior third of the wing purplish. *Underside* sap-green, largely suffused with plumbeous grey. Fore wing: the transverse black slender lines and crimson spot as on the upperside; a very obscure subterminal series of dark spots parallel to terminal margin. Hind wing: three crimson spots encircled by slender black loops near base, and a very obscure subterminal series of dark spots in continuation of that on the fore wing, but obsolescent posteriorly. Antennæ brown; head with a crimson streak behind the eyes; thorax and abdomen greenish brown, beneath greyish.— ♀ very similar, with precisely similar markings above and below, but the ground-colour on upperside paler and especially pale on the terminal halves of the wings, in contrast with the darker basal portions.

Exp. ♂ ♀ 83–110 mm. (3·38–4·32″).

Hab. Ceylon.

The shade of the ground-colour in this form is variable, the females especially often have a bronzy-brown tint.

Race **laudabilis**. Swinhoe.—The Southern Indian continental representative of *D. evelina* seems to form a very distinct race. The male differs in the costa of the fore wing on the upperside beyond the dark obscure discal band being broadly greyish white with a silvery lustre up to a little distance before the apex of the wing; this colour spreads downwards diffusely, but does not extend below vein 6. In the female there is a similar patch, very wide on the costa, extending as a broad transverse band with outer diffuse and inner sinuous margin right across the wing to vein 1; on the hind wing it is represented by a very much narrower transverse diffuse band or irroration of grey scales. *Underside*, ♂ ♀, as in the typical form, but more densely suffused with

plumbeous grey. Antennæ, head, thorax and abdomen as in the typical form.

Exp. ♂ ♀ 93–112 mm. (3·68–4·4″).

Hab. South India, from Bombay southwards.

Larva. "The larva of *Euthalia laudabilis* feeds on *Diospyros candolleana* (Ebenaceæ), and is green with a vinaceous dorsal patch on each segment, enclosing a whitish dark-centred ocellus. These patches vary in size, those on the fourth, seventh and tenth segments being usually the largest, and those on the fifth and sixth small or obsolete." (*Davidson, Bell & Aitken.*)

Pupa. "Green, with silver spots and a bright line of the same colour along the sides of the dorsal triangle." (*Davidson, Bell & Aitken.*)

288. **Dophla derma,** *Kollar* (Adolias), *Hügel's Kaschmir,* iv, 2, 1844, p. 436; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 194: *Moore, Lep. Ind.* iii, 1896–99, p. 106, pl. 230, figs. 1, 1 *a*–1 *c*, ♂ ♀

Adolias eva, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 432; *de N.* (Euthalia), *Butt. Ind.* ii, 1886, p. 195.

♂ ♀ *Upperside* rich warm brown. Fore wing with four short transverse sinuous black lines in pairs in cell, the inner pair with a bright crimson crescent-shaped spot between; the space between the inner and outer pair darker brown than the ground-colour; beyond cell a dark, broad, somewhat obscure, discal band of the same tint, not reaching the costa. Hind wing: cell with transverse short black lines and crimson spot, beyond it an obscure discal band similar to that on the fore wing. *Underside* paler brown washed with pale lilac; fore and hind wings with the usual slender basal black markings, one crimson spot on fore wing as on upperside, two spots on hind wing; the dark interspace between the inner and outer pair of short transverse cellular black lines on upperside of fore wing and the discal band on both fore and hind wings indicated by the pale brown ground-colour of the wings not overlaid with the pale lilac tint; in addition, on fore wing similar obscure broad transverse subterminal and terminal bands of the ground-colour. Antennæ ochraceous brown; head, thorax and abdomen brown, the head with a line of crimson behind each eye; beneath pale lilacine brown.

Exp. ♂ ♀ 81–113 mm. (3·2–4·4″).

Hab. Sylhet; Assam; Burma; Tenasserim, extending far into the Malayan Subregion.

Kollar gives Mussooree as a locality; but *D. derma* has not, of late years at any rate, been procured further west than Sylhet.

289. **Dophla dunya,** *Doubleday* (Adolias), *Dbldy., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 291, pl. 44, fig. 3 ♂; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 195; *Moore* (Rangasa), *Lep. Ind.* iii, 1896–99, p. 66, pl. 213, figs. 1, 1 *a*, ♂ ♀.

♂ ♀ *Upperside* rich brown. Fore wing with a subcostal black

spot in middle of cell, minute white spots on both inner and outer side, and a short reddish band at apex of cell, the latter two margined with black; a minute spot at base of interspace 6, another at base of interspace 8, and a discal row of spots in interspaces 1, 2 and 3, white; latter varying in size but all encircled with diffuse black. Hind wing: a dusky black short transverse bar across apex of cell, a much curved discal row of detached white spots, encircled with diffuse black, the anterior two much larger than the others, quadrate and outwardly emarginate, the others small, round or oval, the posterior four placed in a slightly concave line. Both fore and hind wing with a more or less indistinct dusky-black band of marks in the interspaces. *Underside* pale green, the markings as on the upperside but very pale, the cellular spot and band pink, the white spots paler green than the ground-colour; the postdiscal band of spots only more distinct than on the upperside, the spots connected by a diffuse shade between them, giving the appearance of a continuous band. Antennæ, head, thorax and abdomen brown; the palpi, thorax, and abdomen beneath greenish white.

Exp. ♂ ♀ 84–100 mm. (3·3–3·95″).

Hab. South Tenasserim, Tavoy and Mergui; Malay Peninsula; Sumatra; Borneo.

Genus **EUTHALIA.**

Euthalia, *Hübner, Verz. bek. Schmett.* 1816, p. 41; *Moore, Lep. Ceyl.* i, 1880, p. 31; *de N. Butt. Ind.* ii, 1886, p. 191; *Moore, Lep. Ind.* iii, 1896–99, p. 111, pt.

Nora, *de Nicéville, Jour. Bomb. N. H. Soc.* viii, 1893, p. 44.

Saparona, Haramba, Cynitia, Kirontisa, Tasinga, Sonepisa, et Chucapa, *Moore, Lep. Ind.* iii, 1897, pp. 85, 86, 93, 100, 101, 110, & 137.

Type, *E. lubentina*, Cramer, from India.

Range. Indo-Malayan Region, extending to China.

♂ ♀. Fore wing typically triangular; costa arched; apex subacute; termen straight anteriorly, then slightly concave; tornus well-marked, dorsum slightly sinuous; cell to upper apex not half length of fore wing; upper discocellular minute, middle strongly concave, lower absent; cell open; veins 10 and 11 free, 11 often anastomosed with 12 in one or both sexes. Hind wing more or less subquadrate; costa slightly arched; apex broadly rounded, termen slightly arched; tornus generally produced, often angulated; abdominal fold broad, dorsum consequently much arched; cell open, vein 7 as close to 8 as to 6 or closer. Antennæ considerably longer than half length of fore wing; club long, narrow and gradual; palpi generally short, broad anteriorly, densely clothed with scales or short scale-like hairs, third joint conical, sometimes attenuate; eyes naked. Sexes generally unlike. One section with secondary sex-mark of specialized scales at base of upperside of hind wing in ♂

The shape of the wings is slightly variable in this genus; that of the fore wing depends upon the apex being only subacute as in the type form and many others, or strongly produced, falcate, and acutely angular as in *E. anosia*. Sometimes the apex of the fore wing is truncate, as in *E. lepidea* and its close allies. In the hind wing the tornus is sometimes acutely produced as in *E. anosia*, or more or less rounded as in *E. appiades*.

The widespread forms in this genus have one or more geographical races and are remarkable for the similarity between the males of the typical form and of the race, while the difference between the females of the same is very striking and almost sufficient to allow of their separation as distinct forms.

Key to the forms of Euthalia.

A. Fore wing: vein 9 emitted from middle of vein 7.
  a. Sexes not similar: ♂ upperside blackish brown with a very broad grey band on hind wing occupying fully terminal half of wing; ♀ upperside dark brown with a transverse inwardly-oblique darker discal band, no terminal band on hind wing .. *E. cocytus*, p. 271.
  b. Sexes similar: ♂ ♀ upperside blackish brown with a comparatively narrow band on hind wing occupying about terminal third of wing.
    a'. This band pale grey . *E. lepidea*, p. 272.
    b' This band bright blue . .. . Race *andersoni*, p. 273.

B. Fore wing: vein 9 emitted from basal half of vein 7.
  a. Apical joint of palpi attenuate from base to apex.
    a'. ♂ ♀ Interspace between discal and postdiscal transverse lines on upper and under sides of fore and hind wings pure white ... .. *E. cibaritis*, p. 273.
    b'. Interspace between discal and postdiscal transverse lines on upperside of fore and hind wings, in ♂ concolorous with ground-colour of wing; in ♀ more or less concolorous with ground-colour on hind wing, paling to white or brownish white anteriorly on fore wing.
      a^2. Hind wing: ♂ upperside with a blue terminal band: ♀ ground-colour underside more or less washed with greenish blue.
        a^3. ♂. Hind wing upperside: terminal blue band comparatively narrow, not extending on inner side beyond postdiscal dark fascia. ♀ Fore-wing upperside: interspace between discal and postdiscal dark

fasciæ equal to space between postdiscal fascia and termen , ... } *E. appiades* typical, p. 274, and var. *sedeva*, p. 275.

b^3. ♂. Hind wing upperside: terminal blue band comparatively broad, extending on inner side to beyond postdiscal dark fascia. ♀ Fore wing upperside: space between discal and postdiscal dark fasciæ less than space between postdiscal fascia and termen ... Race *julii*, p. 275.

b^2. Hind wing: ♂ upperside without a blue terminal band: ♀ ground-colour not washed with greenish blue *E. jahnu*, p. 276.

b. Apical joint of palpi conical, stout, not attenuated.

a'. Fore and hind wings, upper and under sides, with numerous crimson spots . *E. lubentina*, p. 278.

b'. Fore and hind wings, upper and under sides, without any crimson spots.

a^2. ♂ ♀. Fore and hind wings: upper and under sides crossed by a prominent white or yellowish-white discal band, band not forked or widened anteriorly on fore wing . .. .. *E. franciæ*, p. 279.

b^2. Fore and hind wings: upper and under sides, ♂, not crossed by white discal band; ♀ similar, or if white or brownish-white discal band present, this band either widened or forked anteriorly on fore wing.

a^3. Upperside ground-colour some shade of brown or blackish brown; fore wing: apex rounded or acute but never falcate.

a^4. ♂ hind wing upperside with a blue subterminal or terminal band: ♀ fore wing upperside with a very oblique, white, discal band, or a curved series of detached white discal spots.

a^5. Fore wing upperside: ♂ with a series of slender white streaks beyond apex of cell; ♀ with a comparatively broad white discal band, breadth of band equal one-fifth of length of fore wing ... ... *E. phemius*, p. 280.

b^5. Fore wing upperside: ♂ without any white streaks beyond cell: ♀ without white discal band.

a^6. Fore wing upperside: ♂ a small patch of blue on tornal angle: ♀ with a curved series of four or five white discal spots, no spots beyond *E. telchinia*, p. 281.

b^6. Fore wing upperside: ♂ without any blue on tornal angle: ♀ unknown.

a^7. Hind wing underside: ground-colour not washed over with greenish blue — *E. zichri*, p. 281.

b^7. Hind wing underside: ground-colour largely washed over with greenish blue. . . — *E. binghami*, p. 282.

b^4. ♂. Hind wing upperside without a blue subterminal or terminal band; ♀ fore wing upperside with a broad, more or less vertical greyish or white, or very oblique narrow discal band, or a curved series of detached white discal spots.

a^5. Underside more or less yellow or bright ochraceous.

a^6. Fore and hind wing upperside: ♂ with a more or less vertical broad discal band irrorated with greyish scales, inner margin of this band on fore wing not sinuous: ♀ with similar discal band traversed by a dark broad lunular sinuous fascia . . . . . — *E. kesava*, p. 276.

b^6. Fore and hind wing upperside: ♂ with discal band similar to that in typical form, but with inner margin of band on fore wing sinuous: ♀ with narrow brownish-white discal band broadening below costa on fore wing . — Race *rangoonensis*, [p. 277

b^5. Underside brown, sometimes slightly ochraceous, never yellow.

a^6. ♂. Fore wing upperside with white discal spots: ♀ hind wing underside not suffused with greenish blue.

a^7. ♂ ♀. Fore wing upperside: curved series of four or five white discal spots present. . . . — *E. garuda*, p. 282.

b^7. Fore wing upperside: ♂ discal white spots faint, ill-defined, and more or less obsolescent; underside ochraceous brown: ♀ with a very narrow and oblique white discal

band, breadth of band about one-ninth length of fore wing ... Race *vasanta*, p. 283.

c^7. Fore wing upperside: ♂ discal white spots as in race *vasanta*, but underside suffused with lilacine white: ♀ with a broad more or less vertical white discal band continued on to hind wing anteriorly, forking below costa of fore wing .. Race *acontius*, p. 283.

b^6. ♂. Fore wing upperside without white discal spots: ♀ hind wing underside not suffused or suffused with greenish blue.

a^7. ♂ ♀. Fore wing upperside with a series of slender white streaks beyond apex of cell. ♀ Hind wing underside not suffused with greenish blue .. .. *E. jama*, p. 284.

b^7. ♂ ♀. Fore wing upperside without such streaks.

a^8. ♂ ♀. Fore wing underside apex touched with pale lilac. ♀. Hind wing underside more or less suffused with greenish blue . .. *E. apicalis*, p. 285.

b^8. ♂. Fore wing underside apex not touched with lilac. ♀ unknown .. *E. kanda*, p. 286.

b^5. Upperside ground-colour greenish grey; fore wing falcate, apex very acute .. .. .. *E. anosia*, p. 286.

c^5. Upperside ground-colour orange with black markings; fore wing apex more or less rounded *E. nais*, p. 287.

290. **Euthalia cocytus,** *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 29 ♂; *Moore* (Cynitia), *Lep. Ind.* iii, 1896–99, p. 94, pl. 224, figs. 1, 1 *a*–1 *d*, ♂ ♀

Adolias satropaces, *Hewitson, Ent. Month. Mag.* xiii, 1876, p. 150, ♂ ♀; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 206.

♂ ♀ Fore wing: apex produced, strongly falcate, costa much arched; apex above falcation truncate, termen below falcation slightly concave, tornus broadly rounded, dorsum straight. Hind wing much as in typical forms. ♂ *Upperside* dark velvety brown. Fore wing: the cellular area and a spot beyond with three broad transverse bars irrorated with bluish scales, those in the cellular

area bordered with lines of very dark brown. Hind wing: basal half uniform. A broad terminal band on both wings commencing below falcation on the fore wing and gradually widening up to the dorsal margin and tornus of the hind wing, dull greenish blue. *Underside* ochraceous yellow. Fore wing: cellular area crossed by four very slender sinuous dark brown lines. Fore and hind wings crossed postdiscally by a straight, somewhat lunular dark brown narrow band. Antennæ, head, thorax and abdomen dark brown, beneath ochraceous.—♀ *Upperside* pale brown. Fore wing: cellular area crossed by a basal and two medial, short, sinuous, dark lines continued irregularly below the cell, followed by two postapical dark lines and a discal curved row of dingy white spots as follows:—small oval spots in interspaces 2 and 4, much larger spots placed obliquely to the costa in interspaces 5 and 6, with a minute spot beyond in interspace 6; a slight irroration preapically of bluish scales, an inwardly oblique dark brown band from apex of falcation to midway on the dorsal margin, the termen narrowly below the falcation dark brown. Hind wing: four transverse short lines in cellular area, a discal band in continuation of the oblique band on the fore wing, a more obscure postdiscal incomplete band and the terminal margin broadly, dark brown. *Underside* bright ochraceous yellow, the dark lines across cellular area on both fore and hind wing and the white spots on the fore wing as on the upperside, the latter encircled with irrorations of black scales; a black postdiscal lunular band on both fore and hind wing and an apical white patch on fore wing. Antennæ, head, thorax and abdomen as in the ♂ but paler.

Exp. ♂ ♀ 68–86 mm. (2·7–3·4″).

Hab. Burma and Tenasserim, extending to Siam.

291. **Euthalia lepidea**, *Butler* (Adolias), *A. M. N. H.* (4) i, 1868, p. 71; *de N. Butt. Ind.* ii, 1886, p. 203, pl. 19, fig. 78 ♂; *Moore* (Cynitia), *Lep. Ind.* iii, 1896–99, p. 96, pl. 225, figs. 1, 1 *a*–1 *e*, ♂ ♀; *Davidson & Aitk. Jour. Bomb. N. H. Soc.* v, 1890, p. 276.

Race andersoni.

Euthalia andersoni, *Moore*, *J. A. S. B.* 1884, p. 18; *de N. Butt. Ind.* ii, 1886, p. 203; *Moore* (Cynitia), *Lep. Ind.* iii, 1896–99, p. 98, pl. 226, figs. 2, 2 *a*–2 *c*, ♂ ♀

♂ ♀ Shape of fore wing as in *E. cocytus*. *Upperside* dark brown, paler in the ♀, with very obscure black markings of transverse lines across the cells of both fore and hind wings and an oblique discal fascia on the fore wing; an ash-grey continuous band along the termen of both fore and hind wings, gradually broadening from the apex of the fore, where it is very narrow, to the tornus of the hind wing, where it covers about one-third of the wing. In the ♀ this band is outwardly narrowly bordered with brown. Cilia white. Antennæ, head, thorax and abdomen dark brown above; beneath, the antennæ ochraceous, the rest dusky white washed with ochraceous. *Underside*: ♂ ochraceous brown,

♀ bright ochraceous. In both sexes the colours paler on the hind wing; the fore wing somewhat narrowly, the hind wing much more broadly suffused with lilacine-grey on the terminal margins and along the dorsal margin of the hind wing; cells of both wings with dark brown sinuous transverse lines and loop-like markings; both fore and hind wings crossed by somewhat diffuse broad discal and narrower postdiscal dark bands, prominent on the fore, obscure on the hind wing. Male with a patch of specialized dark scales above vein 4 on the upperside of the hind wing.

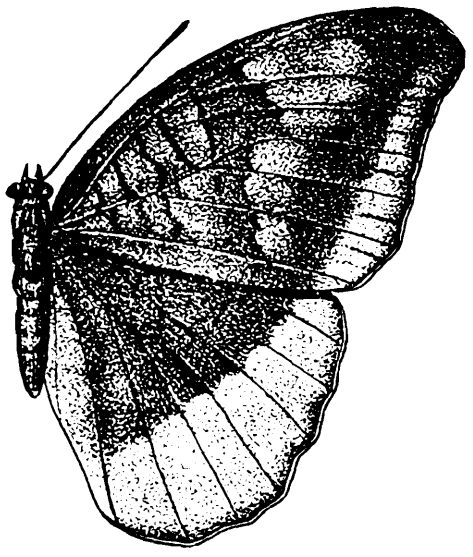

Fig. 52.—*Euthalia lepidea*, ♀. ½.

Exp. ♂ ♀ 70–80 mm. (2·75–3·15″).

Hab. On the continent of India in the low hot valleys of the Himalayas eastward from Almora; in Orissa, Bengal and southwards in the Central Provinces, the Nilgiris, Canara, Mysore and Travancore. East of the Bay of Bengal from Assam to the Malay Peninsula.

Larva. "Of the usual *Euthalia* form; colour green with a dorsal row of light red ocelli with blue centres; spines tipped with yellow." (*Davidson & Aitken.*)

Pupa. "More narrowed at the head than *E. garuda*, green, all the points golden tipped with black, and a few large spots of gold between." (*Davidson & Aitken.*)

Food-plant, *Melastoma malabatharicum*.

Race **andersoni**, Moore.—♂ ♀ Closely resembles the typical form in the shape of the wings, in colour and markings; but on the upperside the terminal band on both fore and hind wing is rich purplish blue, not grey, and in the ♀ has a more or less distinct outer edging of the ground-colour of the wings. On the underside the resemblance is still greater, the colours only being brighter, the markings identical.

Exp. ♂ ♀ 66–76 mm. (2·6–3″).

Hab. Recorded so far only from Tavoy and Mergui in Tenasserim.

292. **Euthalia cibaritis**, *Hewitson* (Adolias), *A. M. N. H.* (4) xiv, 1874, p. 358; *de N.* (Tanæcia) *Butt. Ind.* ii, 1886, p. 223, pl. xix, fig. 77 ♂; *Moore* (Saparona), *Lep. Ind.* iii, 1896–99, p. 85, pl. 220, figs. 1, 1 *a*–1 *d*, ♂ ♀

♂ ♀ *Upperside* warm dark brown. Fore and hind wings with slender black loop-like marks on the basal third, a postdiscal,

transverse, very sinuous, broad white band followed by a subterminal row of triangular black marks, their apices pointed inward and bordered on the fore wing with pale brownish white; on the hind wing in the ♂ the tornal triangular spot, in the ♀ the posterior four spots, are bordered inwardly with bluish violet. The white band is at the costa very broad, its inner margin angulate or squarely indented in interspace 4. *Underside*, ♂: greyish blue, the basal area on the fore wing below the median vein pinkish brown, the black loop-shaped marks, the white postdiscal sinuous transverse band and the subterminal series of black triangular spots as on the upperside, the outermost of the loop-shaped marks ochraceous within; the white band tinged with pink and defined on both sides by black spots. *Underside*, ♀: differs as follows—the ground-colour of the fore wing is somewhat ochraceous brown, touched here and there with bluish green; the hind wing entirely bluish green, of a brighter, more metallic tint than in the ♂, the terminal margin narrowly brown; the markings as in the ♂ but better defined, except the portion of the postdiscal band on the hind wing, which outwardly is defined by a somewhat obscure series of black lunular markings. Antennæ dark brown; head, thorax and abdomen brown, beneath greenish white.

Exp. ♂ ♀ 72–88 mm. (2·87–3·5″).

Hab. The Andamans, Nankauri in the Nicobars *.

293. **Euthalia appiades**, *Ménétriés* (Adolias), *Enum. Corp. An. Mus. Petr., Lep.* ii, 1857, p. 120, pl. 9, fig. 4 ♂; *de N. Butt. Ind.* ii, 1886, p. 207; *id. Jour. Bomb. N. H. Soc.* vi, 1891, p. 350; *Moore* (Haramba), *Lep. Ind.* iii, 1896–99, p. 88, pl. 221, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Adolias adima, *Moore, Cat. Lep. Mus. E.I.C.* 1857, p. 194; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 210; *Moore* (Haramba), *Lep. Ind.* iii, 1896-99, p. 90, pl. 222, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Adolias sedeva, *Moore, Trans. Ent. Soc.* 1859, new ser. v, p. 68, pl. 4, fig. 3; *id.* (Haramba) *Lep. Ind.* iii, 1896-99, p. 91, pl. 223, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Adolias balarama, *Moore, P. Z. S.* 1865, p. 766, pl. 41, fig. 3 ♂; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 208.

Euthalia khasiana, *Swinhoe, A. M. N. H.* (6) v, 1890, p. 354 ♂

Race julii.

Nymula julii, *Bougainville, Voy.* '*Thetis*,' ii, 1837, p. 345, pl. 44, figs. 4, 4 bis, ♀; *Moore* (Haramba), *Lep. Ind.* iii, 1896–99, p. 92.

Adolias xiphiones, *Butler, P. Z. S.* 1868, p. 609, pl. 45, fig. 6 ♂; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 209.

Adolias parvata, *Moore, P. Z. S.* 1878, p. 831, pl. 52, fig. 3 ♀.

♂ *Upperside* dark brown. Fore wing: basal area crossed by five sinuous short black lines, of which the fifth defines the discocellulars; a slightly oblique discal series and an erect postdiscal series of obscure dusky lunular markings. Hind wing: some

* Mr. Gilbert Rogers, of the Indian Forest Department, my indebtedness to whom I have already acknowledged, has sent me long series of this beautiful form from both the Andamans and the Nicobars.

slender loop-shaped black marks at base and across the cell, followed by transverse discal and postdiscal slender lunular black lines in the interspaces and a broad terminal blue band narrowing towards but not reaching the apex of the wing; abdominal fold pale brown. *Underside* dull ochraceous; hind wing at base suffused obscurely with olive-green, broadly posteriorly, more narrowly along the terminal margin; black markings similar to but larger and more clearly defined than those on the upperside, the postdiscal lunular markings of the upperside forming spots below, on both fore and hind wing, on the latter edged inwardly with blue; no terminal blue band on the hind wing. Antennæ, head, thorax and abdomen dark brown; palpi, thorax and abdomen pale ochraceous beneath.— ♀ *Upperside* pale brown, the dark markings similar to those in the ♂ but larger; the obscure discal and postdiscal series of marks on the fore wing have a dull whitish mark close to the costal margin, on the discal band outwardly, on the postdiscal inwardly; no terminal blue band on the hind wing. *Underside* ochraceous brown; on the hind wing overlaid with greenish blue, except narrowly along the terminal margin; markings as on the upperside but more clearly defined; a large diffuse spot of lilacine white at apex of fore wing, the discal series of lunules on the hind wing on a brown ground, the postdiscal series of spots obsolescent posteriorly.

Exp. ♂ ♀ 76–94 mm. (3–3·7″).

Hab. The Himalayas from Kumaun to Sikhim; Bhutan; Assam, Cachar; Arrakan; Upper Burma.

C. appiades towards the east of its range becomes highly variable, the typical form being found as well as *C. adima* and *C. sedeva*, which, so far as I can judge, are nothing more than varieties.

Var. *C. adima*, Moore, differs as follows:— ♂. The blue band on the upperside of the hind wing entirely wanting or with only a few detached terminal spots posteriorly (=*Euthalia khasiana*, Swinh.).— ♀ resembles the ♀ of the typical form, or it sometimes has the area between the discal and postdiscal series of markings on both fore and hind wings paler than the ground-colour of the rest of the wings, gradually changing into dusky white towards the costal margin of the fore wing.

Var. *sedeva*, Moore.— ♂ Similar to the ♂ of the typical form, but the ground-colour on the upperside paler, the discal and postdiscal series of markings on the fore wing closer together (this is variable), and the intervening ground-colour slightly paler than on the rest of the wing.— ♀ either resembles the ♀ of the typical form or, as in var. *adima*, has the area between the discal and postdiscal series of markings distinctly paler, merging into two large dusky-white subcostal spots on the fore wing.

Race **julii**, Bougainville=*xiphiones*, Butler, is the Southern form, and differs from typical *C. appiades* as follows:— ♂ *Upperside* hind wing: the blue terminal band invariably very much broader.

Underside hind wing: the ground-colour entirely metallic blue-green, the black spots below the cell and in the terminal series more distinctly margined with blue.—♀ more variable; some specimens resemble the typical form of ♀ *appiades*, others have the dusky-white subcostal spots between the discal and postdiscal series of markings, but the ground-colour of the fore wing on the underside is always brighter ochraceous than in *appiades* and its varieties.

Exp. ♂ ♀ 68–78 mm. (2·68–3·07″).

Hab. Lower Burma; Tenasserim, extending to the Malay Peninsula.

294. **Euthalia jahnu**, *Moore* (Adolias), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 192; *de N. Butt. Ind.* ii, 1886, p. 211; *Moore* (Haramba), *Lep. Ind.* iii, 1896–99, p. 87, pl. 221, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Adolias sananda, *Moore*, *Trans. Ent. Soc.* new ser. v, 1859, p. 76, pl. 7, fig. 3 ♂.

♂. *Upperside* rich purplish brown. Fore wing: basal and subbasal transverse sinuous black lines; a dusky brown transverse bar at apex of cell, defined on both sides by black lines; a discal lunular narrow black band double from costa to vein 4, the outer band outwardly angulate above vein 4, and then bent inwards and concave; followed by an erect postdiscal similar band. Hind wing: four transverse black lines across the cell followed by discal and postdiscal transverse lunular curved narrow black bands; the abdominal fold pale brown. *Underside* ochraceous ferruginous, the markings as on the upperside, but more clearly defined, the postdiscal bands on hind wing not lunular, but formed into a series of dots. Antennæ, head, thorax and abdomen purplish brown; the palpi, thorax and abdomen beneath ochraceous.—♀ *Upperside* vandyke-brown, the basal markings and the postdiscal lunular band on both fore and hind wing as in the ♂, but dark brown and broader, the discal band much broader and diffuse inwardly; the area between the discal and postdiscal bands very pale brown with a purplish gloss, in some specimens getting markedly whitish towards its broadened costal end. *Underside* yellowish brown, the markings much as on the upperside, but on the fore wing an elongate preapical and somewhat broader apical spot, white; the postdiscal band on the inner margin and sometimes also along the outer margin touched with white. Hind wing: the basal half anteriorly up to the discal band, and posteriorly below vein 4 up to the termen, suffused with blue.

Exp. ♂ ♀ 74–81 mm. (2·92–3·2″).

Hab. Sikhim; Assam; Arrakan; Burma; Tenasserim.

295. **Euthalia kesava**, *Moore* (Adolias), *Trans. Ent. Soc.* new ser. v, 1859, p. 67, pl. 3, fig. 5, ♂ only; *de N. Butt. Ind.* ii, 1886, p. 212; *Moore* (Nora), *Lep. Ind.* iii, 1896-99, p. 107, pl. 231, figs. 1, 1 *a*–1 *d*, ♂ ♀.

Euthalia discispilota, *Moore*, *P. Z. S.* 1878, p. 831 ♀

Race rangoonensis.

Euthalia rangoonensis, *Swinhoe, A. M. N. H.* (6) v, 1890, p. 354; *Moore* (Nora), *Lep. Ind.* iii, 1896-99, p. 109, pl. 232, figs. 1, 1 *a*–1 *d*, ♂ ♀

♂ *Upperside* velvety black. Fore wing: cellular area with five deeper black, short, sinuous, transverse narrow bands, and a very broad vertical discal fascia, irrorated with greyish-blue scales, this fascia not reaching the costa, narrowest in the middle and very broad on the dorsal margin. Hind wing: the anterior third with a yellowish-red tint, the cell with some obscure deep black transverse marks, the terminal half of the wing, except a narrow outer margin, densely irrorated with greyish-blue scales. *Underside* rich chrome-yellow, the cellular area of both fore and hind wing with the usual transverse dark lines, a black spot at base of interspace 1, and an ill-defined postdiscal transverse dark band on the fore wing; the discal margin broadly of the hind wing paler yellow than the ground-colour. Antennæ, head, thorax and abdomen velvety black; beneath, the palpi, thorax and abdomen yellow.— ♀ *Upperside* dark vandyke-brown; fore and hind wings crossed by a very broad discal pale grey band, traversed by a narrow lunular postdiscal broad dark line; the inner margin of the band crenulate, marked at base of interspaces 3 and 6 on fore wing by a white spot, the outer margin of the band diffuse; the cellular area of both fore and hind wing with the usual dark transverse markings. *Underside* somewhat bright ochraceous; the usual five dark transverse short lines in cellular area of fore wing and slender dark loops on basal area of hind wing; both fore and hind wing with discal and postdiscal somewhat lunular and diffuse dark lines, the former with the white spots in interspaces 3 and 6 as on the upperside, the latter on the fore wing terminating posteriorly in a large diffuse spot, on the hind wing faint and macular; dorsal margin broadly washed with greyish blue. Antennæ, head, thorax and abdomen much as in the ♂

Exp. ♂ ♀ 66–76 mm. (2·6–3″).

Hab. Sikhim; Bhutan; the hill-ranges of Assam.

Race **rangoonensis**, Swinhoe.—Very closely resembles the typical form, the males being practically identical. ♀ *Upperside* much paler brown, the discal fascia dingy white, not grey, narrowed from the outside and thus having the appearance of being farther from the terminal margin than in the typical form; its outer margin very sinuous and crenulate. On the hind wing the discal fascia terminates above vein 4. *Underside* differs from that of the typical form as follows: ground-colour of a paler ochraceous, the broad dingy white discal band as on the upperside but continued on the hind wing down to vein 1, the whole basal and dorsal area of the hind wing suffused with greyish blue.

Exp. ♂ ♀ 62–78 mm. (2·43–3·07″).

Hab. Lower Burma; Tenasserim.

A male labelled as from Taungoo and a stunted female labelled as collected by Limborg in Tenasserim, in the British Museum collection, belong, the former possibly, the latter certainly, to the *kesava* form, but I think both localities are open to doubt. In two fairly long series which I have had an opportunity of examining no true *kesava* ♀ occurs further south than the hill-ranges in Assam.

296. **Euthalia lubentina** (Pl. V, fig. 33), *Cramer* (Papilio), *Pap. Exot.* ii, 1779, pl. 155, figs. C, D; *Hübner*, *Verz. bek. Schmett.* 1816, p. 41; *Moore*, *Lep. Cey.* i, 1880, p. 31, pl. 16, figs. 1, 1 *a*, 1 *b*, ♂ ♀, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 220; *Moore*, *Lep. Ind.* iii, 1896–99, p. 112, pl. 233, figs. 1, 1 *a*–1 *e*, larva & pupa, ♂ ♀

♂ *Upperside* dark greenish brown. Fore wing: a bar across middle and a bar beyond apex of cell crimson bordered with black; a slightly oblique transverse discal series of small white spots from costa to interspace 1, followed by a preapical curved row of four similar spots and a transverse subterminal series of elongate black spots forming an obscure band. Hind wing: a crescent-shaped black loop near apex of cell-area; a curved postdiscal series of four or five crimson spots outwardly bordered with black, the subcostal spot the largest, followed by a subterminal series of velvety-black subquadrate spots, the anterior three and the tornal spot outwardly crimson. *Underside* dark purplish brown suffused slightly with ochraceous, the markings as on the upperside but larger and more clearly defined, and in addition:— fore wing: two small black spots at base; basal half of costal margin crimson; hind wing: four crimson spots bordered with black at base; costal and dorsal margins crimson; another spot in the postdiscal series; the velvety-black spotting of the upperside more or less obsolete. Antennæ dark brown, club beneath crimson; head, thorax and abdomen dark greenish brown; beneath, the palpi and the fore legs crimson, the rest pale brown.— ♀ Similar, paler. *Upperside*. Fore wing: the transverse crimson bands in cell obscure with a broad black-bordered white band interposed, the discal series of white spots very large, very irregular in shape. Hind wing: the ground-colour suffused with greenish blue on terminal posterior half of wing; markings similar to those of the ♂ *Underside* brown, the tornal half of the hind wing bluish green. Fore wing: the markings as on the upperside with the addition of two small black spots at base and an obscure broad terminal pale band. Hind wing with four black-bordered transverse crimson spots at base in addition to the markings as on the upperside. Antennæ, head, thorax and abdomen as in the ♂, but paler; the palpi beneath with a stripe of pink, the fore legs whitish.

Exp. ♂ ♀ 68–84 mm. (2·68–3·35″).

Hab. The lower foot-hills of the Himalayas from Hardwár to

Sikhim, but recorded from Mussooree, at 10,000 ft.; Oudh; Bengal; eastward through Bhutan, Assam, Cachar to Burma, Tenasserim, Siam, Malay Peninsula and Sumatra. On continental India southward from Bombay.

Larva. "Armed with ten pairs of long, horizontally projected, very delicately-branched spines. Colour grass-green with a dorsal row of large purplish-brown angulated spots each with or without a small pure white diamond-spot in its middle, these dorsal spots placed on the anterior half of the 4th, 6th, 7th, 9th, 10th, 11th and 12th segments; the lateral spines green tipped with purple-brown." (*Moore.*)

Pupa. "Green, but with two lateral brown marks, each with a dirty-white centre and two brown points equally with whitish centres between these and the terminating projection." (*A. Grote* apud *Moore.*)

297. **Euthalia franciæ** (Pl. V, fig. 35), *Gray* (Adolias), *Lep. Ins. Nep.* 1846, p. 12, pl. 14; *de N. Butt. Ind.* ii, 1886, p. 202; *Moore* (Chucapa), *Lep. Ind.* iii, 1896–99, p. 138, pl. 245, figs. 1, 1 *a*–1 *d*, ♂ ♀.

♂ ♀. *Upperside* dark blackish green; fore wing near tornus and disc of hind wing posteriorly suffused with blue. Fore wing: cellular area with the usual short transverse dark lines. Fore and hind wings with a prominent, slightly curved, discal, macular white band traversed by the dark veins; on the fore wing the spot in the band at base of interspace 3 out of line, angulated outwards; beyond this two obliquely-placed spots in interspaces 5 and 6 respectively, followed by an obscure broad dark post-discal macular band, and a subterminal row of obscure white somewhat diffuse spots. Hind wing with the dark postdiscal and subterminal markings of the fore wing continued to the tornus, the former better defined, the latter distinct only subapically, the spots obsolescent towards the tornus. *Underside* a beautiful silvery blue. Fore and hind wings with the usual slender cellular and basal dark marks respectively; the two oblique spots on fore wing, the discal white band and subterminal row of white spots on both wings, as on the upperside, but the last more continuous, forming a narrow band, all traversed outwardly by a narrow border of pale lilac; on the fore wing the dark postdiscal band of the upperside indicated near the tornal angle by a large patch of dusky black, and on the hind wing by a somewhat obscure narrow sinuous white band. Antennæ dark brown, ochraceous at apex beneath; head, thorax and abdomen dark green, beneath pale blue.

Exp. ♂ ♀ 78–111 mm. (3·07–4·4″).

Hab. Nepal; Sikhim; Bhutan; Assam; Upper Burma, Ruby Mines district and Northern Shan States.

298. **Euthalia phemius**, *Doubleday* (Itanus), *in Dbldy., Westw. & Hew. Gen. Di. Lep.* 1848, pl. 41, fig. 4 ♂; *de N. Butt. Ind.* ii, 1886, p. 218; *Moore, Lep. Ind.* iii, 1896-99, p. 123, pl. 238, figs. 1, 1 *a*-1 *c*. ♂ ♀

♂ *Upperside* brown. Fore wing: the basal half and a broad postdiscal transverse band of a darker brown than the ground-colour; cellular area with six short transverse blackish-brown lines, in pairs, the space between each pair conspicuously paler; two spots at base of interspace 3, and a series of slender lines above them in interspaces 4, 5 and 6, dingy white, the upper three lines broadly interrupted, their apices forming mere dots. Hind wing: basal half uniform; a postdiscal pale blue band, broad in interspace 1, gradually narrowing to a point in interspace 5, followed by a narrow subterminal white band and a slender black terminal line. *Underside* pale ochraceous brown, the terminal margins of both fore and hind wing somewhat broadly pale lilac, bounded outwardly by an anticiliary black line; cilia white. Fore wing: a small circular loop at base of interspace 1, and five short sinuous transverse lines in cellular area black; white spots at base of interspace 3 and the streaks above them as on upperside; the postdiscal broad brown transverse band of the upperside showing as a series of much narrower diffuse transverse spots. Hind wing with four short transverse black lines in cellular area, and slender oval black loops at base of interspaces 6 and 7. Antennæ, head, thorax and abdomen dark; beneath, the antennæ excepted, ochraceous.—♀. *Upperside* paler brown than in ♂, the tornus of the fore and the terminal half of the hind wing still paler. Fore wing: cellular transverse black lines as in the ♂, followed by a broad, very oblique, discal white band from costa to near termen at apex of interspace 2, two pre-apical white spots and the dark brown postdiscal transverse band as in the ♂ Hind wing: two transverse short black lines in cellular area and a postdiscal series of obscure transverse short broad bars in the interspaces. *Underside*: ground-colour and terminal lilac border to the wings as in the ♂, but very much paler, the oblique white discal band and preapical spots as on the upperside; the basal and cellular markings and postdiscal transverse dark diffuse bands similar to those in the ♂ Antennæ, head, thorax and abdomen paler brown than in the ♂

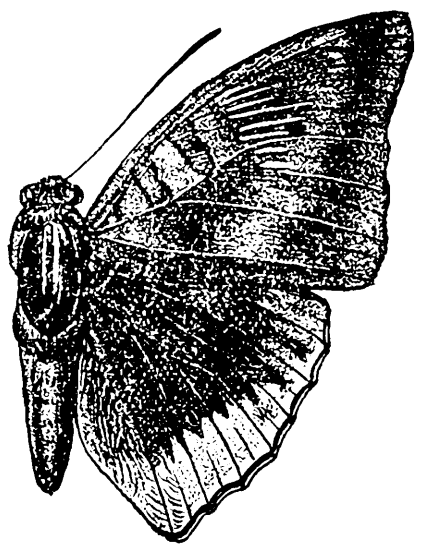

Fig. 53.
Euthalia phemius, ♂. ½.

Exp. ♂ ♀ 64–84 mm. (2·53–3·35″).

Hab. Sikhim; Bhutan, through the hill-ranges of Assam, Burma, and Tenasserim to the Malay Peninsula, extending to Siam and China.

299. **Euthalia telchinia**, *Ménétriés* (Adolias), *Enum. Corp. An. Mus. Petr., Lep.* ii, 1857, p. 120, pl. 9, fig. 3; *de N. Butt. Ind.* ii, 1886, p. 206; *Moore* (Kirontisa), *Lep. Ind.* iii, 1896–99, p. 100, pl. 227, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ Fore wing: costa strongly arched, not falcate below apex, which is slightly truncate; termen slightly concave, tornus rounded but very distinct, dorsum straight. Hind wing broadly pear-shaped, the costa, apex and termen roundly curved; tornus slightly produced; dorsum arched, slightly emarginate above tornus. ♂ *Upperside* dark velvety brown. Fore wing: basal area, cell and wing beyond apex of latter crossed by broad, short, paler brown bars, and a pale brown preapical patch. Hind wing uniform. Fore and hind wings with a brilliant metallic blue terminal band, commencing just above the tornus on the fore and gradually widening to the tornus on the hind wing. *Underside* rich fuliginous brown, basal area below the cell of the fore and basal area of the hind wing with loop-like black markings; cellular area of fore wing crossed by five transverse, short, sinuous, black lines; both fore and hind wing with broad, lunular, very obscure, dark discal broad and postdiscal narrow transverse bands.—The ♀ curiously resembles the ♀ of *E. cocytus*, but apart from the difference in the shape of the fore wing the ground-colour on the upperside is a darker brown; there are five not four dingy white discal spots, the upper two and the lower two subequal; the inwardly oblique postdiscal dark band very diffuse and much broader. The underside is of a much paler ochraceous, but the markings are similar, Antennæ, head, thorax and abdomen dark brown in both sexes; beneath in the ♂ pale brownish, in the ♀ ochraceous.

Exp. ♂ ♀ 78–101 mm. (3·1–4″).

Hab. Nepal; Sikhim; Assam; Cachar.

300. **Euthalia zichri**, *Butler* (Adolias), *Cist. Ent.* i, 1869, p. 6 ♂; *Dist. Rhop. Malay.* 1886, p. 438, pl. 43, fig. 6 ♂; *Moore, Lep Ind.* iii, 1896–99, p. 126, pl. 240, figs. 1, 1 *a*, ♂.

♂ Resembles *E. phemius*, Doubleday, but on the *upperside* the ground-colour is slightly darker, the fore wing entirely lacks the white postcellular streaks and preapical two white spots. Hind wing: the terminal third of the wing paler brown, traversed by a postdiscal row of dark spots and a broad shining metallic blue terminal band between veins 1 and 6. *Underside* pale brown, the usual cellular and basal dark markings on fore and hind wing respectively, followed by a common broad irregular dark brown discal band; a postdiscal similar band broadening posteriorly on the fore wing, faint, indistinct on the hind wing, traversed by a well-marked row of very dark brown spots. Antennæ, head, thorax and abdomen dark brown; beneath, the antennæ red; the palpi, thorax and abdomen ochraceous brown.—Female unknown.

Exp. ♂ 70 mm. (2·76″).

Hab. Recorded within our limits from Lower Burma and Tenasserim (*rare*); found in the Malay Peninsula and Borneo.

301. **Euthalia binghami**, *de Nicéville, Jour. Bomb. N. H. Soc.* ix, 1895, p. 264, pl. N, fig. 7, ♂ only; *Moore, Lep. Ind.* iii, 1896-99, p. 128, pl. 239, figs. 2, 2 *a*, ♂.

♂ Closely resembles *E. zichri*, Butler, of which it is probably only a very dark aberration with the underside of the hind wing more or less suffused with greenish blue. So far as I know, the type, which was taken by myself in a pass in the Dawnat Range in Tenasserim, is the only specimen recorded.—Female unknown.

Exp. ♂ 71 mm. (2·8″).

Hab. Tenasserim.

The ♀ described and referred to this form by the late Mr. de Nicéville turns out to be the ♀ of *E. apicalis*, Butler.

302. **Euthalia garuda**, *Moore* (Adolias), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 186, pl. 6, figs. 2, 2 *a*, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 216; *Moore, Lep. Ind.* iii, 1896-99, p. 115, pl. 234, figs. 1, 1 *a*–1 *d*, larva & pupa, ♂ ♀

Euthalia merilia, *Swinhoe, Trans. Ent. Soc.* 1893, p. 286.

Race vasanta.

Adolias vasanta, *Moore, Trans. Ent. Soc.* new ser. v, 1859, p. 77, pl. 7, fig. 2 ♀; *id.* (Euthalia) *Lep. Ceyl.* i, 1880, p. 33, pl. 17, figs. 2, 2 *a*, 2 *b*, ♂ ♀, larva & pupa; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 217; *Moore* (Euthalia), *Lep. Ind.* iii, 1896-99, p. 120, pl. 236, figs. 1, 1 *a*-1 *d*, ♂ ♀, larva & pupa.

Race acontius.

Adolias acontius, *Hewitson, A. M. N. H.* (4) xiv, 1874, p. 357; *de N.* (Euthalia) *Butt. Ind.* ii, 1886, p. 215; *Moore* (Euthalia), *Lep. Ind.* iii, 1896-99, p. 121, pl. 235, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ *Upperside* olivaceous brown. Fore wing: two transverse short black lines at base, a black loop across middle, and another beyond apex of cell, with their centres dark brown, followed by an angulated discal dark brown band bordered outwardly by a series of five white spots; two preapical white spots beyond and a broad, somewhat diffuse, subterminal black band broadening over the apex and angulated inwards in interspace 1. Hind wing shaded with dark brown at base, two crescent-shaped dark brown loop-like marks in cell; a discal series of dark brown, elongate, outwardly acute, inwardly diffuse, somewhat hastate spots, followed by a subterminal series of small spots of the same colour. *Underside* ochraceous brown. Fore wing: five transverse slender black lines across cell; a black spot below median nervure; discal and preapical white spots as on the upperside, succeeded by a postdiscal series of somewhat diffuse crescent-shaped black marks,

and a broad terminal pale lilac band not reaching the apex, bordered narrowly along the termen with dark brown. Hind wing with four or five slender black loops at base, a posteriorly obsolescent postdiscal series of diffuse black marks and a subterminal series of black dots; the termen near apex touched with pale lilac. Antennæ, head, thorax and abdomen dark brown, the antennæ ochraceous at apex, the body paler beneath.— ♀. Similar but of a paler shade. *Upperside*: fore wing differs from that of the ♂ in the absence of the dark discal and subterminal bands, and in the series of discal spots being elongate, much larger. Hind wing: the discal series of outwardly pointed black markings nearly obsolescent. *Underside* similar to that of the ♂, but the ground-colour more ochraceous, the markings larger, more diffuse.

Exp. ♂ ♀ 68–79 mm. (2·65–3·1″).

Hab. Throughout peninsular India, except in the desert tracts, and the higher ranges of the Himalayas; Assam; Burma; Tenasserim, extending to the peninsula, and Sumatra. Moore gives Ceylon as a habitat, but I have seen no typical specimen from there.

Var. *merilia*, Swinhoe, is probably a seasonal form of *garuda*. It differs in the paler shade of both upper and under sides, while the discal series of white spots is reduced to two or altogether absent; the dark tranverse fasciæ obsolescent.

Exp. ♂ ♀ 64–77 mm. (2·5–3″).

Race **vasanta**, Moore.—Closely resembles the typical form, but in the ♂ the white spots on the fore wing are entirely absent, above and below; the discal band on both fore and hind wing on the upperside is more irregular and not nearly so well-defined; on the fore wing the interspace between it and the subterminal band and on the hind wing the posterior half suffused with dark green; the terminal margin of the fore and anterior half of the hind wing tinged with pink. *Underside* similar, but both the ground-colour and markings paler; the latter less prominent.— ♀ Differs prominently on both upper and under sides in the discal row of white spots being more oblique and complete, extending from the costa to near the apex of interspace 2. The rest much as in *E. garuda* ♀

Exp. ♂ ♀ 67–76 mm. (2·7–3″).

Hab. Ceylon.

Race **acontius**, Hewitson.— ♂ Closely resembles the ♂ of the typical form, but the ground-colour is very much darker and consequently the blackish-brown markings, though similar, are less prominent. There are on the upperside of the fore wing only traces of the discal and preapical white spots so conspicuous in the typical form. On the underside, with the exception that the discal white spots are absent, the markings are similar, but the brownish ground-colour is overlaid, especially on the basal halves of both fore and hind wings, with lilacine white.—

♀ differs considerably. *Upperside* rich umber-brown, the usual slender black markings on both fore and hind wing. Fore wing with a somewhat oblique broad macular discal band from costa to interspace 1 lilacine white, the spot in interspace 2 very large, outwardly emarginate, the spot in interspace 1 shifted inwards. Fore and hind wings with a broad lilacine-white postdiscal band, outwardly margined by a series of very dark brown spots; those on the fore wing large and acutely pointed on the inner side; on the fore wing also there are three or four subcostal white spots before the apex; apex of hind wing lilacine white. *Underside*: the pale brown ground-colour overlaid with bluish green on the basal halves of both fore and hind wing; the markings nearly as on the upperside, the lilacine-white postdiscal band absent on the fore, present on the hind wing; both fore and hind wing with a broad subterminal band beyond the row of spots pale lilac, the terminal margin narrowly brown. Antennæ, head, thorax and abdomen as in the typical form.

Exp. ♂ ♀ 66–86 mm. (2·71–3·4″).

Hab. The Andamans.

303. **Euthalia jama**, *Felder* (Adolias), *Novara Reise, Lep. Rhop.* 1866, p. 431; *de N. Butt. Ind.* ii, 1886, p. 219; *Moore, Lep. Ind.* iii, 1896–99, p. 122, pl. 237, figs. 1, 1 *a*–1 *e*, ♂ ♀.

♂ *Upperside* brown. Fore wing: cellular area with five transverse, sinuous, very short blackish lines, the four outer forming a pair of irregular loops; discal and postdiscal dark-shaded obscure bands, both inclined obliquely inwards, and a subcostal series of five somewhat obscure white streaks above vein 5. Hind wing with a pair of irregular dark loop-like marks in cellular area and the discal and postdiscal dark-shaded obscure bands as on the fore wing. *Underside*: basal half of wings dull pale ochraceous, shading into ochraceous brown towards the terminal margins. Fore wing: cellular area with the dark transverse lines as on the upperside but not forming loops, a small slender oval mark below cell at base of interspace 1, and a dark-shaded broad postdiscal somewhat diffuse band. Hind wing: basal and cellular area with four slender dark loops and a postdiscal series of small dark spots. Antennæ brown, club ochraceous; head, thorax and abdomen brown, beneath ochraceous white.—♀ very similar. *Upperside*: the white subcostal streaks on fore wing broader and more pronounced, the discal dark shade spreading to bases of interspaces 1, 2 and 3; the postdiscal band on both fore and hind wing much narrower, better defined and lunular; apex of fore wing touched with lilacine white. *Underside* as in ♂ but paler, markings similar. Fore wing: the discal dark shading beyond cellular area irregularly curved, the white subcostal streaks beyond it broader than on upperside, forming a conspicuous more or less triangular patch; postdiscal band lunular, well-defined. Hind wing as in the ♂, but a faint discal band in addition to the postdiscal series of spots.

Apices of both wings touched with pale lilac. Antennæ, head, thorax and abdomen similar to those of the ♂

Exp. ♂ ♀ 70–86 mm. (2·75–3·4″).

Hab. Sikhim; Bhutan; the hills of Assam and Burma.

304. **Euthalia apicalis**, *Vollenhoven* (Adolias), *Tijd. v. Ent.* 1862, p. 186, pl. 10, fig. 1 ♂; *Moore, Lep. Ind.* iii, 1896-99, p. 125, pl. 239, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Euthalia binghamii, *de Nicéville, Jour. Bomb. N. H. Soc.* ix, 1895, p. 264, pl. N, fig. 8, ♀ only.

Euthalia eriphyle, *de Nicéville, Jour. Bomb. N. H. Soc.* vi, 1891, p. 353, pl. F, fig. 7 ♂; *Moore, Lep. Ind.* iii, 1896-99, p. 127, pl. 238, figs. 2, 2 *a*, ♂.

Euthalia delmana, *Swinhoe, Trans. Ent. Soc.* 1893, p. 287 ♂.

♂ *Upperside* resembles *E. garuda* ♂, but the ground-colour is of a duller brown, the black markings similar but very indistinct, and the white spots on the fore wing entirely absent. *Underside* like that in *E. garuda*, but the ground-colour of a duller darker ochraceous brown, no white spots on the fore wing, instead of these a discal dark obscure band from costa beyond cell curved downwards and continued somewhat faintly across the hind wing, followed by a subterminal series of minute black dots, crossing both fore and hind wing, the two spots in interspaces 1 and 2 of fore wing much larger and diffuse; apex of fore wing touched with blue. Antennæ, head, thorax and abdomen dark brown; beneath, the antennæ ochraceous red, the palpi, thorax and abdomen whitish brown.—♀ Differs on the *upperside* from *E. garuda* ♀ in being much paler, the cellular markings on both fore and hind wings broad and diffuse, the discal short series of whitish spots on the fore wing smaller; the fore as well as the hind wing with a distinct postdiscal series of small dark spots. *Underside*: ground-colour a yellower brown than in *E. garuda* ♀, the usual slender cellular and basal dark markings on fore and hind wing respectively; the hind wing, except the apical area, broadly, and the termen narrowly, overlaid with metallic blue; the white discal spots on fore wing as on the upperside, but placed on a dark brown diffuse discal band which is continued across the hind wing into the blue area; on the hind wing this band is lunular; finally, a subterminal row of dark dots on the fore wing bordered outwardly by a narrow lilac band broadening over the apex of the wing. Antennæ, head, thorax and abdomen as in the ♂ but paler.

Exp. ♂ ♀ 68–77 mm. (2·68–3·05″).

Hab. Lower Burma and Tenasserim, extending to the Malay Peninsula and Borneo.

Moore is probably right in identifying as the ♀ of this form the insect named and figured by de Nicéville as the ♀ of *E. binghami*. I am quite unable, however, to accept, as Moore has, *E. eriphyle*, de Nicéville=*E. delmana*, Swinhoe, as distinct from *E. apicalis*, Butler.

305. **Euthalia kanda**, *Moore* (Adolias), *Trans. Ent. Soc.* new ser. v, 1859, p. 69, pl. 4, fig. 5; *id.* (Sonepisa) *Lep. Ind.* iii, 1896–99, p. 110, pl. 223, figs. 2, 2 *a*, ♂.
Euthalia elicius, *de N. Jour. Bomb. N. H. Soc.* v, 1890, p. 205, pl. D, fig. 8 ♂.

♂ Fore and hind wings as in type of genus, but apex of fore wing more pointed, tornus less rounded, and in hind wing tornus more produced. *Upperside* very dark umber-brown, with the following darker brown markings:—Fore wing: cellular area with five short transverse sinuous lines. Hind wing: cell with two similar lines; both fore and hind wing with fairly distinct discal and very obscure postdiscal transverse lunular bands. *Underside* pale ochraceous; basal area of hind wing and cell of fore wing with four or five slender transverse short dark lines, followed by discal and postdiscal ill-defined narrow dark bands.—Female unknown.
Exp. ♂ 66 mm. (2·61″).
Hab. Tenasserim, extending to the Malay Peninsula.

306. **Euthalia anosia**, *Moore* (Adolias), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 187; *de N. Butt. Ind.* ii, 1882, p. 222; *Moore* (Tasinga), *Lep. Ind.* iii, 1896–99, p. 101, pl. 227, figs. 2, 2 *a*, ♂ ♀.

♂ *Upperside* dark greyish green. Fore wing: basal area to a little beyond the apex of cell, apex of wing and terminal margin broadly darker, almost fuliginous; cell-area and interspaces below it with three irregular transverse sinuous black lines, bordered with greyish-green scales on both sides; beyond cell-area two similar short lines not descending below vein 4, and a postdiscal line of obscure, black, inwardly pale greenish-bordered spots, curving outwards to the apex. Hind wing: the irroration of greyish-green scales confined to the cell-area and the disc posteriorly, former with two transverse black loops bordered with greyish scales; the costal margin broadly and the anal fold pinkish brown; the postdiscal row of obscure spots as in the fore wing. *Underside* pale olivescent grey. Fore wing: interspace 1 at base with two, cell-area with three transverse irregular black loops; basal area outwardly margined by a diffuse lunular broad line of black scales; a patch of similarly diffuse black scales near the tornus; the postdiscal row of black spots as on the upperside but very indistinct. Hind wing: two black loops in cell-area, smaller loops in interspaces 5, 6 and 7; discal and postdiscal transverse rows of black irrorations, but very diffuse and ill-defined. Antennæ ochraceous brown, paler beneath; head, thorax and abdomen dark greyish green, whitish beneath.—♀ similar; vein 11 in fore wing anastomosed with vein 12. *Upperside*: fore wing with a short strongly-curved discal row of outwardly-pointed large white spots from interspace 2 to costa. Hind wing very similar to that of the ♂ *Underside* also similar to that of the ♂, except that on the fore wing the curved discal row of white spots and all the black irrorations are more prominent.

Exp. ♂ ♀ 66–84 mm. (2·6–3·3″).

Hab. Sikhim; through Assam and Cachar to Burma down to the south of Tenasserim.

307. **Euthalia nais**, *Forster* (Papilio), *Nov. Spec. Ins. Cent.* i, 1771, p. 73; *Moore* (Symphædra), *Lep. Ceyl.* i, 1881, p. 35; *de N.* (Symphædra), *Butt. Ind.* ii. 1886, p. 186; *Moore* (Symphædra), *Lep. Ind.* iii, 1896–99, p. 56, pl. 209, figs. 1, 1 *a*–1 *g*, larva & pupa, ♂ ♀.

Symphædra alcandra, *Hübner, Verz. bek. Schmett.* 1816, p. 40.

♂ ♀ *Upperside* tawny yellow, base of both fore and hind wing dusted with fuscous scales; cilia black, alternated with white. Fore wing with the following black markings: a transverse line below apex of cell, an oval transverse spot beyond encircling a small yellow spot, a broad short oblique discal bar and an angulated postdiscal lunular band; the costa narrowly and the termen shaded with black. Hind wing: a comparatively large triangular patch below the middle of the costa, a postdiscal evenly-curved series of spots and a broad band along the termen black. *Underside* dark ochraceous red. Fore wing: the base shaded with fuscous black, two spots at base of cell and a transverse line beyond crimson-pink, edged with black; a very broad oblique discal band, angulated downwards below vein 4, bordered posteriorly by a large black spot on the inner side and outwardly and anteriorly by an oblique broad black band, followed by four anterior obliquely-placed ochraceous-white spots, and beyond by a very narrow lunular black band bent downwards below vein 6. Hind wing: a crimson short line at extreme base, two crimson black-bordered spots in cell; a comparatively broad transverse discal white band often broken up into a large spot below middle of costa, with two or three spots in line below it; finally, a postdiscal series of small black spots. Antennæ black, bright ochraceous at apex; head, thorax and abdomen tawny red above, brown shaded with crimson-pink below.

Exp. ♂ ♀ 58–70 mm. (2·2–2·75″).

Hab. The plains of India and the Lower Himalayas; Southern India; Ceylon.

Larva. "Light green with a dorsal row of purple spots, the sides armed with a row of ten very long horizontally-projected fleshy spines numerously covered with fine green hairs of a non-irritating character." (*Moore.*)

Pupa. "Short, broad, dorsum keeled; broadly triangular across the middle; head bifid; colour green, with dark gold spots and lines." (*Moore.*)

Genus **PARTHENOS.**

Parthenos, *Hübner, Verz. bek. Schmett.* 1816, p. 38; *Moore, Lep. Ceyl.* i, 1880, p. 46; *de N. Butt. Ind.* ii, 1886, p. 146; *Moore, Lep. Ind.* iii, 1896–99, p. 49.

Mimetra, *Boisduval, Voy. Astrol., Lép.* 1832, p. 126.

Type, *P. sylvia*, Cramer, from Java.

Range. Indo-Malayan Region.

♂ ♀ Fore wing elongate triangular; costa slightly arched; apex broad, rounded; termen slightly scalloped; dorsum short, the tornus forming an obtuse angle; cell closed, comparatively long, about half length of wing, narrow; discocellulars oblique, upper minute or wanting, veins 6 and 7 consequently from a point, middle short, slightly concave, lower long, concave; vein 4 directed upwards and then bent downwards at an obtuse angle; veins 8 and 9 out of 7, almost from a point, 10 and 11 free, 10 touching 11 but not anastomosing with it. Hind wing subquadrate, costa slightly arched; termen scalloped, from apex to vein 4 straight posteriorly, from vein 4 to tornus slightly produced; dorsum angulate in the middle; cell closed, vein 4 bent strongly upwards; a narrow transverse prediscoidal cell present. Antennæ long, over half length of fore wing, slender, gradually clavate; palpi short, pointing forwards, third joint short; eyes naked.

The forms in this genus are very closely allied and greatly resemble one another. They have a peculiar flight, soaring on outstretched wings with only an occasional flap, but often turning suddenly with a jerk, so that they are not easy to catch.

Key to the forms of Parthenos.

a. Subhyaline white spots forming discal band on fore wing continuous, separated only by veins.	
a' A diffuse bluish patch at posterior termination of discal band on upperside of fore wing	*P. gambrisius*, p. 288.
b' No bluish patch at posterior termination of discal band on upperside of fore wing.	Race *roepstorffi*, p. 289.
b. Subhyaline white spots forming discal band on fore wing not continuous, posterior spots widely separated.	
a'. Upperside ground-colour bright æneous green...	*P. virens*, p. 289.
b' Upperside ground-colour pale greyish blue, no trace of green ..	Race *cyaneus*, p. 290.

308. **Parthenos gambrisius** (Pl. V, fig. 38), *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 12; *de N. Butt. Ind.* ii, 1886, p. 147; *Moore, Lep. Ind.* iii, 1896–99, p. 52, pl. 207, figs. 1, 1 *a*, ♂ ♀.
Parthenos apicalis, *Moore, P. Z. S.* 1878, p. 829.

Race roepstorffi.

Parthenos roepstorffi, *Moore, Lep. Ind.* iii, 1896–99, p. 54, pl. 207, fig. 2 ♂.

♂ ♀ *Upperside* dark olive-green. Fore wing with two broad black streaks from base, the upper along both sides of the median vein giving off a slender upward spur inside cell; a transverse

oblique black line across cell, followed by a white transverse bar, two more or less triangular subhyaline white spots and, beyond, a white subcostal similar but elongate spot, all these spots bordered by black on both sides. Following these is an inwardly-oblique discal band of large subhyaline white spots of varying shape, running from the costa, just before the apex, to interspace 1, where it terminates in a bluish diffuse patch; black postdiscal and terminal macular broad bands; the narrow line of green ground-colour between the bands sinuous. Hind wing: a basal and a subbasal transverse black streak, ending outwardly in white spots, a transverse discal series of black spots decreasing in size anteriorly, succeeded by a postdiscal series of narrow linear paired streaks in the interspaces, each pair more or less confluent in the middle; a postdiscal curved series of triangular black spots and a terminal broad black band. *Underside*: fore wing diffusely pale bluish green, the broad discal band and the markings in cell and beyond it towards apex very similar to those on the upperside, the two black streaks from base wanting, the postdiscal and terminal black bands faint and very ill-defined. Hind wing: basal half pale bluish green, apical half white or in some specimens ochraceous grey; the transverse basal and subbasal black streaks absent; a discal, highly sinuous, somewhat interrupted, transverse black line and the postdiscal, subterminal and terminal black markings as on the upperside, but very faint and ill-defined. Antennæ black, head, thorax and abdomen olive-green barred with black; beneath whitish.

Exp. ♂ ♀ 98–120 mm. (3·87–4·75″).

Hab. Eastern Bengal; Manipur; Assam; Burma, and Tenasserim.

Var. *apicalis*, Moore, is a slight variety, having the apex of the fore wing pale as if rubbed—a variation which becomes constant in the Andaman race. Many specimens from Tenasserim have the base and the space between the black bars and discal line of spots on hind wing blue—a feature which is constant in the Chinese and Malaccan race (*sylla*, Donovan = *liliacinus*, Butler).

Race **roepstorffi**, Moore.—Similar both on the upper and under sides to the typical form. Differs in being on the whole smaller and in the entire absence either on the fore or the hind wing of any suffusion of blue on the upperside; the apex of the fore wing always has a rubbed appearance.

Exp. ♂ ♀ 94–104 mm. (3·7–4·1″).

Hab. Andamans and Nicobars.

309. **Parthenos virens**, *Moore, A. M. N. H.* (4) xx, 1877, p. 47; *de N. Butt. Ind.* ii, 1886, p. 149; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 274, pl. B, figs. 3, 3 *a*, larva & pupa; *Moore, Lep. Ind.* iii, 1896–99, p. 51, pl. 206, figs. 1, 1 *a*–1 *c*, larva & pupa, ♂ ♀.

Race cyaneus (Pl. V, fig. 38).

Parthenos cyaneus, *Moore, A. M. N. H.* (4) xx, 1877, p. 46; *id. Lep. Ceyl.* i, 1880, p. 46, pl. 24, figs. 1, 1 *a*; *de N. Butt. Ind.* ii, 1886, p. 149, pl. 21, fig. 95 ♂; *Moore, Lep. Ind.* iii, 1896–99, p. 54, pl. 208, figs. 1, 1 *a–c*, larva & pupa, ♂ ♀.

♂ ♀ Closely allied to and resembling *P. gambrisius*, from which it differs as follows:—*Upperside*: ground-colour a bright bronze-green, the subhyaline white spots near apex of cell in the fore wing more opaque, the broad discal band of large white spots proportionately more basal further from the termen and very irregular, the spots, especially towards the hinder part of the wing, more widely separated, the spot in interspace 5 more acutely triangular and smaller, the two spots above shifted obliquely inwards towards the costa, making the outer margin of the discal band angulate at interspaces 5 and 6. Hind wing: the postdiscal and subterminal markings broader and more diffuse than in *P. gambrisius*, giving a dark shade to the whole of the apical half of the wing. *Underside* pale greenish grey. Fore wing: the spots and markings except the basal black streaks as on the upperside, the ground-colour fading to an ashy grey towards the terminal margin. Hind wing similar to the underside of hind wing of *P. gambrisius*, but the discal transverse sinuous black line very broken and incomplete, the postdiscal, subterminal and terminal black markings somewhat better defined. Antennæ black; head, thorax and abdomen bronze green, barred with black above; beneath whitish.

Exp. ♂ ♀ 112–120 mm. (4–4·75″).

Hab. S. India from Canara to Travancore.

Larva. Cylindrical; head and anal segment with short simple spines; segments 3 to 12 with longer branched spines, reddish brown in colour, those on 3 and 4 comparatively very long. Colour pale green, with yellowish-white lateral stripes one on each side.

Pupa "brown, boat-shaped." (*After Davidson & Aitken.*)

Race **cyaneus**, Moore, differs from *P. virens* on the upperside in the ground-colour being of a beautiful pale greyish blue, the discal band of spots on the fore wing proportionately closer to the termen, and the spots, especially towards the hinder part of the wing, even more widely separate. In the hind wing the postdiscal paired streaks in the interspaces do not generally coalesce, but are separate; the subterminal black spots are more lunular than triangular in shape, and the terminal black band more sinuous. *Underside* pale greyish green, the markings similar to the markings in the typical form.

Exp. ♂ ♀ 110–126 mm. (3·97–4·97″).

Hab. Ceylon.

Larva. "Cylindrical; pale yellowish purplish brown, darker beneath, with dark brown longitudinal dorsal lines and transverse white-dotted segmental lines; head and legs dark brown, head and anal segment spined; other segments slightly hairy; third and twelfth segments armed with erect rather long dark purplish

branched spines, which are longest on the 3rd, 4th, 11th and 12th segments." (*Moore.*) "Feeds on Modecca." (*Thwaites.*)

Pupa. "Boat-shaped, pale purplish brown; head pointed and cleft." (*Moore.*)

Genus **MODUZA.**

Liminitis, pt., *Felder, Ein Neues Lep.* 1861, p. 30; *de N. Butt. Ind.* ii, 1886, p. 155.

Moduza, *Moore, Lep. Ceyl.* i, 1881, p. 47; *id. Lep. Ind.* iii, 1896–99, p. 161.

Type, *M. procris*, Cramer, from India.

Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa arched; apex produced, rounded; termen scalloped, concave in the middle, slightly convex below apex and above tornus; dorsum straight; cell about half length of wing, slenderly closed; upper discocellular very short, middle sloping outwards, lower transverse, outwardly convex; vein 3 from well before apex of cell, 4 from apex, 10 and 11 free. Hind wing subtriangular; costa much arched at base, then nearly straight to apex, which is well marked; termen arched, scalloped; dorsum slightly arched; cell open; vein 7 at base closer to 8 than to 6. Antennæ long, well over half length of fore wing; club very long, narrow and gradual; palpi broad, third joint short, conical; eyes naked.

Key to the forms of Moduza.

a. Ground-colour of upperside of wings ferruginous red.
  a' Ground-colour bright; white spot at apex of cell on upperside of fore wing generally large, always present ... . *M. procris*, p. 291.
  b' Ground-colour dark; white spot at apex of cell on upperside of fore wing small or entirely wanting ... . Var. *anarta*, p. 293.
b. Ground-colour of upperside of wings fuliginous brown Race *calidasa*, p. 293.

310. **Moduza procris,** *Cramer* (Papilio), *Pap. Exot.* ii, 1777, pl. 106, figs. E, F, ♀; *de N.* (Liminitis) *Butt. Ind.* ii, 1886, p. 163; *Davidson & Aitken* (Limenitis), *Jour. Bomb. N. H. Soc.* v, 1890, p. 274; *Moore, Lep. Ind.* iii, 1896–99, p. 161, pl. 253, figs. 1, 1 *a*–1 *d*, larva & pupa, ♂ ♀.

Liminitis anarta, *Moore, P. Z. S.* 1877, p. 585; *de N.* (var. anarta) *Butt. Ind.* ii, 1886, p. 164; *Moore* (Moduza), *Lep. Ind.* iii, 1896–99, p. 164, pl. 254, figs. 1, 1 *a*, ♂ ♀.

Race calidasa.

Liminitis calidasa, *Moore, A. M. N. H.* (3) i, 1858, p. 48; *id.* (Moduza) *Lep. Ceyl.* i, 1881, p. 48, pl. 25, figs. 1, 1 *a*, ♂, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 164; *Moore* (Moduza), *Lep. Ind.* iii, 1896–99, p. 165, pl. 254, figs. 2, 2 *a*, 2 *b*, larva & pupa, ♂ ♀.

♂ ♀. *Upperside* rich ferruginous red. Fore and hind wings with

a series of short black transverse lines at base, three on the fore, four on the hind wing; on the hind wing these lines occur in cellular area only and are very slender, with a black spot in each of the interspaces above them; a white spot varying in size at apex of cell in fore wing; a broad white macular slightly-curved common discal band, set in a dusky-black background, interrupted anteriorly on fore wing, the spots in interspaces 4, 5 and 6 are detached and slightly out of line, the first very small. Fore wing: terminal margin somewhat broadly dusky black, the black produced in conical shape inwardly in the interspaces, and traversed by two slender lunular pale lines. Hind wing: a postdiscal series of transverse black spots, followed by an outer row of smaller spots; a subterminal lunular black line, and a narrow terminal black band; a pale somewhat sinuous line interposed between the subterminal and terminal markings. *Underside* with similar but more clearly-defined markings; base of fore and basal two-thirds of the hind wing pale blue; on the hind wing the white discal band with its dusky-black margins superposed on the blue area; the postdiscal series of black spots on the hind wing diffuse; the sinuous lines traversing the black terminal margin on both fore and hind wing broader, more prominent, and the interspaces along the extreme margin touched with white. Antennæ black, ochraceous at apex; head, thorax and abdomen dark ferruginous red; beneath bluish white.

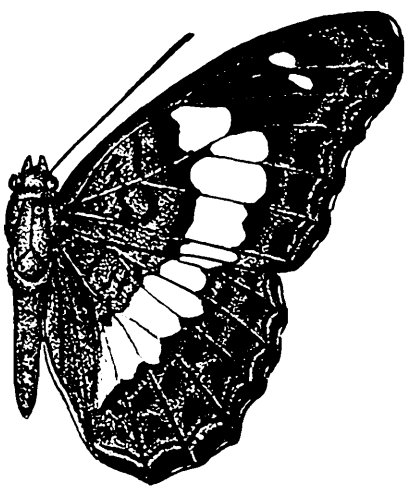

Fig. 54.—*Moduza procris*, ♂. ½.

Exp. ♂ ♀ 62–78 mm. (2·47–3·08″).

Hab. Peninsular India in regions of heavy rainfall; Assam; Burma and Tenasserim, extending into the Malayan Subregion.

Larva. "Found from July to October on *Mussænda frondosa*. When young it is slender cylindrical, evenly clothed with short spinous tubercles and of a uniform dark brown colour. It remains on one leaf eating it regularly back from the point, but leaving the midrib, and as it eats, it fringes the eaten margin with its excrement, held together by silk, among which it is absolutely undistinguishable. After its last moult it abandons these strange habits and lives openly on the upper side of a leaf . . Its head is now very large and closely set with short stout simple spines, on the back there is a double row of strong spines or sharp tubercles, clustered at the ends of short stems; on the third segment there are two pairs, more laterally situated, of processes similar to those on the back, but three times as long, and on the fourth segment one pair longer still. The colour is still dark brown." (*Davidson & Aitken.*)

Food-plant, *Mussænda*.

Pupa. "Abdominal part slender with small dorsal tubercles; thorax stout; wing-cases much dilated laterally; head produced into two foliaceous, hammer-shaped processes which meet at their ends, leaving a circular hole in the middle. Colour dark brown. Easily passes for a small withered and twisted leaf." (*Davidson & Aitken.*)

Var. *anarta*, Moore, differs from the typical form in being on the upperside generally darker, the dusky-black shading more extensive, the discal white macular band narrower, and the white spot at apex of cell of fore wing very small, sometimes entirely absent. *Underside* also slightly darker, the outer postdiscal row of round black spots on the hind wing superposed on cone-shaped lilac-blue markings.

Exp. ♂ ♀ as in the typical form.

Hab. Lower Burma; Tenasserim; the Andamans.

In Burma I procured both the typical form and *anarta* the dark variety.

Race **calidasa**, Moore, is a still darker form, the ground-colour on the upperside dusky brown with only a transverse mark in the discoidal cells of both fore and hind wings, the terminal portions of the wings more or less ferruginous. The markings are almost identical, but the cell of the fore wing always lacks both on upper and under sides the white spot at apex. On the whole, too, the inner margin of the discal white band both on fore and hind wings is straighter and more even. Antennæ black; head, thorax and abdomen brown; palpi, thorax and abdomen beneath bluish white.

Exp. ♂ ♀ 61–75 mm. (2·3–2·98″).

Hab. Ceylon.

Larva. "Pale greenish yellow or reddish; head spined; the segments armed with short spiny tubercles, and a long dorsal divergent pair on third and fourth segments. Feeds on *Cinchona*, *Mussænda*, &c."

Pupa. "Reddish purple-brown; wing-cases dilated; head-piece bifid, twisted and bent outwards at the tips." (*Moore.*)

Genus **LIMINITIS.**

Liminitis, *Fabr. Illig. Mag.* vi, 1807, p. 281; *de N. Butt. Ind.* ii, 1886, p. 155, pt.; *Moore, Lep. Ind.* iii, 1896–99, p. 146.
Najas, *Hübner, Tentamen*, 1806, p. 1 (no descr.).
Parasarpa, Sumalia, & Najas, *Moore, Lep. Ind.* iii, 1898, p. 146.

Type, *L. camilla*, from Europe.

Range. North America, Europe, Asia. In India confined to the Himalayas and hill-ranges of Assam; Burma and Tenasserim.

♂ ♀ Fore wing: costa very slightly arched; apex produced but rounded; termen oblique, even or slightly scalloped, in some forms slightly concave; tornus obtuse; dorsum straight; cell less than half length of wing, slenderly closed; upper discocellular

very short, middle strongly concave, lower slightly oblique; veins 3 and 4 approximate; vein 8 from middle of 7; veins 10 and 11 free. Hind wing pear-shaped, costa slightly arched, apex rounded, termen even or slightly scalloped, tornus rounded, dorsum arched; cell open, vein 7 closer to 6 than to 8. Antennæ typically about half length of fore wing, in all Indian forms much longer than half; club long, narrow and gradual; palpi short, moderately broad in front, studded with lax scales and soft subporrect hairs, third joint short; eyes hairy, in two forms naked; tibiæ and tarsi of intermediate and posterior legs spinose.

Key to the forms of Liminitis.

A. Eyes hairy.
  a. Broad discal band crossing wings on upperside, yellow on fore, silvery white on hind wing .. .. *L. zayla*, p. 294.
  b. Broad discal band crossing wings on upperside concolorous throughout.
    a'. This band pale green on upperside *L. daraxa*, p. 295.
    b' This band white on upperside.
      a^2. Discal band continuous throughout, not macular anteriorly .. . *L. dudu*, p. 296.
      b^2. Discal band not continuous, macular anteriorly, the upper three spots on fore wing well separate . .. , . *L. zulema*, p. 297
B. Eyes not hairy.
  a. Discal band on hind wing very broad, about one-third length of wing . .. . *L. trivena*, p. 297.
  b. Discal band on hind wing comparatively narrow, not one-quarter length of wing . *L. ligyes*, p. 298.

311. **Liminitis zayla** (Pl. VI, fig. 45), *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 276, pl. 35, fig. 4; *de N. Butt. Ind.* ii, 1886, p. 159; *Moore* (Parasarpa), *Lep. Ind.* iii, 1896–99, p. 147, pl. 248, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* olivescent brown, basal area of wings sprinkled with golden scales. Fore wing: two or three circular loop-like slender black marks at base of interspace 1; the cell crossed by a median and an apical pair and an intermediate short black line, the space between the pairs of lines ochraceous; a broad yellow discal band, its inner margin sinuous but sharply defined, its outer margin straight; above this band a yellow streak along costa to near apex, joining a sinuous, narrow, transverse, postdiscal ferruginous-red band, traversed by a series of brown broad lunules, and followed by a subterminal dark brown broad line; a narrower outer pale line and a terminal margin of the brown ground-colour. Between the discal and postdiscal bands the ground-colour forms a broad band darkening outwardly. Hind wing: basal area with some obscure black slender short lines; a discal straight band in continuation of the band on the fore

wing silvery white and rapidly narrowing posteriorly to a point, followed by a narrow interval of the brown ground-colour and a dark brown, somewhat irregular band; a postdiscal series of ferruginous-red lunules, lined outwardly with dark brown; subterminal dark brown and pale lines and terminal margin as on the fore wing; abdominal fold thickly sprinkled with golden scales. *Underside* similar with similar markings, but ground-colour and markings all very much paler, the latter blurred and ill-defined. Fore wing: a transverse series of diffuse whitish marks in the interspaces beyond discal band, a pale line on the inner as well as on the outer side of the subterminal dark line. Hind wing: basal area suffused with shining blue, outwardly defined by a black line, the transverse row of whitish diffuse marks beyond discal band as on fore wing, but continuous, not detached. Antennæ brown; head, thorax and abdomen dark brown; palpi, thorax and abdomen beneath white.

Exp. ♂ ♀ 90–100 mm. (3·56–3·92″).

Hab. Sikhim, 6000–8000 ft.; Assam, the Khási Hills.

312. **Liminitis daraxa** (Pl. VI, fig. 43), *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 276, pl. 34, fig. 4; *de N. Butt. Ind.* ii, 1886, p. 158; *Moore* (Sumalia), *Lep. Ind.* iii, 1896–99, p. 152, pl. 250, figs. 2, 2 *a*, 2 *b*.

♂ ♀ *Upperside* dark velvety brown. Fore and hind wings with the usual basal markings black but very obscure against the dark brown ground-colour; a comparatively broad pale green macular discal band traversed by the dark veins, the anterior three spots detached and in a line towards apex, the apical spot very small; a postdiscal obscure black transverse band followed by a row of velvety-black spots, more distinct on the hind than on the fore wing; a subterminal similarly coloured band on the hind wing only; a terminal band also; cilia black, alternated with white; a ferruginous-red patch on the tornus of hind wing surrounding the subtornal two black spots of the postdiscal series. *Underside* ferruginous. Fore and hind wings with the basal markings darker ferruginous; in fore wing the base, the space between the medial and apical pair of short lines in cell, and a bar beyond apex of cell pale lilac, the loop-like spot in the base of interspace 1 surrounded by lilacine white; in hind wing the basal area and abdominal fold suffused with lilacine; the discal band crossing both wings as on the upperside, but very much paler, almost white; the postdiscal row of spots very small, each spot placed on a bright lilac ground, margined inwardly on the hind wing by a dark ferruginous lunule; subterminal and terminal dark ferruginous bands with a pale line interposed between them.

Exp. ♂ ♀ 70–75 mm. (2·75–2·93″).

Hab. The Himalayas, Kumaun to Sylhet; Bhutan; Cachar; Assam, the Nága and Khási Hills; Burma; Tenasserim, extending to the Malay Peninsula.

313. **Liminitis dudu**, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 276; *de N. Butt. Ind.* ii, 1886, p. 159, pl. 24, fig. 112 ♂; *Moore* (Sumalia), *Lep. Ind.* iii, 1896-99, p. 150, pl. 250, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ *Upperside* rich dark brown. Fore wing: cell with a medial and an apical transverse short red band, each margined inwardly and outwardly by short dark black lines, the medial band crossing over into interspace 1, the apical band along the disco-cellulars; both fore and hind wing with a common broad, transverse, white discal band, narrowing and bent inwards above vein 4 on fore wing and at that point its outer margin somewhat diffuse; the brown ground-colour extends as a streak inwards in interspaces 4 and 5, the outer margin posteriorly on fore wing and along its whole length on hind wing bordered by a dark slightly sinuous line followed by a narrow pale interspace, above which the costa of fore wing is touched with red; a post-discal band of lunules, pale on the fore, dark red on the hind wing, and pale ashy-brown subterminal and terminal lines divided by a narrow band of the dark brown ground-colour,. these pale lines turning to red at the tornal angle. *Underside* pale lilac washed with silvery white. Fore wing: the red transverse cellular marks much as on the upperside, but paler; similar basal marks in interspace 1; the discal band as on the upperside, but broader, margined on both sides by chestnut-red lines; a preapical chestnut-red patch merging into an ochraceous patch on apex; below the apex the termen broadly chestnut-red to vein 1, traversed subterminally by a transverse dark chestnut line. Hind wing with two oval silvery spots in cell and a similar larger spot at base of interspace 7; the transverse white discal band as on the fore wing, the outer bordering chestnut-red line widened at tornal angle into a large chestnut-red patch; termen narrowly white, touched in the interspaces with pale lilac and defined on the inner side by a dark line. Antennæ brown, the club ochraceous beneath; head, thorax and abdomen dark brown; beneath, the palpi, thorax and abdomen lilacine white.

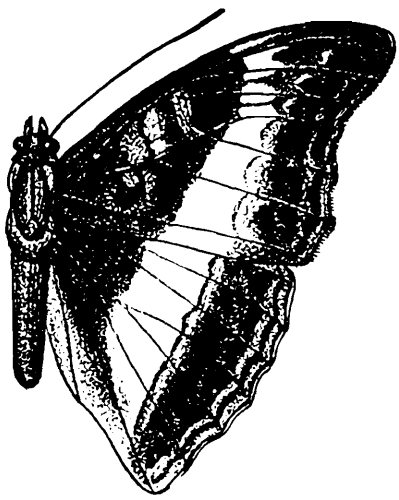

Fig. 55.—*Liminitis dudu*. ½.

Exp. ♂ ♀ 72–92 mm. (2·82–3·6″).

Hab. Sikhim; Nepal, eastwards through the Nága and Khási Hills in Assam to the hills in Upper Burma.

314. **Liminitis zulema,** *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 276, pl. 34, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 159; *Moore* (Sumalia), *Lep. Ind.* iii, 1896-99, p. 153, pl. 251, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ *Upperside* rich dark brown. Fore wing: cell and base of interspace 1 golden brown; cell crossed by four short velvety-black lines, a medial and an apical red bar, basal area of interspace 1 with transverse black lines in form of a figure of 8 enclosing red spots; a broad oblique white discal band traversed by the dark veins, and anteriorly broken into three elongate spots with a slender subcostal streak above them, followed by a double row of somewhat lunular black postdiscal spots divided by a ferruginous-red narrow band; an inner and an outer subterminal pale line; two small white subcostal spots near apex bordering the inner postdiscal row of black lunules. Hind wing: basal area with some transverse black lines, the spaces between them touched with ferruginous, a broad white continuous discal band, postdiscal rows of cone-shaped black spots divided by a ferruginous-red narrow band; pale subterminal and terminal lines as on the fore wing. *Underside* similar, with similar markings, but slightly broader; basal area and cell of fore wing greyish white; basal area of hind wing broadly bluish grey, diminishing to a point near the tornus.

Exp. ♂ ♀ 65–82 mm. (2·6–3·2″).

Hab. Sikhim; Bhutan; the hills of Assam, Burma and Tenasserim.

315. **Liminitis trivena,** *Moore, Ent. Month. Mag.* Nov. 1864, p. 133; *de N. Butt. Ind.* ii, 1886, p. 161; *Moore* (Najas), *Lep. Ind.* iii, 1896-99, p. 168, pl. 255, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* dull black; base of wings irrorated with greyish, sometimes ochraceous, scales; cell of fore wing with a white preapical, sinuous, short transverse band, sometimes an inner spot of white, and one or even two white spots in the interspace below. Fore and hind wings with a broad white discal band, continuous on the hind wing, traversed only by the dark veins, macular on the fore wing; the posterior spots very irregular in size and well separated anteriorly on the fore wing; this band curves inwards to the costa beyond apex of cell, and is followed by three white subcostal spots in transverse order; a postdiscal row of black spots outwardly margined with white and an obscure pale subterminal line with an anteciliary very slender black line; cilia white, alternated with black. *Underside* bright ochraceous yellow; base of fore wing much paler, the white preapical band in cell and the broad white discal band across both fore and hind wing as on the upperside, but the spots composing it on the fore wing larger, closer together, lined inwardly and outwardly with fuscous black; the three preapical white spots as on the upperside, but less prominent; postdiscal

series of black spots of the upperside absent on the hind wing, represented on the fore wing by black irregular spots in interspaces 1, 2 and 3; finally, an anteciliary slender black line as on the upperside. Antennæ, head, thorax and abdomen brown; palpi, thorax and abdomen beneath whitish.

Exp. ♂ ♀ 61–68 mm. (2·42–3·7″).

Hab. N.W Himalayas, Kashmir to Kulu.

316. **Liminitis ligyes**, *Hewitson, Trans. Ent. Soc.* (3) ii, 1864 (pt. 2), p. 246, pl. 15, figs. 3, 4; *de N.* (trivena var. ligyes) *Butt. Ind.* ii, 1886, p. 161, pl. 24, fig. 113 ♂; *Moore* (Najas), *Lep. Ind.* iii, 1896–99, p. 169, pl. 255, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Liminitis hydaspes, *Moore, P. Z. S.* 1874, p. 270, pl. 43, fig. 2 ♂; *de N.* (trivena var. hydaspes) *Butt. Ind.* ii, 1886, p. 162; *Moore, Lep. Ind.* iii, 1896–99, p. 170, pl. 256, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀. Closely resembles *L. trivena*. Differs on both upper and under sides by the narrowness of the discal band, which is only about two-thirds the width of the discal band in *L. trivena*. Moreover, the spots composing the band are well separated on the hind wing as well as on the fore. In typical specimens the postdiscal series of black spots is margined outwardly with ferruginous red, but this is variable; in some it is absent, while in others (var. *hydaspes*) there is an additional row of ferruginous-red dots on the inner side of the postdiscal series of black spots. *Underside* similar to the underside in *L. trivena*, but on the whole of a darker ochraceous yellow, with the markings more prominent. In the majority of specimens also the apical half of cell and the area bounded by the discal band in the fore wing and a postdiscal and subterminal row of large round spots on the hind wing are of a deep ochraceous orange.

Exp. ♂ ♀ 68–82 mm. (2·7–3·22″).

Hab. N.W. Himalayas, Kashmir, Chitral.

Genus **LEBADEA**.

Lebadea, *Felder, Ein Neues Lep.* 1861, p. 28; *de N. Butt. Ind.* ii, 1886, p. 151; *Moore, Lep. Ind.* iii, 1896–99, p. 156.

Type, *L. martha*, Fabr., from Sikhim.

Range. Indo-Malayan Region.

♂ ♀ Fore wing long and narrow, costa very slightly arched; apex very strongly produced, blunt and rounded; termen concave, tornus angulate; dorsum straight; cell to upper apex more than half length of wing; discocellulars inwardly oblique, upper minute, middle short, about one-fourth as long as lower, lower incurved, slender only in its posterior half; vein 3 from before lower apex of cell, 4 from apex; vein 8 from just before middle of 7, 10 and 11 free. Hind wing subtriangular; costa much arched at base, then nearly straight; apex rounded; termen slightly arched, scalloped; tornus produced, dorsum long; cell very short, not half length of wing, slenderly closed; veins 3 and 4 stalked,

branching from well beyond lower apex of cell, 6 as close to 7 as to 5. Antennæ very long, nearly two-thirds length of fore wing; club long, narrow, gradual; palpi subporrect, short; eyes naked.

317 **Lebadea martha** (Pl. X, fig. 73), *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 56 ♀; *Moore, Lep. Ind.* iii, 1896-99, p. 158, pl. 252, figs. 2, 2 *a*-2 *c*, ♂ ♀.

Liminitis ismene, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 276, pl. 34, fig. 2 ♂; *de N.* (Lebadea) *Butt. Ind.* ii, 1886, p. 152, pl. 19, fig. 79 ♂; *Moore* (Lebadea), *Lep. Ind.* iii, 1896-99, p. 157, pl. 252, figs. 1, 1 *a*, ♂ ♀.

Lebadea attenuata, *Moore, P. Z. S.* 1878, p. 829; *de N. Butt. Ind.* ii, 1886, p. 152.

♂ ♀ *Upperside* deep tawny. Fore and hind wings crossed obliquely by a straight white discal band, on the fore wing macular and curved slightly inward beyond apex of cell; the basal area of the wings, on the inner side of the discal band, crossed by several black sinuous short transverse lines, and the cell of the fore wing, near its apex, by a pale transverse black-margined short band. Beyond the discal line and running to near the apex of the wing is a series of slender, white, outwardly dusky-bordered lunules, followed by a highly sinuous subterminal black line, inwardly somewhat faintly margined with white; apex of fore wing touched with white; termen of fore wing in most specimens broadly suffused with greyish brown; the spots composing the discal band on the fore wing outwardly concave; outer margin of the same band on the hind wing sinuous. *Underside* dull pale ochraceous brown, the basal area of the wings irrorated with greenish-white scales; the markings as on the upperside, but the white markings broader and somewhat diffuse; the subterminal highly sinuous dark line comparatively broadly margined on both sides with white. Antennæ brown, the club preapically touched with white; head, thorax and abdomen tawny; beneath, the palpi, thorax and abdomen white.

Exp. ♂ ♀ 64-77 mm. (2·53-3·03″).

Hab. Sikhim; Bhutan; Assam; Burma; Tenasserim.

A very variable form. The following is a brief summary of the variations that are commonly to be found:—The width of the discal band may range on the hind wing from a mere broad white line to a prominent band 4 mm. or over in width. Many specimens are intermediate between the two. This variation seems not to depend entirely on locality. There are specimens in the British Museum of both extremes as to width of band from the same place in Upper Burma. The ground-colour, especially of the fore wing, is also very variable. Sometimes the fore wing is entirely brown, the deep tawny colour being restricted to a spot or two within the encircling black marks at the base of the wing. In parts of Burma there is also a slight difference between the wet-season and dry-season forms, the markings in the latter being more obscure and the underside paler.

Genus **AUZAKIA.**

Liminitis, pt., *de N. Butt. Ind.* ii, 1886, p. 156.
Auzakia, *Moore, Lep. Ind.* iii, 1896-99, p. 148.
Bhagadatta, *Moore, Lep. Ind.* iii, 1898, p. 154.

Type, *A. danava*, Moore, from the Himalayas.

Range. The Himalayas: hills of Assam and Upper Burma to China.

♂ ♀ Fore wing: costa slightly arched; apex produced; termen slightly concave; tornus bluntly angulate; dorsum slightly sinuous; cell not half length of wing; upper discocellular minute, middle very short, straight, lower comparatively long, slender; veins 3 and 4 from lower apex of cell, 8 out of basal half of 7, 9 and 10 free. Hind wing: costa and termen widely arched, latter slightly scalloped; apex rounded; tornus produced, acute, rounded in some forms; dorsum widely curved; cell slenderly closed; veins 3 and 4 approximate from lower apex of cell, vein 6 closer to 5 than to 7. Antennæ over half length of fore wing; club long, narrow, gradual; palpi short, stout, third joint acutely pointed; eyes naked.

Key to the forms of Auzakia.

a. Upperside ground-colour fuliginous with broad very dark brown basal markings ..	*A. danava*, p. 300.
b. Upperside ground-colour rich warm umber-brown, with comparatively slender dark brown basal markings. .	*A. austenia*, p. 301.

318. **Auzakia danava,** *Moore* (Liminitis), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 180, pl. 6 *a*, fig. 2, ♂ ♀; *de N.* (Liminitis) *Butt. Ind.* ii, 1886, p. 157; *Moore, Lep. Ind.* iii, 1896-99, p. 149, pl. 249, figs. 1, 1 *a*–1 *c*, ♂ ♀

♂ *Upperside* fuliginous brown, paling on the terminal half of the wings. Fore wing: the basal area below the cell, two broad bands across the latter, and a patch beyond its apex to costa dark brownish black, the outer margin of the dark area crenulate, extended angularly along the veins; this is followed by a pale olive-brown obscure band, a discal dark brown band widening below costa, and a subterminal narrower band of the same shade; between discal and subterminal bands is a series of faintly defined dark transverse spots in the interspaces. Hind wing: basal third dark brown, followed by a pale olive-brown interspace; discal, postdiscal and subterminal bands as on the fore wing; tornus suffused with green. *Underside* pale ochraceous, suffused with lilacine; cell of fore wing crossed by a medial and an apical brighter lilac band bordered with dark lines on both sides; base and cell of hind wing with the usual loop-like slender dark marks with pale centres; a lilac discal band, lunular and curved inwards anteriorly on the fore wing, broad and straight on the hind wing,

followed on both wings by a yellow postdiscal diffuse narrow band. Fore wing with a patch of purplish white on apex; hind wing with a broad transverse subterminal diffuse lilac band traversed by a series of lunular obscure brownish marks; termen of both fore and hind wing brownish yellow. Antennæ, head, thorax and abdomen dark brown; beneath, the palpi, thorax and abdomen pale lilacine white.— ♀ *Upperside* similar to that of the ♂, but fore and hind wings crossed obliquely by broad, outwardly somewhat diffuse, prominent white discal and postdiscal bands. These bands slightly tinged with fuliginous and on the fore wing somewhat lunular. The postdiscal band on both fore and hind wing outwardly traversed by a series of detached dark lunules; the dark interspace between the two bands much paler, suffused with green on its inner half. *Underside* as in the ♂, but very much paler; the series of postdiscal detached lunules as on the upperside.

Exp. ♂ ♀ 76–90 mm. (3–3·53″).

Hab. The Himalayas; the hills of Assam and Upper Burma.

319. **Auzakia austenia**, *Moore* (Lebadea), *P. Z. S.* 1872, p. 560, pl. 32, fig. 1 ♂; *de N.* (Liminitis), *Butt. Ind.* ii, 1886, p. 157; *Moore* (Bhagadatta), *Lep. Ind.* iii, 1896-99, p. 155, pl. 251, figs. 2, 2*a*, ♂.

♂ *Upperside* rich warm umber-brown; cell of fore wing with five short transverse dark brown sinuous lines and one just beyond the discocellulars; cell of hind wing with three similar lines and one beyond the discocellulars; a very pale brown broad transverse discal band crossing both fore and hind wing, its inner margin very sinuous on the fore wing, sharply defined throughout, and its outer margin very diffuse, shading into the brown of the ground-colour, followed by a postdiscal somewhat similar and a subterminal much narrower pale band. The subterminal pale band traversed by a series of very narrow long dark brown lunules, which on the apical area of fore wing are very slenderly margined on the inner and outer sides by white, posteriorly they become shorter and more open, until near the tornal angle of the hind wing they form mere double rounded approximate spots. Cilia white alternated with brown. *Underside* paler brown; basal area of fore and hind wings washed with pale lilac, turning to greenish blue along dorsal margin of the hind wing; markings as on the upperside, but the discal and postdiscal transverse bands much paler, almost white; the former somewhat lunular.— ♀ very similar, of a paler brown, with the discal and postdiscal transverse bands proportionately paler; the band of narrow dark brown lunules on the latter nearly all margined narrowly with white. *Underside* also paler than in the ♂ and suffused throughout with lilacine, the discal and postdiscal bands whiter still, the latter on the hind wing outwardly bordered with a faint suffusion of pink; almost the whole basal area of fore and hind wings in

certain lights pale bluish. Antennæ, head, thorax and abdomen brown; beneath, the palpi, thorax and abdomen white.

Exp. ♂ ♀ 88–96 mm. (3·45–3·8″).

Hab. Assam, the Khási Hills; Cachar.

Genus **PANTOPORIA.**

Pantoporia, *Hübner, Verz. bek. Schmett.* 1816, p. 44; *Moore, Lep. Ceyl.* i, 1881, p. 56; *Moore, Lep. Ind.* iii, 1896–99, p. 193.
Athyma, pt., *de Nicéville, Butt. Ind.* ii, 1886, p. 171.
Tatisia, Condochates, Kironga, *Moore, Lep. Ind.* iii, 1898, pp. 179, 187, 209.

Type, *P. nefte*, Cramer, from Java.

Range. Indo-Malayan Region.

♂ ♀ Fore wing short, broad, triangular; costa well arched; apex blunt; termen nearly straight; tornus bluntly angulated; dorsum straight; cell slenderly closed; upper discocellular minute, middle deeply rounded and concave, lower convex, slightly sinuous; veins 3 and 4 from lower apex of cell, 9 from about middle of 7, 10 and 11 free. Hind wing: costa and termen rounded, forming together half an ellipse of which the dorsum is the chord, the last nearly straight; cell open, vein 7 equidistant from 6 and 8. Antennæ over half length of fore wing; club long, narrow and gradual; palpi broad in front, clad with close scales, third joint short conical; eyes naked, in a few forms hairy.

Key to the forms of Pantoporia.

A. Eyes not hairy.
  a. Hind wing: underside with five conspicuous black spots at base.. ... .. — *P. sulpitia*, p. 303.
  b. Hind wing: underside without any such spots.
    a'. ♂. Fore wing upperside: discoidal streak white, distinct, divided into four; apical portion never large, nor widely separated from rest.
      a^2. ♂ ♀ Hind wing: underside without any distinct series of black spots between postdiscal and subterminal markings. ♀ black with orange-yellow markings *.
        a^3. ♂. Fore wing upperside: lower portion of discal band not extending into interspace 3 ... .. — *P. nefte*, race *nivifera*, [p. 305.
        b^3. ♂. Fore wing upperside: lower portion of discal band extending into interspace 3.
          a^4. Hind wing upperside: postdiscal band white ... . — Race *asita*, p. 306.
          b^4. Hind wing upperside: postdiscal band orange-yellow — Race *inara*, p. 306.

* The females of *P. nivifera* and races cannot be separated. The males vary, but the local races are distinguishable.

b^2. ♂ ♀. Hind wing: underside with a distinct series of black spots between postdiscal and subterminal marking. ♀ black with white markings; discal band outwardly suffused with yellow. *P. rufula*, p. 307.

b'. ♂. Fore wing upperside: discoidal streak white, distinct, divided, apical portion large, triangular, widely separated from rest of streak, or discoidal streak indistinct, ferruginous red.

a^2. ♂. Fore wing upperside: discal band not extending into interspace 3.

a^3. ♂. Fore wing upperside: discoidal streak white.

a^4. ♂. Hind wing upperside: subbasal band distinctly widening from dorsum to costa. ♀ black with pure white markings . *P. kanwa*, p. 307.

b^4. ♂. Hind wing upperside: subbasal band of even width throughout. ♀ olivaceous black, with sullied brownish-white diffuse markings. ... ... *P. kresna*, p. 308.

b^3. ♂. Fore wing upperside: discoidal streak ferruginous red. ♀ black with orange-yellow markings . . *P. cama*, p. 309.

b^2. ♂ Fore wing upperside: discal band extending into interspace 3.

a^3. ♂. Underside: ground-colour bright chestnut-red; discoidal streak in fore wing much broken and divided. ♀ black with white markings *P. selenophora*, p. 310.

b^3. ♂. Underside: ground-colour darker chestnut; discoidal streak in fore wing sinuous, only subapically divided. ♀ olivaceous dull black with fuliginous-white markings *P. zeroca*, p. 311.

B. Eyes hairy.

a. ♂ ♀. Fore wing upperside: a large triangular white spot just beyond apex of cell .. .. *P. opalina*, p. 312.

b. ♂ ♀. Fore wing upperside: no triangular white spot just beyond apex of cell.

a'. ♂ ♀. Fore wing upperside: no discoidal streak, but an anterior medial and a transverse subapical white spot in cell. *P. ranga*, p. 312.

b'. ♂ ♀. Fore wing upperside: a very short slender white discoidal streak with a large round spot beyond it in cell *P. abiasa*, p. 314.

320. **Pantoporia sulpitia**, *Cramer* (Papilio), *Pap. Exot.* iii, 1779, pl. 214, figs. E, F; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 174.
Liminitis strophia (*Godart*), *Kollar*, *Hügel's Kaschmir*, iv, pt. 2, 1844, p. 249.
Parathyma adamsoni, *Moore*, *Lep. Ind.* iii, 1896–99, p. 175, pl. 256, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀ *Upperside* dull black with the following white markings:—Fore wing: a clavate undivided but anteriorly notched discoidal streak; three elongate spots or short streaks in the interspaces beyond the cell; a slightly curved series of discal spots; those in interspaces 1 *a'*, 1 and 2 large, the anterior five minute; an inner subterminal series of transverse short lines in interspaces 1 to 4, and an outer very obscure pale, not white, subterminal line. Hind wing with a subbasal comparatively broad (broader in the ♀) macular transverse band, followed by a series of obscure dark discal marks, darker than the ground-colour in the interspaces; a post-discal series of subquadrate spots, these spots emarginate on their inner sides, and a subterminal pale broad line. Cilia of both fore and hind wings black alternated with white. *Underside* bright ochraceous chestnut; the white markings as on the upperside, but on the fore wing the inner and outer subterminal marking white, lunular and broad, not extending anteriorly beyond interspace 4; on the hind wing the subterminal pale line represented by a regular series of white lunules. Fore wing: bases of interspaces 1 *a*, 1 and 2 shaded with fuliginous black, and a spot of the same colour beyond the discal band in interspaces 1 and 2. Hind wing: basal area very bright ochraceous chestnut with five jet-black spots; the white subbasal band margined anteriorly on the inner side by a black line, and beyond it a discal series of very dark chestnut-red spots; the postdiscal series of white spots margined inwardly by a line of black dots. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen bluish white.

Fig. 56.
Pantoporia sulpitia. ½.

Exp. ♂ ♀ 62–71 mm. (2·41–2·8″).

Hab. Mussooree? (*Kollar*); Burma, extending into China.

In a collection purchased and sent to me from Mussooree there is a single ♂ of this form, bnt, notwithstanding that Kollar gives it from Mussooree, I am doubtful of the locality. I procured a single specimen at Bhamo in Upper Burma, where it was taken also by Col. C. H. E. Adamson.

321. **Pantoporia nefte,** *Cramer* (Papilio), *Pap. Exot.* iii, 1782, pl. 256, figs. E, F.

Race nivifera, *Butler.*

Athyma nivifera, *Butler, Trans. Linn. Soc.*, 2nd ser. *Zool.* i, 1879, p. 540, pl. 69, fig. 4 ♂; *Moore* (Pantoporia), *Lep. Ind.* iii, 1896–99, p. 194, pl. 262, figs. 2, 2 *a*, 2 *b*, ♂ ♀

Race asita.

Athyma asita, *Moore*, *P. Z. S.* 1858, p. 13 ♂ ; *de N. Butt. Ind.* ii, 1886, p. 180; *Moore* (Pantoporia), *Lep. Ind.* iii, 1896–99, p. 199, pl. 263, figs. 2, 2 *a*, ♂ ♀.

Race inara (Pl. IX, fig. 62).

Liminitis inara, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, pl. 34, fig. 3 ♂ ; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 179 ; *Moore* (Pantoporia), *Lep. Ind.* iii, 1896-99, p. 196, pl. 264, figs. 1, 1 *a*-1 *e*, ♂ ♀.

Race **nivifera**, Butler.— ♂ *Upperside* black with snow-white markings more or less edged with irrorations of blue scales. Fore wing : discoidal streak obscurely divided and uneven along its upper margin ; a much-curved and broadly-interrupted discal band white ; the latter composed of three outwardly oblique quadrate spots in interspaces 1 *a*, 1 and 2, and three oblong spots inclined inwards in interspaces 4, 5 and 6, no spot in interspace 3 ; beyond this an inner and an outer subterminal pale line divided by a transverse narrow black band, the former terminating near apex in an obliquely-placed small narrow white spot. Hind wing: the discal band of the fore wing continued as a subbasal transverse white band : a postdiscal, narrower, more or less macular band also white, and a very distinct pale, still narrower, subterminal band. The interspace between the postdiscal and the subterminal bands darker than the general ground-colour of the wing, and the postdiscal band on the inner side margined with similarly coloured cone-shaped marks. *Underside* brown, the white markings as on the upperside but somewhat diffuse, the interspaces of the ground-colour more or less blotched with darker brown, forming on the hind wing a conspicuous discal transverse series of spots in the interspaces ; the dorsal margin of the hind wing broadly bluish white. Antennæ, head, thorax and abdomen above dark brownish black, the thorax and base of the abdomen respectively crossed by a bar of bluish white ; beneath, the palpi, thorax and abdomen bluish white. — ♀ *Upperside* black, the markings similar to those in the ♂, but orange-yellow and much broader ; on the fore wing the discal band complete, the inner subterminal band much broader and better defined. *Underside* : the ground-colour a paler brown than in the ♂, the markings as on the upperside but pinkish white, the dark brown blotches in the interspaces and the series of dark discal spots on the hind wing more prominent.

Exp. ♂ ♀ 60–68 mm. (2·38-2·7″).

Hab. Borneo and the Malay Peninsula, extending up to the Mergui Islands.

This race differs from the typical Javan form *P. nefte* in the narrower discal band on the fore wing and markedly in the narrowness of the subbasal band on the hind wing. In the ♂ the ground-colour of the underside is of a darker brown than in typical *P. nefte*.

Race **asita**, Moore.— ♂ ♀ differ from *nivifera* ♂ ♀ as follows:— ♂ *Upperside.* Fore wing: discoidal streak more clearly divided, the preapical portion prominent; discal band broader, the anterior spot composing its posterior half not wider than the others, not outwardly conical; two conspicuous preapical orange-yellow spots. Hind wing: subbasal band slightly broader. *Underside*: ground-colour a more ochraceous brown; fore wing preapically orange-yellow.— ♀. *Upperside*: the markings of a somewhat deeper orange-yellow; the discal band on fore and postdiscal band on hind wing distinctly broader; the inner subterminal narrow band on fore wing ill-defined posteriorly; the preapical spots much smaller. *Underside*: ground-colour much more ochraceous.

Exp. ♂ ♀ 65–71 mm. (2·59–2·81″).

Hab. Recorded from the Shan States in Upper Burma; Lower Burma; Tenasserim.

Northwards in Burma this form seems to merge into the race *inara*, Doubleday. Many specimens have the postdiscal band on the hind wing more or less suffused with orange-yellow.

Race **inara**, Doubleday.— ♂ and ♀ differ from *nivifera* ♂ and ♀ as follows:— ♂ *Upperside.* Fore wing: discoidal streak from dusky white to dark ferruginous, with the exception of the preapical portion which is always prominently white; discal band much broader, straighter, farther from the terminal margin and more complete, there being a small spot in interspace 3. Inner subterminal band orange-yellow, macular, well-defined, the preapical spots large. Hind wing: the postdiscal band entirely orange-yellow, broader and continuous, divided only by the black veins. *Underside* ochraceous light brown, shaded with orange-yellow on apex of fore wing and on the anterior portion of the postdiscal band on the hind wing; the dark brown blotchings in the spaces between the markings smaller and more restricted than in *nivifera*; the discoidal streak and posterior half of inner subterminal band on fore wing and the postdiscal band posteriorly on the hind wing suffused with very pale bluish pink.— ♀ *Upperside*: the markings of a somewhat paler orange-yellow than in *nivifera* ♀; the discal band very much broader; the inner subterminal band on fore wing reduced to a tornal and two or three preapical spots. *Underside*: ground-colour bright ochraceous yellow, the markings pinkish white, but in great part suffused with pale yellow; the dark brown blotchings on the fore wing large and in strong contrast with the ground-colour.

Exp. ♂ ♀ 66–74 mm. (2·6–2·92″).

Hab. Sikhim, Bhutan and Nepal in North-eastern India; Orissa; Canara; Mysore in Southern India. In further India through the hills of Assam to Upper Burma.

The above is a description of the wet-season form. The dry-season form, especially of the ♂, is very similar. In the ♀ the ground-colour is paler, the markings comparatively broader and on the underside somewhat diffuse.

Larva. "Cylindrical, with six rows of fine branched spines, the

dorsal being lower than the lateral and those on the third and fourth segments lower than the rest, the second segment unarmed; the bases of the legs set with short simple spines; colour pure green, with a large brown patch on the ninth segment; spines brown and head dark brown, head covered with short simple brown spines and white tubercles. Feeds on *Glochidion velutinum* and *G. zelanicum*." (*Davidson & Aitken.*)

Pupa. "Like that of *A. mahesa*, but of the curious processes on the back, the posterior one is much longer and more inclined forwards." (*Davidson & Aitken.*)

322. **Pantoporia rufula,** *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 181 ♀; *Moore, Lep. Ind.* iii, 1896–99, p. 199, pl. 265, figs. 1, 1 *a*, ♂ ♀

This insular form closely resembles *P. nefte*, Cramer, race *nivifera*, Butler, so far as the males are concerned, but the sexes are much more alike in it than in the Malaccan form. It differs as follows :— ♂. *Upperside.* Fore wing: discoidal streak ill-defined, divided into four, the preapical portion forming a prominent white spot; the discal band very much broader; the inner and outer subterminal lines nearly obsolete; preapical spot orange-yellow. Hind wing: subbasal band broader, postdiscal band faint, obsolescent, the inner border of black cone-shaped marks and the outer black band more distinct than in *nivifera*. *Underside* ochraceous, the markings broader, the dark blotches between them on the ground-colour of the fore wing and the discal series of dark spots more heavily marked; also the subterminal narrow band on the hind wing is more or less distinctly margined on the inner side by a row of black transverse spots.— ♀ Very closely resembles its own ♂, the markings are white on both upper and under sides, but the spots that compose the discal band on the fore wing are outwardly suffused with orange-yellow, and on the underside of the hind wing the spots on the inner margin of the subterminal band are much larger and more clearly defined.

Exp. ♂ ♀ 67–72 mm. (2·64–2·85″).

Hab. The Andamans.

323. **Pantoporia kanwa,** *Moore* (Athyma), *P. Z. S.* 1858, p. 17, pl. 51, fig. 2; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 169; *Moore* (Tatisia), *Lep. Ind.* iii, 1896–99, p. 179, pl. 258, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀ *Upperside* black (in ♀ blackish brown) with white markings. Fore wing: discoidal streak narrow clavate, followed by an acutely pointed, long, triangular spot beyond apex of cell; discal curved band macular, the spots that compose it well separated, those in interspaces 1 and 2 broadly oval, no spot in interspace 3, a very small rounded spot in interspace 4, and elongate oval spots in 5 and 6; an inner and an outer subterminal line dusky white formed of short, transverse, ill-defined slender lines in the interspaces,

the latter line obscure. Hind wing: the subbasal band widening from dorsum to costa; postdiscal band comparatively narrow, sinuous, macular, also widening slightly from costa to dorsum; a pale subterminal somewhat diffuse line. *Underside*: ♂ greyish brown, ♀ pale brown; markings as on the upperside, but broader and not so sharply defined; these markings slightly broader in the ♀ than in the ♂; the dark-brown blotched shading between the white markings on the fore wing and the dark spots bordering the postdiscal band on the inner side in the hind wing diffuse; dorsal margin of the hind wing broadly greenish blue. Antennæ black, ochraceous at apex; head, thorax and abdomen black, blackish brown in the ♀; in both sexes the thorax anteriorly and the base of the abdomen with a prominent transverse bluish-white bar; beneath, the palpi white, thorax and abdomen bluish white.

Exp. ♂ ♀ 65–70 mm. (2·59–2·76″).

Hab. Assam; Burma; Tenasserim; extending to the Malayan Subregion.

324. **Pantoporia kresna**, *Moore* (Athyma), *P. Z. S.* 1858, p. 12, pl. 50, fig. 4 ♂; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 173; *Moore*, *Lep. Ind.* iii, 1896–99, p. 195, pl. 263, figs. 1, 1 *a*–1 *c*, ♂ ♀
Athyma subrata, *Moore*, *P. Z. S.* 1858, p. 13, pl. 51, fig. 1 ♀; *de N. Butt. Ind.* ii, 1886, p. 181 ♀

♂. *Upperside* rich velvety black. Fore wing: discoidal streak white, clavate, divided into four, the apical portion impinging on the discocellulars, large, conical, subacute at apex, widely separated from the rest; discal band white, narrow, macular, curved, broadly interrupted, the spot in interspace 2 large, broadly oval; no spot in interspace 3; a postdiscal, very narrow, white band formed of two curved portions, the anterior and posterior each of three transverse spots or short lines. Hind wing: the discal white band on the fore wing continued as a narrow subbasal undivided transverse band; a postdiscal macular, somewhat sinuous, narrower band and a subterminal pale line. *Underside* brown, the markings as on the upperside but somewhat broader, the interspace of ground-colour between them blotched with dark brown; these blotchings form on the fore and hind wings a broad dark inner border to the postdiscal markings. Cilia black alternated with white; dorsal margin of hind wing broadly greenish blue. Antennæ, head, thorax and abdomen black, the thorax anteriorly and abdomen at base with transverse bars of bluish white; beneath, the club of the antennæ dark ochraceous, the palpi, thorax and abdomen whitish.— ♀ *Upperside* fuliginous brown shaded with black, the markings similar to those in the ♂, but pale brownish white and diffuse; on the fore wing the discoidal streak notched anteriorly, not divided, the apical portion narrowing acutely to a point and extended nearly to the discal band. *Underside* similar but paler, the markings suffused with pale pink, the dark brown blotching broad and

prominent. Antennæ very dark ochraceous red, head, thorax and abdomen velvety black, an ochraceous bar across the base of the last; beneath, palpi, thorax and abdomen brownish white.

Exp. ♂ ♀ 64–72 mm. (2·52–2·83″).

Hab. Assam; Cachar; Burma; Tenasserim; extending to the Malay Peninsula and Borneo.

325. **Pantoporia cama** (Pl. IX, fig. 63, ♀), *Moore* (Athyma), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 174, pl. 5, fig. 5, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 178; *Moore* (Pantoporia), *Lep. Ind.* iii, 1896–99, p. 200, pl. 265, figs. 2, 2 *a*–2 *c*, ♂ ♀, & pl. 266, figs. 1, 1 *a*–1 *e*, ♂ ♀

♂ *Upperside* rich brownish black. Fore and hind wings with a broad, more or less macular, white band crossing the wings, discal, curved and interrupted in interspaces 3 and 4 on the fore wing, subbasal and complete on the hind wing; fore wing with an obscure dull ferruginous discoidal streak, a quadrate orange preapical spot; postdiscal and subterminal pale lines, the postdiscal emitting a short fork inwards above vein 4. Hind wing with a broad diffuse subterminal and a narrower terminal pale band. *Underside* rich ochraceous; markings as on the upperside, but all more or less bluish white, the discoidal streak on fore wing more prominent; a white black-centred spot at base of interspace 1; a triangular very dark chestnut patch on tornal area. On the hind wing, interspace 7 white, a discal incomplete series of dark chestnut spots; the dorsal margin broadly suffused with bluish. On both fore and hind wing the subterminal and terminal markings are suffused with blue and somewhat diffuse. Antennæ, head, thorax and abdomen black, a bluish-white bar across base of abdomen; beneath, the club of the antennæ ochraceous, the palpi, thorax and abdomen white.—♀ *Upperside* black; all the markings as in the ♂, but with the exception of the subterminal pale bands, on both fore and hind wing, more or less orange-yellow; on the fore wing the discoidal streak is narrower, longer, more prominent than in the ♂, the anterior portion of the discal band more oblique, emarginate on the inner side; the postdiscal band obscure and irregular. Hind wing: postdiscal band sinuous, orange only up to vein 7, pale in interspace 7, the subterminal pale band broad, complete. *Underside* ochraceous olive-brown; the markings as on the upperside, but pinkish white and blurred; the dorsal margin of hind wing and the thorax beneath irrorated with metallic blue scales. Antennæ, head and thorax black; abdomen ochraceous, with a transverse bluish-white bar at base as in the ♂

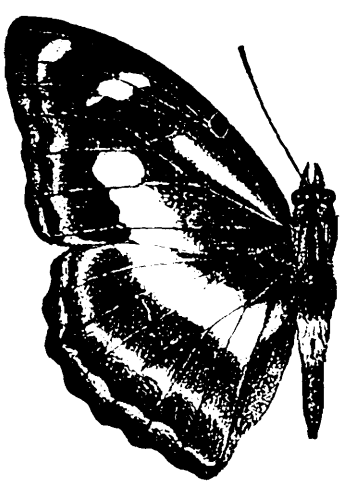

Fig. 57.
Pantoporia cama. ♂ ½.

Exp. ♂ ♀ 67–86 mm. (2·68–3·4″).

Hab. The Himalayas, Mussooree to Sikhim; Assam; Upper Burma.

The dry-season form has the ground-colour both on the upper and under sides duller, the markings all very much broader and in the ♀ of a paler and duller yellow.

326. **Pantoporia selenophora**, *Kollar* (Liminitis), *Hügel's Kaschmir*, iv, pt. 2, 1844, p. 426, pl. 7, figs. 1, 2, ♂; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 176; *Davidson, Bell & Aitken, Jour. Bomb. N. H. Soc.* x, pt. ii, 1896, p. 254; *Moore, Lep. Ind.* iii, 1896–99, p. 202, pl. 267, figs. 1, 1 *a*–1 *e*, ♂ ♀

♂ *Upperside* black. Fore wing: discoidal streak deep red, twice divided, the apical portion dusky white; three elongate oval white spots in the interspaces beyond; a distinct white band, variable in width, from dorsum to interspace 3; an obscure inner subterminal line of transverse whitish marks, and a still more obscure outer subterminal pale line. Hind wing with the broad white discal band of the fore wing continued across to vein 1, a postdiscal narrow diffuse pale macular band, and a subterminal pale line; abdominal fold dusky grey; cilia of both fore and hind wings black, alternated with white. *Underside* bright chestnut-red; the markings as on the upperside but all white, on the terminal portions of the wings diffuse; discoidal streak in fore wing white, diffuse, more broadly divided; interspace 8 white at base, with a dark chestnut-red loop below it in interspace 7 crossing into the cellular area; very dark postdiscal blotches in interspaces 1 *a*, 1 to 3 on fore wing; and a series of very dark chestnut-red marks between discal and postdiscal bands on the hind wing; dorsal margin of hind wing broadly blue. Antennæ, head, thorax and abdomen very dark brown; beneath, the palpi, thorax and abdomen white faintly tinged with blue.— ♀. *Upperside* velvety brownish black with white and pale markings. Fore wing: the discoidal streak clavate, twice divided, a large elongate triangular spot beyond apex of cell; a macular discal band of four large spots inclined outwards from dorsum, and three obliquely placed spots from beyond the middle of the costa, the lowest spot of these minute, the next two large, elongate, with a very slender short streak above them on the costa; an inner subterminal series of transverse spots and an outer subterminal pale incomplete line. Hind wing: the subbasal broad band widening towards costa; a postdiscal series of large, inwardly bluntly conical spots and a broad subterminal pale line. *Underside* as in the ♂, but the white markings broader, the ground-colour not so bright. Antennæ, thorax and abdomen as in the ♂, but the abdomen with a white transverse band at base.

Exp. ♂ ♀ 66–72 mm. (2·6–2·83″).

Hab. The Himalayas; Southern India, the Nilgiris, Kanara and Mysore; Assam; Burma and Northern Tenasserim.

In the dry-season form the ground-colour in both sexes is brown, paler in the ♀ than in the ♂; the discal band variable in width, but on the whole broader both on the upper and under sides, and the ground-colour on the underside ochraceous brown.

Larva and pupa. "Like that of *A. inara*, Doubleday & Hewitson, but the dorsal patch is much smaller and there are some white spots on the sides. The pupa is distinguished from that of *A. inara* by slight differences in the shape of the grotesque processes on the head and thorax. The common food-plant is the *Adnia cordifolia*." (*Davidson, Bell & Aitken.*)

327. **Pantoporia zeroca**, *Moore* (Athyma), *P. Z. S.* 1872, p. 564 ♂; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 177; *Moore, Lep. Ind.* iii, 1896–99, p. 205, pl. 268, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ *Upperside* superficially resembles the upperside of *A. selenophora* ♂; but on the fore wing the discoidal streak is more obscure, the three obliquely-placed white spots composing the anterior portion of the discal band are preapically transverse on the wing and are sometimes not white but fuliginous brown; the postdiscal and subterminal lines on the hind wing are more continuous. *Underside* also resembles, but more closely, the underside of *A. selenophora* ♂, but the ground-colour is darker, the discoidal streak and transverse preapical spots on the fore wing and the postdiscal and subterminal lines on the hind wing lilac, the latter two more continuous, not macular.— ♀ altogether different. *Upperside* fuliginous brown with diffuse sullied white markings. Fore wing with the discoidal streak long and undivided; beyond apex of cell an elongate narrow triangular spot; discal band long and narrow posteriorly and very oblique, extending in interspace 3 diffusely to the inner subterminal band; the three spots composing its anterior portion also very oblique; the inner subterminal band broad and distinct; outer subterminal band distinct only posteriorly. Hind wing with the usual subbasal, postdiscal and subterminal bands, the former two sullied white, the postdiscal very diffuse, the subterminal pale brown. *Underside* ochraceous brown, the sullied white markings as on the upperside, a series of dark ferruginous diffuse marks resembling stains from near apex of fore to dorsal margin of hind wing; this last broadly bluish. Antennæ, head, thorax and abdomen dark brown; beneath, palpi, thorax and abdomen white suffused with pale blue. The usual abdominal bar at base above.

Exp. ♂ ♀ 64–68 mm. (2·52–2·71″).

Hab. Kumaun to Sikhim; Bhutan; Assam; Burma and Tenasserim.

The dry-season form in the ♂ has the markings broader, the ground-colour a duller ochraceous brown.— ♀ Ground-colour paler on both upper and under sides, the markings broader, more diffuse.

328. **Pantoporia opalina** (Pl. IX, fig. 61), *Kollar* (Liminitis), *Hügel's Kaschmir*, iv, pt. 2, 1844, p. 427; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 173; *Moore* (Condochates), *Lep. Ind.* iii, 1896–99, p. 188, pl. 261, figs. 1, 1 *a*–1 *d*, larva & pupa, ♂ ♀.

Athyma orientalis, *Elwes, Trans. Ent. Soc.* 1888, p. 354, pl. 9, fig. 4 ♂; *id. P. Z. S.* 1891, p. 277.

♂ ♀ *Upperside* dark brownish black, paler in the ♀ than in the ♂ A trifid discoidal clavate white streak on fore wing with a subtriangular spot just beyond apex of cell; a strongly curved series of discal spots in the interspaces, decreasing in size from interspace 1 to 4, thence bent inwards and elongate to interspace 6, with an oblique small preapical spot also white. Hind wing: a more or less continuous subbasal band (broad in the dry-season, narrower in the wet-season specimens), traversed by the dark veins, and a postdiscal macular band, not quite reaching either the dorsal or costal margins, white. Fore and hind wings with pale subterminal narrow bands and the cilia white alternated with blackish brown. *Underside*: ground-colour on anterior half of both fore and hind wing chocolate-brown, posterior half duller, suffused on the hind wing with shining pale lilacine; the white markings and pale subterminal band as on the upperside but broader; the posterior half of the terminal margin on fore wing whitish with some inner dusky black markings; the dorsal margin of hind wing broadly suffused with greenish blue.

Exp. ♂ ♀ 57–72 mm. (2·25–2·83″).

Hab. The Himalayas; the hills of Assam and Burma.

Larva. Cylindrical; in preserved specimen yellow, in life probably pale green, with a dark lateral stripe; head with two dark brown divergent broad stripes in front, studded with numerous small white tubercles and a double row of short spines; a series of long black-branched spines on the segments from 3 to 10, the longest on the 3rd and 4th segments, a lateral row of shorter spines on each side and numerous small papillæ.

Pupa. "Abdomen attenuated posteriorly, with a short dorsal projecting keel on each segment; a large broad-keeled anteriodorsal dilated prominence and a thoracic conical prominence; wing-cases dilated and pointed anteriorly, rounded posteriorly; head-piece bifid, the tips lengthened, pointed laterally, divergent, auriform and twisted; ventral surface arched. Colour pale yellowish testaceous, processes partly dark brown; two parallel macular brown stripes on the abdomen below and a lateral row of brown spots." (*Moore.*)

329. **Pantoporia ranga**, *Moore* (Athyma), *Cat. Lep. Mus. E. I. C.* i, 1857, p. 175, pl. 5 *a*, fig. 6 ♂; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 172; *Moore* (Kironga), *Lep. Ind.* iii, 1896–99, p. 210, pl. 269, figs. 1, 1 *a*–1 *g*, ♂ ♀, & p. 211, pl. 270, figs. 1, 1 *a*, 1 *b*, larva & pupa, ♂ ♀.

Athyma mahesa, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 176, pl. 5, fig. 7 ♂; *de N. Butt. Ind.* ii, 1886, p. 171; *Davidson, Bell & Aitken, Jour. Bomb. N.H. Soc.* v, 1890, p. 350, & x, pt. 2, 1896, p. 254, pl. ii, figs. 4, 4 *a*, larva & pupa.

♂ ♀. *Upperside*: ♂ velvety black, ♀ very dark brown, suffused with bluish in certain lights. Fore wing: a medial anterior and a preapical larger whitish spot in cell; posteriorly in the cell, beyond its apex and below it at base of interspace 1, some dull obscure blue spots; a discal series of white spots, three elongate placed obliquely from just beyond middle of costa, two more inwards in interspaces 2 and 3, one in middle of interspaces 1 *a* and 1; the spot in interspace 2 very large truncate exteriorly, the spot in interspace 3 elongate. Beyond these spots an inner and an outer subterminal line of transverse white marks irrorated more or less with blackish scales. Hind wing: a subbasal broad transverse macular white band, the anterior spots that compose it more widely separated than the others, a postdiscal series of white spots, irrorated with black scales, and a subterminal line of short detached narrow transverse pale marks in the interspaces; cilia on fore and hind wings black alternated with white. *Underside* very dark brown, shaded and blotched with black between the white markings; these latter as on the upperside, but all pure white, much larger, much more clearly defined; dorsal margin of hind wing broadly pale blue. Antennæ, head, thorax and abdomen black; the thorax anteriorly obscurely glossed with blue; the abdomen with a series of lateral white spots on each side from base; body beneath white, glossed on thorax with pale blue; eyes hairy.

Exp. ♂ ♀ 64–80 mm. (2·52–3·12″).

Hab. Sikhim; Bhutan; hills of Assam, Burma and Tenasserim. Found also in Southern India, Kanara and the Nilgiris.

The dry-season form has the ground-colour above dark brown in both sexes and the markings broader and sullied white; on the underside the ground-colour is distinctly ochraceous brown.

Larva. "In form the larva was exactly similar to that of *Liminitis* (*Moduza*) *procris* ; in colour it was green, with a whitish band round the 9th segment. Its habits were also like those of *L. procris*, but not quite the same. It selected one of the side nerves of a leaf and ate away the soft parts on each side till the bare nerve stood out; then having barricaded the approach to this with fragments of leaf which it had contrived to cut off in feeding, mixed with excrement and silk, it rested motionless on the very point of the rib unapproachable by ants or spiders. After the last moult it gave up these habits and rested on the upper side of a leaf, where it was conspicuous enough. We infer that the worst enemies of this species are not birds or parasites but small spiders and predaceous insects." (*Davidson & Aitken.*) Food-plants, *Olea dioica* and *Linociera malabarica*.

Pupa. "Of the most brilliant silver-colour, the segments and parts being outlined in brown. It is suspended perpendicularly; abdominal segments slender, the thoracic region larger and expanded laterally; two long sharp horns issuing from the sides of the head and at first parallel, diverge and point laterally; on the back there are two prominent processes curved towards each other, and many small points and tubercles." (*Davidson & Aitken.*)

330. **Pantoporia abiasa**, *Moore* (Athyma), *P. Z. S.* 1858, p. 16, pl. 59, fig. 7 ♂ ; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 174 ; *Moore* (Kironga), *Lep. Ind.* iii, 1896-99, p. 213, pl. 270, figs. 2, 2 *a*, ♂ ♀.
Athyma clerica, *Butler, Trans. Linn. Soc.* i, 1877, p. 540, pl. 69, fig. 5 ♂

♂ ♀ *Upperside* dark brownish black with white markings, narrower in the ♀ than in the ♂ Fore wing: discoidal streak short, slender, with a large spot well separated beyond it, and a faint transverse short line on the discocellulars; discal band slightly curved, much interrupted, composed of a spot in interspace 1 *a*, another in the posterior portion of interspace 1, a larger oval spot in interspace 2, well separated from the one below it, a small contiguous spot in interspace 3, and an oblique series of small spots in interspaces 4, 5 and 6, the spot in 4 minute; a postdiscal line of transverse small spots followed by a subterminal obscure pale line. Hind wing with the usual subbasal broad band; a sinuous postdiscal series of conical spots, and a pale obscure subterminal line. *Underside* purplish brown, the spots and bands tinged with pale pinkish blue, all larger and the outer ones better defined than on the upperside; the interspace of ground-colour between the markings broadly blotched with dark brown; the dorsal margin of the hind wing broadly greenish blue. Antennæ, head, thorax and abdomen dark brownish black, the abdomen with a basal transverse white bar; beneath, the palpi, thorax and abdomen bluish white.

Exp. ♂ ♀ 60–66 mm. (2·38–2·6″).

Hab. Malayan Subregion, extending into our limits at Mergui in S. Tenasserim.

Genus **ATHYMA.**

Athyma, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 272 ; *de N. Butt. Ind.* ii, 1886, p. 165 ; *Moore, Lep. Ind.* iii, 1896-99, p. 183.
Tacoræa, Tharasia, Chendrana, et Tacola, *Moore, Lep. Ind.* iii, 1898, pp. 176, 180, 182 & 192.

Type, *A. perius*, Linn., from India.

Range. Indo-Malayan Region.

♂ ♀ Fore wing short, broad, triangular; costa moderately arched, apex blunt; termen nearly straight, slightly concave in the middle; tornus angular; dorsum slightly sinuous; cell open; veins 5, 6 and 7 very closely approximate at base, upper and middle discocellulars therefore minute; vein 9 from middle of 7, 10 and 11 free, from apical third of subcostal. Hind wing ovate; costa strongly curved near base, then nearly straight; apex rounded; termen widely arched, scalloped; tornus well marked; abdominal fold broad; cell open; vein 7 equidistant from 6 and 8 at base. Antennæ long, nearly two-thirds length of fore wing; club long, narrow, gradual; palpi short, broad, densely scaled, third joint short and conical; eyes typically naked, in

one form hairy; thorax short and robust; intermediate and posterior tibiæ shorter than the femora, spined along the underside.

Key to the forms of Athyma.

A. Eyes not hairy.
  a. Fore wing upperside: discoidal streak divided.
    a'. Fore wing upperside: macular discal band not interrupted, all spots composing it present . . . . . *A. perius*, p. 315.
    b' Fore wing upperside: macular discal band interrupted, spot in interspace 3 absent . . . . . *A. larymna*, p. 316.
  b. Fore wing upperside: discoidal streak not divided.
    a' A spot beyond apex of discoidal streak.
      a^2. Hind wing underside: spots composing postdiscal macular band with black centre in each *A. asura*, p. 317.
      b^2. Hind wing underside: spots composing postdiscal macular band without black centre spots . . . . Race *idita*, p. 318.
    b'. No spot beyond apex of discoidal streak *A. pravara*, p. 318.
B. Eyes hairy *A. jina*, p. 319.

331. **Athyma perius**, *Linn.* (Papilio) *Syst. Nat.* x, 1758, p. 471; *de N. Butt. Ind.* ii, 1886, p. 166, pl. 20, fig. 89 ♀; *Moore, Lep. Ind.* iii, 1896-99, p. 184, pl. 260, figs. 1, 1 *a*–1 *d*, larva & pupa, ♂ ♀.

♂ ♀ *Upperside* black (in the ♀ blackish brown) with the following white markings:—Fore wing: a clavate discoidal streak, twice divided, a cone-shaped large spot beyond; a much curved discal macular band, the spots composing it in interspaces 1 *a*, 1 and 2 broad, rectangular, in interspace 3 small, subtriangular, in interspace 4 circular or oval, in 5 and 6 elongate, shifted obliquely inwards; a postdiscal sinuous line of narrow transverse spots, and a subterminal line of obscure short lunules. Hind wing: discal band of fore wing continued subbasally across, broad and not macular, traversed only by the veins; a postdiscal macular band, inwardly margined by a series of round black dots, and a subterminal line of obscure lunules as on the fore wing. *Underside* golden ochraceous yellow; the white markings as on the upperside but heavily margined and defined with black; interspace 1 *a* with subbasal and preapical patches in interspace 1

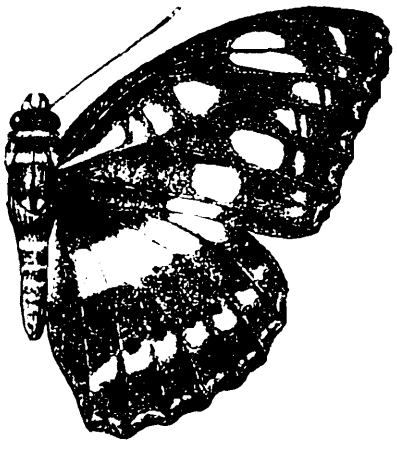

Fig. 58.—*Athyma perius*. ½.

of fore wing fuliginous black; postdiscal band on hind wing margined inwardly with pale blue, bearing a superposed series of black spots, the pale blue extended along the veins crossing the band; both fore and hind wing with a prominent terminal narrow black band; the cilia white alternated with brown. Antennæ black; head with a spot of golden ochraceous between the eyes; thorax with a band or two of bluish spots anteriorly and posteriorly; abdomen transversely and narrowly barred with bluish white; beneath, the palpi, thorax and abdomen pure white; in the ♀ the abdomen has a double lateral row of minute black dots.

Exp. ♂ ♀ 60–76 mm. (2·38–3″).

Hab. Throughout the Himalayas; the hills of Central, Eastern and Western India: Southern India, but not, so far as is known, Ceylon; Burma; Tenasserim; extending to Siam and the Malay Peninsula.

Larva. "Cylindrical, of equal thickness throughout its length; head larger than the following segment, black, thickly covered with obtuse castaneous spines; body pale green; beneath and legs castaneous, armed with a subdorsal series of long and a spiracular series of shorter spined castaneous tubercles, one in each series on each segment, those on the fourth, sixth, eighth, tenth and thirteenth segments in the subdorsal series shorter than the others, spiracles black." (*de Nicéville.*)

Pupa. "Brown, richly gilt, head ending in two points, thorax foliaceous." (*de Nicéville.*)

Food-plants recorded, *Glochidion lanceolatum* and *G. velutinum.*

332. **Athyma larymna**, *Doubleday* (Liminitis), *in Dbldy., Westw. & Hew. Gen. Di. Lep.* ii, 1850, pl. 35, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 167; *Moore* (Tacola), *Lep. Ind.* iii, 1896–99, p. 192, pl. 262, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ *Upperside* black, in ♀ very dark brownish black, with pure white markings. Fore wing: discoidal streak divided into four, the basal two divisions very narrow, the intervening portion forming a small round spot, the preapical and apical portions of the streak broad, triangular, very acute at their apices; a discal, macular, broadly interrupted band, composed as follows: an elongate spot in interspace 1 *a*, an outwardly conical, inwardly truncate or slightly emarginate large spot in interspace 1, an oval large spot in interspace 2, no spots in interspace 3, elongate narrow spots in interspaces 4, 5 and 6 respectively, with two slender streaks above them on costa; the posterior three spots in an oblique line from middle of dorsum towards apex of wing, the anterior three in an oblique line from just beyond middle of costa towards upper portion of termen; beyond these a sinuous series of transverse, short, somewhat lunular lines in interspaces 1, 2, 3, 5 and 6, and a pale subterminal broad line. Hind wing: a transverse subbasal band in continuation of the discal band on the fore

wing; a postdiscal macular band, the spots composing it broadly divided by the veins and a pale subterminal broad line as on the fore wing. *Underside* ochraceous brown, in ♀ dull grey-brown; the white markings as on the upperside with, on the posterior half of the fore wing and between the subbasal and postdiscal bands on the hind wing, darker brown intervening shadings and blotches; the basal two divisions of the discoidal streak in fore wing obscure, the subterminal markings somewhat diffuse. Antennæ, head, thorax and abdomen black; the thorax anteriorly and the base of the abdomen crossed by a bar of bluish white.

Exp. ♂ ♀ 82–96 mm. (3·23–3·8″).

Hab. The Malayan Subregion, extending into Tenasserim.

333. **Athyma asura**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 171, pl. 5 *a*, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 168; *Moore* (Tacoræa), *Lep. Ind.* iii, 1896–99, p. 177, pl. 257, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Race idita.

Athyma idita, *Moore, P. Z. S.* 1858, p. 16, pl. 51, fig. 3 ♂; *de N. Butt. Ind.* ii, 1886, p. 168; *Moore* (Tacoræa), *Lep. Ind.* iii, 1896–99, p. 178, pl. 258, figs. 1, 1 *a*, ♂.

♂ ♀ *Upperside* black with white markings. Fore wing: discoidal streak slender, narrow, undivided; an obscure reddish lunule below its apex and an irregular white spot beyond, followed by a small obscure round reddish spot; discal band macular, composed of spots decreasing in size and directed obliquely outwards from middle of dorsum to interspace 4, and two short streaks shifted inwards obliquely towards costal margin in interspaces 5 and 6 respectively; beyond this a postdiscal series of short transverse lines diminishing to dots, curved slightly inwards, followed by a minute dot anteriorly in interspaces 5 and 6, and an obscure, pale, transverse, subterminal lunular line. Hind wing: the discal band of the fore wing continued subbasally across, not macular, traversed only by the veins; a postdiscal series of somewhat shield-shaped spots, each spot centred with black, and a broad obscure subterminal band. *Underside* bright chestnut, the white markings much as on the upperside but broader. Fore wing: the postdiscal series of spots black, encircled with diffuse white, the subterminal pale line replaced by a series of very short transverse lines in the interspaces, a black spot at base of interspace 1; interspaces 1 *a* and 1 blotched with blackish. Hind wing: base of interspace 8 white; subbasal broad white band bordered with pale blue; the postdiscal band of white spots larger; and the subterminal pale band replaced by a series of short white lines in the interspaces. Cilia of wings white, alternated with black. Antennæ, head, thorax and abdomen black; thorax glossed with green, abdomen with a pale blue transverse band at base; beneath, palpi, thorax and abdomen white.

Exp. ♂ ♀ 78–90 mm. (3·09–3·53″).

Hab. Himalayas, Kulu and Simla to Mussooree; recorded from the hills of Assam, Arrakan, and Tenasserim.

The dry-season form is smaller, the markings whiter, the discal spots on fore wing larger; the subbasal band and postdiscal series of spots on hind wing broader; the ground-colour on the underside a shade darker.

Race **idita**, Moore.—Differs from the typical form as follows:—*Upperside* purpurescent black, the markings purer white and on the whole smaller and narrower. The most striking difference is on the hind wing, where in the postdiscal series the spots, though shield-shaped as in *asura*, are entirely without the black centres so conspicuous in that form. These are also wanting on the underside, while the ground-colour is darker, more of a chocolate-brown.

Exp. ♂ ♀ 72–84 mm. (2·84–3·3″).

Hab. Mergui, southwards into the Malayan Subregion as far as Borneo.

334. **Athyma pravara**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 173, pl. 5 *a*, fig. 4 ♂; *de N. Butt. Ind.* ii, 1886, p. 170; *Moore* (Chendrana), *Lep. Ind.* iii, 1896–99, p. 182, pl. 259, figs. 2, 2 *a*, 2 *b*, ♂ ♀

♂ ♀ *Upperside* dark brownish black with the following white markings:—Fore wing: discoidal streak long, strongly clavate; discal band macular, composed of three large spots placed in an outwardly oblique line from the middle of the dorsum, in interspaces 1 *a*, 1 and 2, and three smaller, somewhat elongate spots in an inwardly oblique line from middle of interspace 4 to interspace 6; a postdiscal series of transverse, slender, short lines in the interspaces and a pale subterminal line; the interspaces between the white markings shaded with jet-black, most prominent on the inner side of the postdiscal series of short lines. Hind wing: the discal band on the fore wing continued subbasally across, not macular, traversed only by the dark veins; a postdiscal somewhat sinuous band of quadrate spots and a pale subterminal band. *Underside* pale brown, the markings as on the upperside but somewhat broader; the ground-colour on the fore wing blotched between the white markings with dark brown; on the hind wing, between the subbasal and postdiscal bands, there is a row of similarly coloured large diffuse spots; the pale subterminal bands on both fore and hind wings more clearly defined and broader than on the upperside; dorsal margin of hind wing broadly greyish. Antennæ, head, thorax and abdomen dark brown; beneath, antennæ dark ochraceous, palpi, thorax and abdomen pale ochraceous white.

Exp. ♂ ♀ 60–68 mm. (2·38–2·69″).

Hab. The hills of Assam; through Cachar, Arrakan, Burma to Tenasserim; extending into the Malayan Subregion.

335. **Athyma jina**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 172, pl. 5 *a*, fig. 3 ♂ ; *de N. Butt. Ind.* ii, 1886, p. 169; *Moore* (Tharasia), *Lep. Ind.* iii, 1896–99, p. 181, pl. 259, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ *Upperside* fuliginous black, with pale creamy-white markings. Fore wing: discoidal streak long and comparatively broad, widening towards the apex, which is bluntly pointed; discal macular band complete, not interrupted, composed of somewhat elongate spots; postdiscal band widely interrupted, consisting of a short lunular line in interspace 1 and four preapical spots placed in a curve; subterminal pale band very obscure. Hind wing: subbasal band moderately broad, not macular, traversed by the dark veins; postdiscal band macular, of quadrate or conical spots decreasing in size towards the costa; subterminal pale band lunular. *Underside* bright ochraceous chestnut; the markings as on the upperside but broader, especially the postdiscal and subterminal markings on both fore and hind wings; interspaces 1 *a*, 1 and the greater part of 2 on fore wing brown; interspace 8 on hind wing white. Antennæ, head, thorax and abdomen dark brownish black; base of abdomen with a transverse white band; beneath, club of antennæ dark ochraceous, palpi, thorax and abdomen white; eyes hairy.

Exp. ♂ ♀ 74–84 mm. (2·93–3·33″).

Hab. Sikhim, Nepal.

Genus **NEPTIS**.

Neptis, *Fabr. Illig. Mag.* vi, 1807, p. 282; *Moore, Lep. Ceyl.* i, 1881, p. 54; *de N. Butt. Ind.* ii, 1886, p. 75; *Moore, Lep. Ind.* iii, 1896–99, p. 226.

Andrapana, Bimbasara, Pandassana, Stabrobates, et Lasippa, *Moore, Lep. Ind.* iii, 1898, p. 146.

Type, *N. aceris*, Linn., from Europe.

Hab. Eastern and Southern Europe; Western, Southern and Eastern Africa; Madagascar; Mauritius; India; China; Japan, and southwards through the Malayan Subregion to Australia.

♂ ♀ Fore wing elongate, triangular; costa slightly arched; apex blunt or subacute; termen variable, straight, slightly convex, in some forms slightly concave; dorsum sinuous; cell open; upper and middle discocellulars only present, short, variable, but the latter typically concave; vein 9 from middle of 7, 10 and 11 free. Hind wing broadly ovate; costa variable from slightly to strongly arched; apex rounded; termen arched, sometimes scalloped; tornus rounded; dorsum slightly arched; cell open; vein 7 closer to 6 than to 8 at base; vein 8 typically not extending to apex of wing, terminating on the costal margin. Antennæ slender, about half length of fore wing; club long, narrow, gradual; palpi slender, short, clothed with somewhat loose, lax scales and hairs, third joint short, pointed; eyes naked; thorax and body com-

paratively slender; tibiæ and tarsi beneath of intermediate and posterior legs spined.

The forms of *Neptis* are in the minor details of shades of ground-colour and markings extremely variable, in consequence of which the number of so-called "species" has been enormously multiplied. Races of *N. eurynome*, the most widely distributed form of the genus, have in India alone received about a dozen names. The coloration on the upperside in the majority of the forms is black with white markings. These latter on the fore wing consist of a prominent discoidal streak with or without a separate spot beyond, and a discal curved series of spots; those on the posterior portion of the wing in a line directed obliquely outwards from the middle of the dorsum, those on the anterior portion of the wing in a line directed obliquely outwards from beyond the middle of the costa; beyond the discal spots the markings are smaller and less clearly defined. On the hind wing there is always a subbasal more or less continuous transverse band in continuation of the discal series of spots on the fore wing, and a postdiscal series of spots with generally faint ill-defined discal and subterminal lines. In many forms the white is replaced by orange-yellow, in a few the white markings are strongly suffused with fuliginous brown.

Key to the forms of Neptis.

A. Upperside fore wing: discoidal streak with a more or less well-separated triangular spot beyond.
  a. Underside hind wing: transverse subbasal band and postdiscal series of spots always more or less margined by black lines.
    a'. Underside hind wing: transverse subbasal band nearly of even width throughout, not broadest in middle; ground-colour ochraceous.
      a^2. Upperside hind wing: spots in postdiscal series quadrate, often longer than broad. . . . *N. eurynome*, p. 323.
      b^2. Upperside hind wing: spots in postdiscal series transverse not quadrate, always broader than long .. Race *andamana*, p. 325.
    b' Underside hind wing: transverse subbasal band not of even width, narrower at either end, broadest in middle; ground-colour always darker ... . Race *nicobarica*, p. 325.
  b. Underside hind wing: transverse subbasal band and postdiscal series of spots not margined by black lines.
    a'. Hind wing: subbasal band not extending to costal margin.
      a^2. Underside ground-colour ochraceous brown.
        a^3. Underside fore wing: interspaces between veins without dark chestnut-brown markings *N. columella*, p. 326.

b^3. Underside fore wing: interspaces between veins with prominent dark chestnut-brown markings — *N. iumbah*, p. 327.

b^2. Underside ground-colour dusky purplish brown.

a^3. Upperside hind wing: spots of postdiscal series rounded or conical.

a^4. Underside hind wing: band beyond subbasal band white ... — *N. magadha*, p. 328.

b^4. Underside hind wing: band beyond subbasal band distinctly purple .. .. — Race *khasiana*, p. 328.

b^3. Upperside hind wing: spots of postdiscal series transverse, never rounded or conical .. ... — *N. nata*, p. 329.

b'. Hind wing: subbasal band extending to costal margin.

a^2. Hind wing: subbasal band distinctly widening towards costal margin.

a^4. Upperside fore wing: spot beyond apex of discoidal streak short, conical, blunt .. .. . — *N. mahendra*, p. 329.

b^4. Upperside fore wing: spot beyond apex of discoidal streak more elongate, acutely pointed . . — *N. yerburii*, p. 330.

b^2. Hind wing: subbasal band of nearly even width throughout or slightly attenuated at each end.

a^3. Hind wing: subbasal band not attenuated at each end.

a^4. Upperside markings not pure white, more or less sullied with fuscous . .. ... — *N. soma*, p. 330.

b^4. Upperside markings pure white.

a^5. Fore wing underside: markings broad; spots of discal series in interspaces 2 and 3 outwardly rounded . — Race *hampsoni*, p. 331.

b^5. Fore wing underside: markings narrower; spots of discal series in interspaces 2 and 3 outwardly truncate or emarginate ... . — Race *clinia*, p. 332.

b^3. Hind wing: subbasal band distinctly attenuate at each end . . — Race *kallaura*, p. 331.

B. Upperside fore wing: discoidal streak joined to triangular spot beyond.

a. Upperside: colour brownish or fuliginous black with white markings, not sullied but sometimes slightly irrorated with dusky dark scales.

a' Upperside fore wing: no white spot at base of interspace 3.

a^2. Upperside fore wing: discal series of white spots completed by a small spot in interspace 4.

a^3. Lower and upper spots of this series respectively not connate among themselves, not forming separate short bands — *N. sankara*, p. 332.

b^3. Lower and upper spots respectively of this series connate among themselves, forming separate short bands... .. .. — Race *nar*, p. 333.

b^2. Upperside fore wing: discal series of white spots not complete. No spot in interspace 4.

a^3. Upperside fore wing: lower portion of discal series consisting of four spots, in interspaces 1 *a*, 1, 2 and 3 . .. ... — *N. cartica*, p. 333. Race *burmana*, p. 334.

b^3. Upperside fore wing: lower portion of discal series consisting of three spots, in interspaces 1 *a*, 1 and 2. ... .. — Race *nashona*, p. 334.

b' Upperside fore wing: a white spot at base of interspace 3.

a^2. This spot small, triangular ... .. — *N. narayana*, p. 334.

b^2. This spot large, forming with discoidal streak a curved club-shaped mark.

a^3. Underside: ground-colour pale ochraceous yellow .. . ... — *N. manasa*, p. 336.

b^3. Underside: ground-colour rich purplish brown, ochraceous only at apex and tornus of fore and along costa and termen of hind wing . .. . — Race *nyctea*, p. 336.

b. Upperside: colour brownish or fuliginous black with white markings strongly suffused with yellow.

a' Underside: ground-cclour dark ferruginous brown .. . . — *N. narayana*, Race *nana*, p. 335.

b' Underside: ground-colour "violaceous with markings of dark reddish brown" — *N. narayana*, Race *asterastilis*, p. 335.

c'. Underside: ground-colour pale ochraceous .. .. — *N. zaida*, p. 336.

c. Upperside: colour brownish or fuliginous black, with whitish markings strongly suffused with dusky brown.

a'. Upperside hind wing: interspace between postdiscal and subterminal markings formed into a series of black spots darker than ground-colour . — *N. harita*, p. 337.

b'. Upperside hind wing: interspace between postdiscal and subterminal markings not macular.... .. — *N. vikasi*, [p. 338. Race *pseudovikasi*,

d. Upperside: colour very dark brown or black with pale brown markings, no tint of white or fuliginous white.

a'. Underside markings as on the upperside, pale brown ... ... — *N. fuliginosa*, p. 338.

b' Underside markings rich violaceous — *N. anjana*, p. 339.

e. Upperside: colour deep velvety black with orange-yellow markings.
a'. Underside markings more or less strongly suffused with violaceous or silvery purple.
*a*². Of large size: expanse over 80 mm. Upperside fore wing: an orange spot at base of interspace 3.. ... *N. radha*, p. 339.
*b*². Smaller: expanse under 80 mm. Upperside fore wing without any spot at base of interspace 3.
*a*³. Upperside fore wing: medial spot of discal series large, rounded, well separated from spot next below it. *N. ananta*, p. 340.
*b*³. Upperside fore wing: medial spot of discal series comparatively small, quadrate, separated from spot next below only by vein.
*a*⁴. Upperside hind wing: subbasal band always much narrower than space between it and postdiscal band .. . . *N. miah*, p. 341.
*b*⁴. Upperside hind wing: subbasal band equal in width to space between it and postdiscal band. Race *nolana*, p. 341.
b' Underside markings not suffused with violaceous or silvery purple.
*a*². Of comparatively large size, expanse over 55 mm. Underside hind wing: subterminal band very narrow, greyish .. .. *N. viraja*, p. 342.
*b*². Of comparatively small size, expanse under 55 mm. Underside hind wing: subterminal band broad, orange-yellow *N. heliodore*, p. 342.

336. **Neptis eurynome** (Pl. IX, fig. 64), *Westwood* (Liminitis), *Donovan's Ins. China*, 2nd ed. 1842, p. 66, pl. 35, fig. 4.
Neptis astola, *Moore, P. Z. S.* 1872, p. 560; *de N. Butt. Ind.* ii, 1886, p. 99; *Moore, Lep. Ind.* iii, 1896-99, p. 227, pl. 274, figs. 1, 1 *a*–1 *g*, ♂ ♀
Neptis emodes, *Moore, P. Z. S.* 1872, p. 561, pl. 32, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 99.
Neptis varmona, *Moore, P. Z. S.* 1872, p. 561; *id. Lep. Ceyl.* i, 1881, p. 54, pl. 28, figs. 1, 1 *a*, ♂, 1 *b*, larva & pupa; *de N. Butt. Ind.* ii. 1886, p. 95; *Moore, Lep. Ind.* iii, 1896-99, p. 230, pl. 276, figs. 1, 1 *a*–1 *h*, larva & pupa, ♂ ♀.
Neptis kamarupa, *Moore, P. Z. S.* 1874, p. 570; *de N. Butt. Ind.* ii, 1886, p. 98.
Neptis disrupta, *Moore, A. M. N. H.* (3) xx, 1877, p. 339; *id. Lep. Ceyl.* i, 1857, p. 55, pl. 28, figs. 4, 4 *a*, ♀ (aberration).
Neptis adara, *Moore, P. Z. S.* 1878, p. 830; *de N. Butt. Ind.* ii, 1886, p. 97; *Moore, Lep. Ind.* iii, 1896-99, p. 229, pl. 275, figs. 1, 1 *a*–1 *g*, ♂ ♀
Neptis meetana, *Moore, P. Z. S.* 1878, p. 830; *de N. Butt. Ind.* ii, 1886, p. 97.

Neptis swinhoei, *Butler*, *P. Z. S.* 1883, p. 145, pl. 24, fig. 9.
Neptis eurymene, *Butler*, *P. Z. S.* 1883, p. 145, pl. 24, fig. 5 ♂.

Race andamana.

Neptis andamana, *Moore*, *P. Z. S.* 1877, p. 586; *de N. Butt. Ind.* ii, 1886, p. 94; *Moore*, *Lep. Ind.* iii, 1896-99, p. 232, pl. 277, figs. 1, 1 *a*-1 *g*, ♂ ♀.

Race nicobarica.

Neptis nicobarica, *Moore*, *P. Z. S.* 1877, p. 586; *de N. Butt. Ind.* ii, 1886, p. 94; *Moore*, *Lep. Ind.* iii, 1896-99, p. 233, pl. 278, figs. 1, 1 *a*-1 *g*, ♂ ♀.

Dry-season form.— ♂ ♀ *Upperside* black, with pure white markings. Fore wing: discoidal streak clavate, apically truncate, subapically either notched or sometimes indistinctly divided; triangular spot beyond broad, well-defined, acute at apex, but not elongate; discal series of spots separate, not connate, each about twice as long as broad; postdiscal transverse series of small spots incomplete, but some are always present. Hind wing: subbasal band of even or nearly even width; discal and subterminal pale lines obscure; postdiscal series of spots well separated, quadrate or subquadrate, very seldom narrow. *Underside* from pale golden ochraceous to dark ochraceous almost chocolate; white markings as on the upperside, but broader and defined in black. Fore wing: interspaces 1 *a* and 1 from base to near the apex shaded with black, some narrow transverse white markings on either side of the transverse postdiscal series of small spots. Hind wing: a streak of white on costal margin at base, a more slender white streak below it; the discal and subterminal pale lines of the upperside replaced by narrow white lines with still narrower margins of black. Antennæ, head, thorax and abdomen black; the palpi, thorax and abdomen beneath dusky white.

Fig. 59.
Neptis eurynome. ½.

Wet-season form.—Differs only in the narrowness of the white markings and in the slightly darker ground-colour and broader black margins to the spots and bands on the underside.

Exp. ♂ ♀ 44–70 mm. (1·75–2·79″).

Hab. Throughout Continental India; Ceylon; Assam; Burma; Tenasserim, extending to China and the Malayan Subregion.

Larva (*varmona* = *eurynome*). Moore describes this from a drawing by Mr. S. N. Wards as follows:—"Head larger than anterior segment, vertex with two short pointed spines, cheeks obtusely spined; third, fourth, sixth and twelfth segments armed with a subdorsal pair of stout fleshy spiny processes, those on the fourth segment longest. Colour pale green; face, tip of processes

and segments slightly washed with pale pinkish, a slight pinkish oblique lateral fascia from anal process; a small, dark, lateral spot on sixth segment."

Pupa. "Rather short; head-piece bluntly cleft in front, vertex pointed; thorax dorsally prominent and angular; dorsum angular at base; abdominal segments slightly angled dorsally; wing-cases somewhat dilated laterally. Colour pale brownish ochreous, with lateral thoracic golden spots."

I have united under Westwood's name a very large number of forms separated by Moore and Butler on what, so far as I have been able to find out, are variable characters. I have not done this without prolonged and careful study and comparison of large numbers of specimens of the so-called distinct forms from Dr. Moore's own collection. All I can say is, that I have been unable to find one single character that could serve invariably, or indeed in the majority of cases, to distinguish the forms restricted under the various names. The Andaman and the Nicobar forms, however, seem to be somewhat constant, and I have, but still with much hesitation, retained them as slightly differentiated insular races of *N. eurynome*, Westwood. Regarding the rest, typically the Eastern form *eurynome* is larger than typical *varmona* or *astola*, and has the subbasal band on the underside of the hind wing heavily black-bordered, but this bordering is not so wide as in the above-mentioned insular races, nor is its width constant. Typical *varmona* has this same bordering slightly more pronounced than in *astola*, while the ground-colour on the underside of the latter is, in the majority of specimens, a shade darker than in *varmona*. It is, however, worthy of note that in the specimens now in the collection of the British Museum, marked as types of *N. varmona* and *N. astola* respectively, the shade of this ground-colour is identical.

Race **andamana**, Moore, ♂ ♀.—Almost identical in colour and markings with some of the wet-season Burmese specimens of the typical form, but in every specimen (and I have examined some two hundred) *the spots of the postdiscal series on the upperside of the hind wing are very narrow, and the subbasal band on the underside of the same wing very heavily bordered with black.*

Exp. ♂ ♀ 52–59 mm. (2·08–2·34″).

Hab. The Andamans.

Race **nicobarica**, Moore, ♂ ♀.—Differs from the typical form in the much darker colouring of the ground-colour on the underside, and in the subbasal band of the hind wing being slightly fusiform, narrower at dorsal and costal margins than in the middle. This is more clearly apparent on the underside. Like the Andaman race, the above band is very heavily bordered with black on the underside of the wing.

Exp. ♂ ♀ 56-64 mm. (2·23–2·52″).

Hab. The Nicobars.

I have been able to make this careful examination through the kindness of Mr. Gilbert Rogers, Deputy Conservator of Forests in the Andamans, from whom I have received some hundreds of specimens.

337 **Neptis columella** (Pl. IX, fig. 66), *Cramer* (Papilio), *Pap. Exot.* iv, 1782, pl. 296, figs. A, B, ♀; *Moore* (Andrapana), *Lep. Ind.* iii, 1896–99, p. 218, pl. 271, figs. 1, 1 *a*–1 *c*, ♂ ♀

Neptis ophiana, *Moore, P. Z. S.* 1872, p. 561 ♂; *de N. Butt. Ind.* ii, 1886, p. 105.

Neptis martabana, *Moore, Trans. Ent. Soc.* 1881, p. 310; *de N. Butt. Ind.* ii, 1886, p. 106.

Neptis ophiana, var. nilgirica, *Moore, Hampson, J. A. S. B.* 1888, pt. 2, p. 353.

♂ ♀. *Upperside* black, with white markings. Fore wing: discoidal streak widening towards apex, notched preapically on the anterior margin and obliquely truncate at apex; spot beyond large, broadly triangular, well separated; discal spots in pairs varying in size, spot of this series in interspace 1 *a* always elongate; spots in transverse postdiscal series obscure, not all well defined, margined on both sides with deeper black than that of the ground-colour; the space between the series and the discal spots and also the terminal margin beyond it with obscure transverse pale markings. Hind wing: costal margin broadly greyish brown; subbasal band not extending to the costa, of varying width; discal and subterminal pale transverse lines, the space between them darker than the ground-colour, traversed by a prominent series of postdiscal spots of varying size. Cilia white alternating with black. *Underside* ferruginous brown; white markings as on the upperside but broader; the pale markings between the discal and postdiscal series of spots, the subterminal markings on the upperside of the fore wing, and the discal and subterminal pale lines on the upperside of the hind wing represented by pale lunular transverse whitish markings. The costal margin of the hind wing above vein 8 very broad, especially in the ♀ Antennæ dark brown to black; head, thorax and abdomen dark brownish black; beneath white.

Exp. ♂ ♀ 66–75 mm. (2·59–2·98″).

Hab. Western and Southern India, recorded from Mahableshwar near Bombay, and the Nilgiris; Sikhim, Bhutan, through the hills of Assam, Burma and Tenasserim to the Malay Peninsula, Siam and Sumatra.

The dry-season form has the white markings generally broader and the ground-colour of the underside brighter. I have received a single specimen, a ♀, of a *Neptis* from the Nicobars which I refer provisionally to this form. It differs from typical *N. columella* as follows:—*Upperside*: fore wing with only five, not six, spots in the discal series, the small spot in interspace 1 being absent. *Underside* dark chocolate-brown, the markings beyond he discal series on the fore wing very broad and diffuse, placed

on a fuliginous background. Hind wing: the terminal margin beyond the line of postdiscal spots completely and strongly suffused with lilacine white, traversed by an outer postdiscal and a subterminal series of black lunular markings. It is quite possible this is only a casual aberration.

338. **Neptis jumbah**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 167, pl. 4 *a*, fig. 5 ♀; *de N. Butt. Ind.* ii, 1886, p. 106; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 273; *Moore* (Andrapana), *Lep. Ind.* iii, 1896–99, p. 220, pl. 272, figs. 1, 1 *a*, larva & pupa, 1 *b*–1 *f*, ♂ ♀.

Neptis jumba, *Moore, Lep. Ceyl.* i, 1881, p. 55, pl. 28, figs. 2, 2 *a*, ♂, 2 *b*, larva & pupa.

♂ ♀ Somewhat resembles *N. columella*, but differs as follows:— *Upperside* fuliginous black, the interspaces between the veins deeper black, very conspicuous in certain lights, particularly so between the subbasal and postdiscal markings on the hind wing; the white markings suffused with very pale bluish green; the posterior two spots of the discal series on the fore wing subequal; the postdiscal macular band on the hind wing with a tendency to obsolescence, varying from a narrow series of white lunules to a somewhat diffuse transverse narrow pale band. On the *underside* the ground-colour is paler than in *N. columella*, the interspaces between the veins conspicuously much darker; the postdiscal and subterminal markings on both fore and hind wings diffuse and very ill-defined. *N. jumbah* can besides be at once recognized by the discal transverse series of comparatively large dark brown spots. In the ♀ the spots on the fore wing and the subbasal band on the hind wing are comparatively broader than they are in the ♂; in the dry-season form of both sexes, as compared with the wet-season form, often conspicuously broader. Antennæ, head, thorax and abdomen as in *N. columella*.

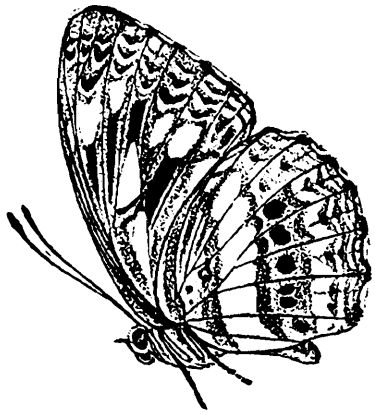

Fig. 60.—*Neptis jumbah*. ½.

Exp. ♂ ♀ 62–70 mm. (2·45–2·75″).

Hab. Bengal; Southern India, the Nilgiris, Canara, Travancore; Ceylon; Burma; Tenasserim; the Andamans.

Specimens from the Andamans have the lilacine white terminal markings on the underside very broad and diffuse.

Larva. "Somewhat fusiform, anterior and anal segments narrowed, the middle segments being thickened laterally, armed with two dorsal, long, anteriorly-divergent fleshy processes on the fourth segment, and two shorter posteriorly-divergent similar processes on the twelfth segment, also two very short dorsal spiny tubercles on the third and sixth segments. Head cleft and pointed at the

vertex. Colour brownish-purple, anal segments dark purple-brown spotted with green and bordering an oblique line extending laterally from anal spine to base of spine on fourth segment; two short, oblique, dorsal anteriorly-oblique (?) lateral streaks along middle segments." (*Moore.*)

Pupa. "Suspended vertically; slender in the abdominal part with a sharp dorsal ridge, much stouter and broader in the thoracic region; with wing-cases expanded laterally; two sharp points on the head; colour varying from dark brown to dull white, suffused and touched at points with gold." (*Davidson & Aitken.*)

339. **Neptis magadha**, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 427 ♂; *de N. Butt. Ind.* ii, 1886, p. 100; *Moore* (Andrapana), *Lep. Ind.* iii, 1896-99, p. 223, pl. 273, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Neptis charon, *Butler, A. M. N. H.* (3) xx, 1867, p. 400, pl. 9, fig. 1 ♀; *Dist. Rhop. Malay.* 1886, p. 155, fig. 43 ♀.

Race khasiana.

Neptis khasiana, *Moore, P. Z. S.* 1872, p. 562, pl. 32, fig. 7 ♂; *de N. Butt. Ind.* ii, 1886, p. 100; *Moore* (Andrapana), *Lep. Ind.* iii, 1896-99, p. 224, pl. 273, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ *Upperside* black, with white markings. Fore wing: discoidal streak very slender, not incised; spot beyond its apex triangular; discal series of spots in pairs, as in *N. columella*, but smaller, spot in interspace 2 the largest; postdiscal white spots and subterminal pale markings as in that form. Hind wing: transverse subbasal band very narrow, discal and subterminal pale lines obsolescent; postdiscal spots rounded, small. Cilia of both fore and hind wing black alternated with white. *Underside* purpurescent brown; the markings as on the upperside but pale blue and slightly larger; the inner and outer postdiscal and subterminal series of transverse markings on the fore wing and the discal, postdiscal and subterminal markings on the hind wing very distinct and broad; base of costal margin of hind wing broadly, conspicuously white. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen sullied white, the abdomen with a lateral stripe on each side.

Exp. ♂ ♀ 66–70 mm. (2·61–2·75″).

Hab. Burma; Tenasserim; extending to the Malayan Subregion.

Race **khasiana**, Moore.—♂ ♀ Differs only from the typical form in the ground-colour on both upper and under sides being a shade darker, also conspicuously in the attenuation of the white markings, which are smaller than in any other known form of *Neptis* from India. These differences seem to be constant.

Exp. ♂ ♀ 66 mm. (2·6″).

Hab. Bhutan; Assam; Upper Burma.

340. **Neptis nata**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 168, pl. 4 *a*, fig. 6 ♂; *de N. Butt. Ind.* ii, 1886, p. 100; *Moore, Lep. Ind.* iii, 1896-99, p. 243, pl. 286, figs. 1, 1 *a*–1 *g*, ♂ ♀.

♂ ♀ Closely resembles *N. magadha* in the ground-colour of both upper and under sides. The markings differ as follows:— *Upperside* fore wing: the discoidal streak comparatively broader, more clavate, the triangular spot beyond narrower, more attenuated and elongated at apex. Hind wing: the spots of the postdiscal series narrow, transverse, never rounded or cone-shaped, sometimes lunular. *Underside*: the spots and markings as on the upperside but larger and slightly diffuse, the triangular spot beyond discoidal streak on fore wing often joined with it; the discal and postdiscal lines on the hind wing more continuous and greyish white.

Exp. ♂ ♀ 56–68 mm. (2·22–2·75″).

Hab. Malayan Subregion, extending into South Tenasserim.

341. **Neptis mahendra** (Pl. IX, fig. 65), *Moore, P. Z. S.* 1872, p. 560, pl. 32, fig. 3 ♂; *de N. Butt. Ind.* ii, 1886, p. 104; *Moore, Lep. Ind.* iii, 1896-99, p. 234, pl. 279, figs. 1, 1 *a*–1 *g*, ♂ ♀.

Dry-season form.— ♂ ♀ *Upperside* fuliginous dull black, markings pure white. Fore wing: discoidal streak clavate, obliquely truncate at apex, spot beyond it broad, cone-shaped, acute at apex, but *not elongate*; spots in discal curved row twice as long as broad, the spot in interspace 2 always bluntly truncate, abruptly truncate in the ♀; postdiscal transverse series of small spots generally incomplete, the middle spots absent; in the ♀ more complete and with very obscure inner postdiscal and subterminal transverse pale markings. Hind wing: subbasal transverse band comparatively broad, widening slightly towards costa in ♂, broader and of even width in ♀; discal and subterminal pale obscure lines more clearly defined in the ♀ than in the ♂; a prominent series of more or less quadrate spots. *Underside* rich golden brown, the white maakings as on the upperside but broader, especially the postdiscal series of spots on both fore and hind wing; the obscure pale markings of the upperside replaced by more clearly defined white transverse markings. Cilia white alternated with black. Antennæ, head, thorax and abdomen black; beneath fuliginous, the abdomen whitish.

Wet-season form.— ♂ ♀ Differs from the dry-season form in the somewhat duller black of the ground-colour and in the conspicuously narrower white markings.

Exp. ♂ ♀ 54–64 mm. (2·14–2·5″).

Hab. Seems to be confined to the N.W. Himalayas from Busahir and Kashmir to Kumaun.

I have a dry-season specimen, a ♂ kindly given me by Col. E. R. Johnson, I.M.S., the envelope of which has the locality and date as "Shillong 5–83," but as Col. Johnson collected both at Shillong and at Simla, it seems possible that some mistake has been made.

342. **Neptis yerburii,** *Butler, P. Z. S.* 1886, p. 360; *Moore, Lep. Ind.* iii, 1896–99, p. 235, pl. 280, figs. 1, 1 *a*–1 *g*, ♂ ♀.
Neptis nandina, pt., *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 168; *de N.* (*apud Moore*) *Butt. Ind.* ii, 1886, p. 104.

♂ ♀ In both dry- and wet-season forms closely resembles *N. mahendra*, Moore, but the following differences seem to be constant in long series of both insects:—

Upperside, ♂ ♀: the triangular spot beyond apex of discoidal streak on fore wing conspicuously more elongate and attenuate at apex; the posterior three of the discal series of spots shorter and more obliquely placed; the postdiscal transverse series of small spots more complete. In many specimens the markings are not pure white as in *N. mahendra*, but cream-coloured. *Underside*: ground-colour paler respectively in both seasonal forms, the general appearance of the insect paler and more whitish than in *N. mahendra*, the elongate triangular spot beyond apex of discoidal streak much closer to the latter, very often touching it.

Exp. ♂ ♀ 56–65 mm. (2·22–2·58″).

Hab. Himalayas from Campbellpur and Abbotabad to Sikhim; the hills of Assam and Upper Burma.

343. **Neptis soma,** *Moore, P. Z. S.* 1858, p. 9, pl. 49, fig. 6 ♀; *de N. Butt. Ind.* ii, 1886, p. 102, pl. 23, fig. 108 ♂; *Moore, Lep. Ind.* iii, 1896–99, p. 241, pl. 284, figs. 1, 1 *a*–1 *f*, ♂ ♀.
Neptis adipala, *Moore, P. Z. S.* 1872, p. 563, pl. 32, fig. 8 ♂; *de N. Butt. Ind.* ii, 1886, p. 102; *Moore, Lep. Ind.* iii, 1896–99, p. 242, pl. 285, figs. 1, 1 *a*–1 *g*, ♂ ♀.
Neptis susruta, *Moore, P. Z. S.* 1872, p. 563, pl. 32, fig. 4 ♂; *de N. Butt. Ind.* ii, 1886, p. 102; *Moore, Lep. Ind.* iii, 1896–99, p. 239, pl. 283, figs. 1, 1 *a*–1 *g*, ♂ ♀
Neptis cacharica, *Butler, Trans. Ent. Soc.* 1879, p. 3 ♀; *de N. Butt. Ind.* ii, 1886, p. 102.
Neptis leuconota et gononata, *Butler, Trans. Linn. Soc.*, 2nd ser. *Zool.* i, 1879, p. 541, pl. 69, figs. 1 & 2.

Race kallaura.

Neptis kallaura, *Moore, Trans. Ent. Soc.* 1881, p. 309; *de N. Butt. Ind.* ii, 1886, p. 103; *Moore, Lep. Ind.* iii, 1896–99, p. 237, pl. 281, figs. 2, 2 *a*, 2 *b*, ♂.

Race hampsoni (Pl. 1X, fig. 67).

Neptis hampsoni, *Moore, Lep. Ind.* iii, 1896–99, p. 237, pl. 281, figs. 1, 1 *a*–1 *d*.

Race clinia.

Neptis clinia, *Moore, P. Z. S.* 1872, p. 563, pl. 32, fig. 5 ♂; *de N. Butt. Ind.* ii, 1886, p. 104; *Moore, Lep. Ind.* iii, 1896–99, p. 238, pl. 282, figs. 1, 1 *a*–1 *g*, ♂ ♀
Neptis mananda, *Moore, P. Z. S.* 1877, p. 586, pl. 58, fig. 4 ♀; *de N. Butt. Ind.* ii, 1886, p. 101.

Wet-season form.— ♂ ♀ *Upperside* fuliginous black, with some-

what sullied white markings. Fore wing: discoidal streak narrow, the apex truncate, triangular spot beyond narrow, very elongate; discal spots small, oval, all well separated; postdiscal transverse series of spots complete. Hind wing: subbasal band very narrow, slightly sinuous; discal and subterminal pale lines very obscure; postdiscal series of spots transverse, very narrow, often indicated only by a pale band. *Underside* chocolate reddish brown, markings as on the upperside, but broader and slightly diffuse. Fore wing with the discoidal streak and the triangular spot beyond it diffusely connate, some transverse linear white markings on either side of the postdiscal series of spots; the wing below vein 1 pale greyish brown. Hind wing: the discal and subterminal pale markings of the upperside represented by more clearly defined, very narrow, white bands, with, in the female, the addition of a terminal white similar band. Antennæ black; head, thorax and abdomen fuliginous black; beneath dusky white.

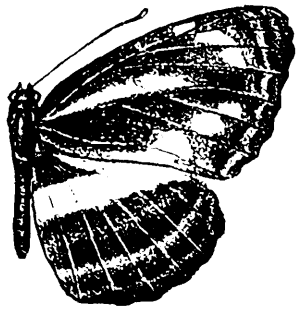

Fig. 61.
Neptis soma. ♀.

Dry-season form.—♂ ♀ *Upperside*: ground-colour a more dusky fuliginous; the markings broader and slightly whiter, not sullied white. *Underside*: ground-colour a shade brighter.

Exp. ♂ ♀ 64–68 mm. (2·53–2·69″).

Hab. Himalayas, Kumaun to Sikhim; Assam; Burma and Tenasserim.

I am unable to separate *N. adipala*, Moore, and *N. susruta*, Moore, from this most unstable form. Even the races briefly described below are only slightly differentiated, and it is with much hesitation I keep them apart as local representatives of *N. soma*.

Race **kallaura**, Moore.—Of this form I have seen only a few specimens. Judging by the types, which are now in the collection of the British Museum, it differs less from the typical form than do any of the other races. As in *N. soma*, the markings are small and narrow; the subbasal band of the hind wing is, however, attenuated at each end, and not of even width. *Underside*: ground-colour very much paler and somewhat ochraceous, the anterior and posterior sets of spots of the discal series closer together respectively; the postdiscal band on the hind wing equal in width to the subbasal band.

Exp. ♂ ♀ 60–67 mm. (2·38–2·67″).

Hab. Recorded only so far from Travancore.

Race **hampsoni**, Moore.—♂ ♀ Very closely allied to the typical form, but the markings pure white and broader in both seasonal forms, as in the race *clinia*. *Upperside* fore wing: the spots of the discal series oval, outwardly rounded. *Underside*: ground-colour dark ferruginous, the markings broad as on the upperside; the spots of the discal series, though closer to each

other than in the typical form, still not connate, or forming an upper and lower band as in the race *clinia*.

Exp. ♂ ♀ 57–62 mm. (2·25–2·45″).

Hab. Recorded from the Nilgiris; Anaimalai Hills and Mysore.

Race **clinia**, Moore.— ♂ ♀ Differs in both the dry- and wet-season broods from the typical form as follows:—*Upperside* fore wing: discoidal streak and spot beyond generally much closer together, only separated by a narrow line; discal spots much larger, outwardly truncate. Hind wing: subbasal band on the whole broader. *Underside*: ground-colour paler, almost ochraceous in some specimens; differences in the markings from the typical form similar to those on the upperside; discoidal streak on fore wing continuous, only indented above and below; the lower four spots of the discal series by themselves and the upper three by themselves connate; subbasal band on hind wing as a rule very broad.

Exp. ♂ ♀ 55–62 mm. (2·18–2·45″).

Hab. The Andamans.

344. **Neptis sankara** (Pl. IX, fig. 68), *Kollar* (Liminitis), *Hügel's Kaschmir*, iv, 2, 1844, p. 428 ♀; *de N.* (Athyma) *Butt. Ind.* ii, 1886, p. 175; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 4, pl. 289, figs. 1, 1 *a*–1 *g*, ♂ ♀.

Neptis amba, *Moore, P. Z. S.* 1858, p. 7, pl. 49, fig. 4 ♂; *de N. Butt. Ind.* ii, 1886, p. 88.

Neptis quilta, *Swinhoe, A. M. N. H.* (6) xix, 1897, p. 408; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 6, pl. 290, figs. 1, 1 *a*–1 *e*, ♂ ♀

Race nar.

Neptis nar, *de Nicéville, Jour. Bomb. N. H. Soc.* vi, 1891, p. 349, pl. F, fig. 6 ♀; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 6, pl. 288, figs. 2, 2 *a*, ♀.

Wet-season form.— ♂ ♀ *Upperside* fuliginous dusky black, with pure white markings. Fore wing; discoidal streak long, acutely pointed, attenuated at apex, anteriorly notched; discal curved series of spots complete, the spots elongate, separated only by the veins, the spot in interspace 4 very small; a postdiscal transverse series of jet-black lunular spots, and a subterminal sullied white line. Hind wing: a subbasal comparatively broad transverse band; a very obscure pale discal transverse shading; a postdiscal transverse narrow band crossed by the dark veins, bordered outwardly by a rather obscure, somewhat lunular, black band, and a pale broad subterminal transverse line. *Underside* purplish brown; the white markings as on the upperside but broader, their margins diffuse; in addition, on the hind wing, a short streak on the costal margin at base, a broader and longer streak from base below vein 8; and a discal transverse series of purplish-brown spots of a shade darker than the ground-colour. Cilia white, alternated narrowly with black. Antennæ, head, thorax and abdomen above very dark brownish black; palpi, thorax and abdomen beneath whitish.

Dry-season form.— ♂ ♀ *Upperside*: ground-colour paler; white markings conspicuously broader both on the upper and under sides.

Exp. ♂ ♀ 63–74 mm. (2·48–2·94″).

Hab. The Himalayas from Kashmir to Kumaun; Nepal.

Var. *quilta*, Swinhoe.—A slightly differentiated Eastern form. Typical specimens from Cherra Poonjee, in Assam, have the white markings in both seasonal forms sullied olivescent white and narrower than in the corresponding seasonal forms of *N. sankara*. On the underside the ground-colour is darker than in the typical form. In Sikhim and Bhutan specimens intermediate between the two occur. This form is recorded from Sikhim; Bhutan; through the hills of Assam to Upper Burma.

Race **nar**, de Nicéville.—An insular form, the female only known. It differs from *N. sankara*, in the white markings being narrower and sullied with brownish on the upperside; the anterior and posterior spots of the discal series on the fore wing connate among themselves respectively, so that the anterior spots form a short band sloping obliquely outwards from the costa, and the posterior spots a short band sloping obliquely outwards from the dorsum. *Underside*: ground-colour much darker than in the typical form, the white markings as on the upperside, but strongly suffused with lilacine; the subbasal band on the hind wing not extending to the costa.

Exp. ♀ 70 mm. (2·77″).

Hab. The Andamans.

345. **Neptis cartica**, *Moore*, *P. Z. S.* 1872, p. 562, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 89; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 1, pl. 287, figs. 1, 1 *a*–1 *d*, ♂ ♀.

Neptis carticoides, *Moore*, *Trans. Ent. Soc.* 1881, p. 309; *de N. Butt. Ind.* ii, 1886, p. 90.

Race burmana.

Neptis burmana, *de Nicéville*, *J. A. S. B.* 1886, pt. 2, p. 251, pl. 11, fig. 9; *id. Butt. Ind.* ii, 1886, p. 89; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 3, pl. 287, figs. 2, 2 *a*, ♂.

Race nashona.

Neptis nashona, *Swinhoe*, *A. M. N. H.* (6) xvii, 1896, p. 357; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 3, pl. 288, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Dry-season form.— ♂ ♀ *Upperside* fuliginous brown, with somewhat sullied white markings. Fore wing: discoidal streak long, narrow, joined on to the triangular spot beyond, the division between them indicated by an incision anteriorly; apex of spot attenuate, elongate; the posterior spots of the curved discal series very obliquely placed, somewhat diffuse; anterior spots separated; a postdiscal series of spots lunular and pale brownish, with somewhat indistinct transverse pale markings on either side of it, the

inner pale markings anteriorly curving towards the costa and bordering the anterior spots of the discal series. Hind wing: subbasal band white; discal and subterminal narrow bands pale brownish; spots of the postdiscal series narrow, transverse, slightly diffuse. *Underside*: dark brown markings as on the upperside, but broader, whiter, and somewhat more clearly defined. Fore wing: the costa at base ochraceous; the postdiscal series of lunular spots and the markings bordering them on either side white. Hind wing: the costal margin at base broadly white, the discal narrow brown band bordered outwardly by a series of very dark brown markings in the interspaces; the subterminal band white and much broader than on the upperside. Antennæ, head, thorax and abdomen dark brown; the palpi, thorax and abdomen beneath sullied white.

Wet-season form.—Differs only in the slightly darker ground-colour on both upper and under sides, and in the narrowness of the markings.

Exp. ♂ ♀ 70–78 mm. (2·75–3·08″).

Hab. Sikhim; Nepal; hills of Assam.

Race **burmana**, de Nicéville.—Very close to the typical form, only very slightly differentiated; the markings broader and purer white, occasionally very slightly sullied with fuliginous.

Exp. ♂ ♀ 58–72 mm. (2·3–2·85″).

Hab. Burma and Tenasserim.

Race **nashona**, Swinhoe.—Differs from the typical form in having the markings on the upperside more or less sullied with fuliginous, but not quite so dark as in *N. pseudovikasi*. Further, there are only three, not four, spots in the posterior half of the discal series on the upperside of the fore wing.

Exp. ♂ ♀ 60–69 mm. (2·35–2·73″).

Hab. Recorded from the Khási Hills, Assam.

346. **Neptis narayana**, *Moore, P. Z. S.* 1858, p. 6, pl. 49, fig. 3 ♂; *de N. Butt. Ind.* ii, 1886, p. 87; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 17, pl. 295, figs. 1, 1 *a*, ♂

Race nana.

Neptis nana, *de Nicéville, J. A. S. B.* lvii, 1888, pt. 2, p. 276, pl. 13, fig. 1 ♂; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 18, pl. 295, figs. 2, 2 *a*, ♂

Race asterastilis.

Neptis asterastilis, *C. Oberthür, Études d'Ent. No.* 15, *June* 1891. p. 10, pl. 1, fig. 5.

♂ ♀ *Upperside* fuliginous black with white markings, in the female slightly tinted with ochraceous. Fore wing: discoidal streak long, clavate, indented anteriorly before the apex, the latter

blunt, extended slightly into base of interspace 3; a small costal spot above apex of streak; discal spots in pairs well separated, the spots in interspaces 1 *a* and 1 connate, divided only by the vein, spots in 2 and 3 similarly connate, the spots in 2 large and quadrate; the anterior spots very obliquely placed, elongate; beyond these an obscure subterminal line pale anteriorly, white posteriorly. Hind wing: subbasal band of even width, comparatively broad; postdiscal band narrower with uneven margins, followed by a very obscure pale subterminal line. *Underside* ochraceous golden brown; markings as on the upperside, but broader and diffuse. On the hind wing there are in addition the following rather obscure lilacine markings: a broad streak at bases of interspaces 6 and 7, a discal highly sinuous, a subterminal somewhat curved transverse narrow band, and a narrow border to the postdiscal band. Antennæ, head, thorax and abdomen black; beneath, palpi and thorax greyish white, abdomen white touched with ochraceous.

Exp. ♂ ♀ 62–72 mm. (2·45–2·83″).

Hab. The Himalayas, Kulu to Kumaun.

Race **nana**, de Nicéville.—Differs from the typical form as follows:—♂ *Upperside*: ground-colour darker; markings ochraceous or warm cream-colour; the posterior pairs of discal spots not so widely separated, anterior spots larger and closer together. *Underside*: ground-colour dark ferruginous brown; markings as in the typical form, but the margins of those on the fore wing slightly ochraceous; the lilacine markings on the hind wing broader and more clearly defined. Female unknown.

Exp. ♂ 66 mm. (2·6″).

Hab. Sikhim; Bhutan.

Race **asterastilis**.—"Momeit in Upper Burma (*Doherty*).

"This *Neptis* appears to me to be new. I publish herewith a very exact figure of it by means of which the species may be easily recognized.

"It is black, with pale yellow markings which are disposed in a manner somewhat similar to that in *ananta*, but of a darker shade on the disc and paler beyond.

"Below it is violaceous with spots and markings of rather dark reddish brown. The yellow spots of the upperside appear very pale and transparent in certain lights.

"The colours recall those of *ananta*, Moore, but the lines are more sinuous." (*Oberthür.*)

I have translated M. Oberthür's diagnosis in full. The form is unknown to me, but judging from the coloured figure in the 'Études,' I should say that it is much closer to *N. narayana*, Moore, than to *N. ananta*, Moore.

347 **Neptis manasa**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 165, pl. 4 *a*, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 87; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 18, pl. 295, figs. 3, 3 *a*, ♂

Race nyctea.

Neptis nycteus, *de Nicéville, Jour. Bomb. N. H. Soc.* v, 1890, p. 203, pl. D, fig. 7 ♂; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 19, pl. 295, figs. 4, 4 *a*, ♂

♂ *Upperside* dull ferruginous black, markings white. Fore wing: discoidal streak long, very slightly indented before apex anteriorly, acutely pointed at apex, joined on to the middle two spots of the discal series, so that the streak and the spots together have the shape of a hockey-club; the other discal spots and the costal spots above the streak as in *N. narayana*, but the spot in interspace 6 long, oval, acutely pointed on the outer side, the spot in interspace 5 small and quadrate; beyond the discal series a subterminal pale lunular line. Hind wing as in *N. narayana*, but the white bands broader, and a discal pale transverse line indicated. *Underside* pale ochraceous yellow, the markings as on the upperside but broader and slightly diffuse; on the fore wing the discoidal streak and both posterior pairs of discal spots coalescent, forming a broad crook-shaped mark; the bases of interspaces 1 *a*, 1 and 2 with a broad dusky black patch; on the hind wing in addition to the white markings, as on the upperside, there are fairly distinct small lilacine spots between veins 6, 7 and 8, and broad diffuse discal and subterminal lines. Antennæ dark brown; head, thorax and abdomen dusky black; beneath, palpi, thorax and abdomen white.

Exp. ♂ 71 mm. (2·8″).

Hab. Recorded from N. India.

This form is at present known only from a single specimen of a ♂, the type, now in the British Museum. The precise locality where it was taken is unknown.

Race **nyctea**, de Nicéville.—♂. *Upperside* differs from that of the typical form only in the size of the anterior spots of the discal series, which are smaller, more oval and separate. *Underside* differs in the ground-colour being a rich purple-brown, ochraceous only on the fore wing at base of costa, just before the apex, and near the tornal angle, on the hind wing along the costa from base to middle, and broadly along the terminal margin; the subbasal band on the hind wing also is very much broader and the post-discal more blurred, margined on the inner side with pale purple; there is also no subterminal lilacine line. Female unknown.

Exp. ♂ 64 mm. (2·52″).

Hab. Sikhim, at from 6000–12,000 ft.

348. **Neptis zaida**, *Doubleday, in Dbldy., Westw. & Hew. Gen. Di. Lep.* p. 272, pl. 35, fig. 3 (1850); *de N. Butt. Ind.* ii, 1886, p. 86; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 20, pl. 296, figs. 1, 1 *a*–1 *e*, ♂ ♀

Dry-season form.—♂ ♀ *Upperside* brownish black, marking

pale ochraceous white. Fore wing: discoidal streak broad and long, not indented anteriorly, acutely pointed at apex; extending slightly below vein 4 into base of interspace 3; two obliquely placed broad lower discal patches separated by half the width of interspace 1, and an obliquely placed anterior broad bar from beyond the middle of the costa, followed by a broad obscure pale subterminal transverse line. Hind wing: a broad subbasal and much narrower postdiscal band; a very faint broad pale subterminal line. *Underside* pale ochraceous; markings as on the upperside but broader and whiter. Fore wing: bases of interspaces 1, 2 and sometimes of 3 dark brownish black; the markings beyond the discal patches obscure and ill-defined. Hind wing: an obscure pale narrow discal transverse band in addition to the markings as on the upperside; in some specimens the postdiscal and subterminal bands bordered faintly on the inner side with lilacine. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen dull greyish white.

Wet-season form.— ♂ ♀ Differs only in the cream-white markings being of a darker shade of ochraceous yellow and in the darker ground-colour of the underside, which is more or less of a dull chestnut-brown.

Exp. ♂ ♀ 62–70 mm. (2·45–2·75″).

Hab. The Himalayas from Murree to Sikhim.

349. **Neptis harita,** *Moore, P. Z. S.* 1874, p. 571, pl. 66, fig. 8 ♀; *de N. Butt. Ind.* ii, 1886, p. 92; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 8, pl. 291, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂ ♀ *Upperside* rich velvety brown, with fuliginous pale markings. Fore wing: discoidal streak shorter than in *N. cartica*, preapically notched by the point of a pale, dark-bordered, obliquely placed, subcostal lunule; the spots of the discal series obscure, succeeded by two transverse series of irregular very dark brown lunular markings, the outer series bordered inwardly by a zigzag row of pale markings, and outwardly by a transverse pale line. Hind wing: subbasal band narrow, succeeded somewhat closely by a discal pale ill-defined line, bordered outwardly by a dark brown band; a postdiscal somewhat narrower sublunular band of the same colour, margined inwardly and outwardly by broad pale transverse lines. *Underside* paler brown; the markings somewhat as on the upperside but more diffuse, ill-defined and slightly purplish; the interspaces between the veins with dark brown markings. Antennæ, head, thorax and abdomen dark brown, paler beneath.

Exp. ♂ ♀ 58–64 mm. (2·3–2·54″).

Hab. E. Bengal; Cachar; the hills of Assam, Burma and Tenasserim, extending to the Malayan Subregion.

The type in the British Museum labelled E. Bengal has the outer markings on both fore and hind wings obsolescent.

350. **Neptis vikasi**, *Horsfield, Cat. Lep. Mus. E. I. C.* 1829, pl. 5, figs. 2, 2 *a*.

Race pseudovikasi.

Neptis pseudovikasi, *Moore* (Bimbisara), *Lep. Ind.* ii, 1886, p. 7, pl. 291, figs. 1, 1 *a*–1 *c*, ♂ ♀

Race **pseudovikasi**, Moore.— ♂ ♀ *Upperside* very dark brown with fuliginous-white markings. Fore wing: discoidal streak long and narrow, much longer than in *N. harita*, preapically notched by the point of a pale black-bordered subcostal lunule as in that form; the spots of the discal series in interspaces 1 *a* and 3 obsolescent, the intervening two outwardly truncate; the anterior spots of the same series elongate, narrow, placed very obliquely to the costa and in a curve; the transverse postdiscal series consists of short lines in the interspaces, inwardly bordered by a series of obliquely placed similar short pale lines. Hind wing: subbasal and postdiscal bands narrow, discal and subterminal bands more or less obsolescent. *Underside* purpurescent brown, the markings as on the upperside but broader and whiter suffused with pale purple; the discal pale band on the hind wing outwardly bordered by a broad band of very dark brown. Antennæ, head, thorax and abdomen dark brown; the palpi, thorax and abdomen beneath somewhat paler.

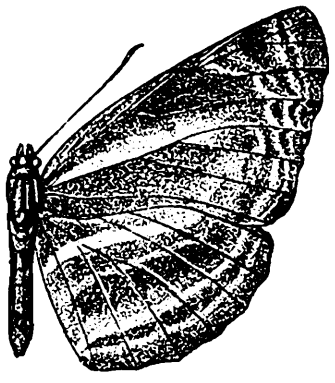

Fig. 62.
Neptis pseudovikasi. ½.

Exp. ♂ ♀ 66–74 mm. (2·61–2·82″).

Hab. Sikhim; Bhutan; the hills of Assam.

351. **Neptis fuliginosa**, *Moore, Trans. Ent. Soc.* 1881, p. 310; *de N. Butt. Ind.* ii, 1886, p. 90; *Moore* (Pandasana), *Lep. Ind.* iv, 1899–1900, p. 12, pl. 293, figs. 1, 1 *a*–1 *g*, ♂ ♀.

Neptis thamala, *Moore, Jour. Linn. Soc., Zool.* xxi, 1889, p. 36, pl. 3, fig. 1.

Wet-season form.— ♂ ♀ *Upperside* fuliginous brown, markings much paler brown, or brownish white. Fore wing with a non-indented, entire, somewhat narrow discoidal streak; an ill-defined lunular mark above it just beyond middle, and two elongate spots above its apex; a discal curved series of spots each longer than broad; the spot in interspace 4 small; an irregularly sinuous postdiscal broken line, curved sharply inwards at interspace 4 and again outwards in interspace 3; an inner subterminal straighter transverse line, interrupted at interspace 4 by a more or less inwardly conical spot; an outer subterminal slender line. Hind wing with transverse subbasal and postdiscal bands comparatively broad, and transverse discal and inner subterminal bands narrower; also a very ill-defined outer subterminal line.

Underside brown, the markings as on the upperside, but broader and ochraceous white; in addition, the fore wing along the subcostal vein from base and the hind wing below vein 8 from base with a similarly coloured streak. Antennæ, head, thorax and abdomen fuliginous brown; beneath, the thorax and abdomen ochraceous white.

Dry-season form.—Similar in both sexes and on both upper and under sides to the wet-season form, but the ground-colour is a shade paler and the markings distinctly broader.

Exp. ♂ ♀ 51–56 mm. (2–2·2″).

Hab. Recorded from Tenasserim, Sumatra and Borneo.

352. **Neptis anjana**, *Moore, Trans. Ent. Soc.* 1881, p. 309 ♂; *de N. Butt. Ind.* ii, 1886, p. 92; *Moore* (Bimbisara), *Lep. Ind.* iv, 1899–1900, p. 9, pl. 292, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀ *Upperside* blackish brown. Fore wing: discoidal streak brownish yellow, long, narrow, obscure; subapical anterior indentation ill-defined; discal series of spots slightly paler and whiter than the streak, the anterior obliquely placed spots reduced to two, well separated from one another; postdiscal markings transverse, very obscure, and of the same colour as the discoidal streak. Hind wing: subbasal band narrow, sullied white, no discal pale line, postdiscal band narrow, submacular, prominently crossed by the veins, curved inwards towards costa, meeting subbasal band; subterminal band brownish yellow, narrower than the postdiscal. *Underside* dark purplish brown; markings as on the upperside but broader and very diffuse, and, except the discal spots of fore wing and subbasal band of hind wing, which are more or less white, pale lilac; the subapical markings beyond the curved discal series of spots on the fore wing very broad; on the hind wing, in addition to the other markings, the costal margin at base broadly, and a discal sinuous broad line pale lilac. Antennæ, head, thorax and abdomen dark brownish black; beneath, the antennæ brown, the palpi, thorax and abdomen greyish white.—♀ similar, the bands and markings slightly broader.

Exp. ♂ ♀ 68–72 mm. (2·68–2·85″).

Hab. Lower Burma; Tenasserim; Malay Peninsula; Sumatra and Borneo.

353. **Neptis radha**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 166, pl. 4 *a*, fig. 4 ♂; *de N. Butt. Ind.* ii, 1886, p. 84; *Moore* (Stabrobates), *Lep. Ind.* iv. 1899–1900, p. 15, pl. 294, figs. 1 1 *a*–1 *c*, ♂ ♀.

♂ ♀. *Upperside* deep black with orange-yellow markings, paler and broader in the ♀ than in the ♂ Fore wing: discoidal streak long, comparatively narrow, very slightly indented anteriorly, attenuate and slightly curved downwards at apex, a spot below its apex at base of interspace 3, and two minute streaks

above it on the costa; posterior two of the discal series of spots oblique, middle two quadrate, transverse, anterior spots oblique from the costa, the lowest conical, outwardly truncate, the middle elongate, the one on the costa consisting of two short slender streaks; the space intervening between the middle and upper discal spots often conspicuously paler than the rest of the ground-colour; finally, a pale transverse subterminal line. Hind wing with the usual subbasal and postdiscal transverse bands; a subterminal pale transverse line observable in some, obsolescent in others. *Underside* dark chestnut-brown, the markings as on the upperside but paler, broader and somewhat diffuse; on the fore wing the preapical area and a transverse postdiscal line, on the hind wing the base of the cell, the bases of the interspaces above it, and the terminal third of the wing with an anteriorly coalescent zigzag discal narrow band conspicuously overlaid with lilacine scales. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen dusky grey.

Exp. ♂ ♀ 84–95 mm. (3·2–3·75″).

Hab. Nepal; Sikhim; Bhutan; the hills of Assam and Upper Burma.

354. **Neptis ananta**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 166, pl. 4 *a*, fig. 3; *de N. Butt. Ind.* ii. 1886, p. 85; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 22, pl. 297, figs. 1, 1 *a*–1 *g*, ♂ ♀

♂ ♀ *Upperside* deep black with orange markings, broader and paler in the ♀ than in the ♂ This form closely resembles *N. radha*, but it is invariably smaller and differs in the markings as follows:—

Wet-season form.—Fore wing: discoidal streak proportionately narrower though not so attenuate at apex, no spot below it at base of interspace 3; the middle spot of the discal series proportionately larger. *Underside*: ground-colour of a redder chestnut tint than in *N. radha*; the markings similar to those on the upperside but more diffuse and paler, the large middle spot only of the discal series on the fore wing tinged with orange; the subbasal band on the hind wing white, the postdiscal band pale ochraceous, very often margined with lilacine blue or in some specimens entirely of that colour; complete discal and subterminal narrow bands are generally present and conspicuous. Antennæ, head, thorax and abdomen as in *N. radha*.

Dry-season form.—Differs on the upperside from the wet-season form in the markings, which are much broader and pale yellow, not orange. On the underside the ground-colour is of an ochraceous brown; the markings very ill-defined, almost obsolescent on the terminal half of the hind wing.

Exp. ♂ ♀ 64–77 mm. (2·53–3·02″).

Hab. The Himalayas, Dalhousie, Chamba, Simla to Sikhim; the hills of Assam and Upper Burma, extending to the Malay Peninsula.

355. **Neptis miah** (Pl. IX, fig. 69), *Moore, Cat. Lep. Mus. E. I. C.* i 1857, p. 164, pl. 4 *a*, fig. 1 ♂ ; *de N. Butt. Ind.* ii, 1886, p. 85 ; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899-1900, p. 25, pl. 299, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Race nolana.

Neptis nolana, *Druce, P. Z. S.* 1874, p. 105 ♀ ; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899-1900, p. 27, pl. 298, figs. 2, 2 *a*, ♂ ♀.

Wet-season form.— ♂ ♀ *Upperside* black with orange-yellow markings, slightly broader and paler in the female than in the male. Fore wing : discoidal streak narrow, indented anteriorly before the apex : discal series of spots proportionately large, the spots in interspaces 1 *a*, 1 very oblique, the spots in 2 and 3 and in 4 and 5 placed transversely to the wing and nearly joined in interspace 4, spot in interspace 6 and the two short slender streaks above it inclined very obliquely outwards from the costa ; beyond the discal series of spots a pale transverse subterminal line. Hind wing with the usual transverse subbasal and postdiscal bands ; the former whitish near the dorsal end, the latter narrow, sublunular, and margined on either side by a transverse series of broad patches in the interspaces, of a deeper black than the ground-colour. *Underside* deep purplish brown; the orange markings as on the upperside, but pinkish white, very slightly tinged with orange ; on the fore wing the discal series of spots is margined anteriorly on the outer side by a pale lilac line ; the subterminal line of the upperside replaced by a bluish-lilac line ; on the hind wing the costa at base, a diffuse streak below vein 7 and in base of cell, and discal and subterminal narrow transverse bands pale lilac-blue ; the subbasal band with two or three short lilac-blue streaks above its costal termination ; the postdiscal band diffuse. Antennæ, head, thorax and abdomen black ; beneath, the palpi, thorax and abdomen greyish.

Dry-season form.— ♂ ♀ *Upperside* : the orange markings much broader and paler. *Underside* : ground-colour brighter purplish brown, the markings more diffuse than in the wet-season form ; the discal and subterminal lilac-blue bands broader and more diffuse, the former zigzag.

Exp. ♂ ♀ 64–68 mm. (2·5–2·73″).

Hab. Sikhim ; Bhutan ; hills of Assam.

Race **nolana**, Druce.— ♂ ♀ This can be distinguished from the typical form by the much broader markings. On the upperside the discal spots on the fore wing are placed as in *N. miah*, but the middle spots are joined by an outward slender extension of spots in interspaces 3 and 4 ; on the hind wing the postdiscal band has the margins more or less sinuous, while on both fore and hind wings the subterminal line is orange-yellow, not pale brownish. *Underside* as in *N. miah*, but the markings broader, more neatly defined, and on the fore wing pale orange. On the hind wing the

subbasal band pale yellowish white, the postdiscal strongly suffused with pink.

Exp. ♂ ♀ 50–56 mm. (1·98–2·2″).

Hab. Upper Burma; Siam; Malay Peninsula.

356. **Neptis viraja** (Pl. IX, fig. 70), *Moore, P. Z. S.* 1872, p. 563, pl. 32, fig. 6 ♂; *de N. Butt. Ind.* ii, 1886, p. 86; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 351, larva; *Davidson, Bell & Aitken, ib.* x, 1896, p. 251, pl. 2, fig. 3, larva & pupa; *Moore* (Stabrobates), *Lep. Ind.* iv, 1899–1900, p. 23, pl. 298, figs. 1, 1 *a*–1 *d*, larva & pupa, ♂ ♀

♂ ♀ *Upperside* black; markings orange-yellow. Fore wing: discoidal streak very broad and long, descending a little below vein 4; a short broad band sloping obliquely outwards from middle of dorsum to beyond vein 3, another short broad and somewhat clavate band sloping obliquely outwards from apical third of costa to below vein 5; beyond these, a subterminal slender line. Hind wing: a subbasal, transverse, very broad, somewhat paler yellow band; a postdiscal slightly narrower transverse band, not quite reaching the costa, anteriorly attenuate, curved slightly inwards; a very faint and ill-defined pale subterminal line. *Underside* dusky brownish black, the markings as on the upperside but much blurred. Fore wing with two subterminal slender lines, the outer not clearly defined. Hind wing: the costa at base yellowish; discal and subterminal pale narrow bands. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen greyish white, the abdomen slightly ochraceous.

Exp. ♂ ♀ 56–68 mm. (2·2–2·73″).

Hab. Sikhim; Bhutan; Bengal; Orissa; S. India; Assam; Burma and Tenasserim.

There is very little difference between the sexes, or between the wet- and dry-seasonal broods; the latter are on the whole paler both in ground-colour and markings.

Larva. "Feeds on the blackwood tree (*Dalbergia latifolia*) and also on *Dalbergia racemosa*, and has similar habits to those of *N. hordonia*, Stoll, which it resembles in form, but the head is bifid at the top, and the dorsal points are wanting, while the last segment is produced into a single blunt point. The colour is dark greenish brown, the fore part, as in *N. hordonia*, being much darker than the rest, but bordered with pale grey." (*Davidson, Bell & Aitken.*)

Pupa. "Like that of *N. hordonia*, but rather broader and the wings more evenly expanded." (*Davidson, Bell & Aitken.*)

This form, as recorded by Mr. Bell, feeds, like *N. hordonia*, on decayed (not fresh) leaves.

357 **Neptis heliodore**, *Fabr.* (Papilio) *Ent. Syst.* iii, 1793, p. 130; *Moore* (Lasippa), *Lep. Ind.* iv, 1899–1900, p. 40, pl. 304, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Neptis tiga, *Moore, P. Z. S.* 1858, p. 4; *de N. Butt. Ind.* ii, 1886, p. 82.

Neptis dorelia, *Butler, Trans. Linn. Soc.*, ser. 2, *Zool.* i, 1879, p. 542, pl. 68, fig. 3.
Rahinda sattanga, *Moore, Trans. Ent. Soc.* 1881, p. 311 ♀; *de N.* (Neptis) *Butt. Ind.* ii, 1886, p. 83; *Moore* (Lasippa), *Lep. Ind.* iv, 1899–1900, p. 42, pl. 305, figs. 1, 1 *a*–1 *c*, ♂ ♀.
Neptis kuhasa, *de N. Butt. Ind.* ii, 1886, p. 84; *Moore* (Lasippa), *Lep. Ind.* iv, 1889–1900, p. 41, pl. 304, figs. 2, 2 *a*, ♂.

Dry-season form.— ♂ ♀ *Upperside* black, with very broad ochraceous orange markings as follow:—Fore wing: discoidal streak anteriorly thrice indented, the preapical indentation centred with an ochraceous wedge-shaped mark; a crescentic spot in the middle of the dorsum extending into interspace 1; a large obliquely placed spot in interspace 2 extending narrowly into interspace 3, and emarginate on the outer side; a large obliquely placed preapical irregular spot from below to interspace 4, a postdiscal continuous transverse series of triangular spots in the interspaces, and a narrow subterminal transverse line. Hind wing with the usual subbasal and postdiscal bands, and subterminal somewhat slender line. *Underside* similar, but the ground-colour dusky black, the markings much broader and slightly diffuse. Antennæ, head, thorax and abdomen black; beneath, the palpi and thorax greyish white, abdomen pale ochraceous.

Wet-season form.— ♂ ♀ *Upperside*: the markings of a deeper yellow and narrower; subterminal line on both fore and hind wing more distinct. *Underside* similar, the discoidal streak on the fore wing extending slightly below the cell; all the markings broader than on the upperside.

Exp. ♂ ♀ 44–52 mm. (1·74–2·05″).

Hab. Assam, Cachar; Upper and Lower Burma; Tenasserim; the Malayan Subregion to Borneo and Java.

Two slightly differentiated varieties of this insect have been described. *N. sattanga*, Moore, from Upper Burma, differs, according to Dr. Moore, in the paler yellow markings, but in neither the type specimen nor in others that I have examined is this difference appreciable. Further, the subterminal line on the upperside of the hind wing is said to be grey not ochraceous. In the type it is certainly obscure, but very pale ochraceous in certain lights. *N. kuhasa*, de Nicéville, from Cachar, is said to differ from *N. sattanga* in the width of the ochraceous-yellow subterminal band on the hind wing, but this is a variable character.

Genus **RAHINDA**.

Rahinda, *Moore, Lep. Ceyl.* i, 1881, p. 56: *id. Lep. Ind.* iv, 1899–1900, p. 29.

Type, *R. hordonia*, Stoll, from India.

Range. The Indo-Malayan Region; China.

♂ ♀ Fore wing: costa arched; apex bluntly angular; termen slightly concave in the middle; tornus truncate; dorsum slightly

sinuous; cell open; upper and middle discocellulars subequal, very short; vein 10 out of 7 well beyond base of latter, 11 out of subcostal, free. Hind wing: costa arched; apex distinct; termen arched and in the typical form scalloped; dorsum arched; tornus rounded; cell open. Antennæ slender; club long, narrow, gradual; palpi as in *Neptis*, with lax loose scales and long porrect hairs; eyes naked. Male sex-mark large patches of specialized dark scales on the costal margin of the upperside of the hind wing and on the dorsal margin of the underside of the fore wing where the two wings overlap each other.

Key to the forms of Rahinda.

a. Upperside hind wing: subbasal and postdiscal bands not coalescing along dorsal margin.
  a' Underside irrorated with numerous transverse short brown striæ.
    a^2. Upperside hind wing: subbasal band ochraceous orange.
      a^3. Upperside fore wing: outer margin of both anterior and posterior portions of discal markings evenly curved .. . *R. hordonia*, p. 344.
      b^3. Upperside fore wing; outer margin of both anterior and posterior portions of discal markings not evenly curved, sinuous... . . .. Race *sinuata*, p. 346.
    b^2. Upperside hind wing: subbasal band white . .. . *R. cnacalis*, p. 346.
  b' Underside not irrorated with transverse striæ.
    a^2. Upperside fore wing: subterminal transverse line forming two wide curves *R. paraka*, p. 346.
    b^2. Upperside fore wing: subterminal transverse line parallel to terminal margin, interrupted in middle, but not curved . *R. aurelia*, p. 347.
b. Upperside hind wing: subbasal and postdiscal bands coalescing along dorsal margin *R. assamica*, p. 347.

358. **Rahinda hordonia** (Pl. IX, fig. 71), *Stoll* (Papilio), *Cramer's Pap. Exot. Suppl.* 1791, pl. 33, figs. 4, 4 D; *de N.* (Neptis) *Butt. Ind.* ii, 1886, p. 78; *Davidson, Bell & Aitken* (Neptis), *Jour. Bomb. Nat. Hist. Soc.* x, 1896, p. 250, pl. 2, figs. 1, 1 *a*, 1 *b*, larva & pupa; *Moore, Lep. Ind.* iv, 1899-1900, p. 30, pl. 300, figs. 1, 1 *a*–1 *f*, larva & pupa, ♂ ♀.

Neptis plagiosa, *Moore, P. Z. S.* 1878, p. 830; *de N. Butt. Ind.* ii, 1886, p. 79.

Race sinuata.

Neptis sinuata, *Moore, P. Z. S.* 1879, p. 136; *de N. Butt. Ind.* ii, 1886, p. 79; *Moore* (Rahinda), *Lep. Ceyl.* i, 1881, p. 56, pl. 28, figs. 3, 3 *a*; *id.* (Rahinda) *Lep. Ind.* iv, 1899–1900, p. 33, pl. 301, figs. 1, 1 *a*, ♂ ♀

Wet-season form.— ♂ ♀ *Upperside* black with orange markings. Fore wing: discoidal streak broad, anteriorly twice indented, at apex extending into base of interspace 3; posterior discal spots

coalescent, forming an irregular oblique short broad band; anterior spots also coalescent, oblique from costa; a postdiscal obscure grey bicurved transverse line, and a very slender, also obscure, orange transverse subterminal line. Hind wing: a subbasal transverse broad band, and a much narrower postdiscal band curved inwards at the ends; beyond this the black terminal margin is traversed by a still blacker subterminal line. *Underside* chestnut-brown, covered with short, slender, transverse brown striæ on the margin of the orange markings, which are similar to those on the upperside but broader, paler, and less clearly defined. Fore wing: the pale transverse postdiscal and orange subterminal lines of the upperside replaced by a postdiscal lilacine narrow band, defined by somewhat crenulate chestnut-brown lines on each side, and a pale subterminal line. Hind wing: the base suffused with lilacine; the subbasal and postdiscal bands bordered outwardly by narrow lilacine bands, the orange-yellow of the postdiscal band much obscured by the transverse brown striæ; the terminal margin with a sinuous obscure broad lilacine line. Antennæ, head, thorax and abdomen black; beneath, the palpi and thorax greyish, abdomen ochraceous.

Dry-season form.— ♂ ♀ Similar to the wet-season form, but the markings very much broader; on the upperside of the fore wing the postdiscal line generally and the subterminal line always clearly defined, the former sometimes like the latter, orange-yellow. *Underside* paler, the markings more blurred, the transverse short brown striæ in many specimens covering nearly the whole surface of the wings.

Exp. ♂ ♀ 38–54 mm. (1·5–2·13″).

Hab. Continental India, from the Himalayas to Travancore; Assam; Burma; Tenasserim, extending into the Malayan Subregion.

Larva. "Has two forms. In the first the head is large and roughly triangular, the segments of the body increase to the fourth and then diminish gradually, and the third, fourth, sixth and twelfth have each two obtuse dorsal points. The fore part from the fourth segment is generally inclined downwards at an angle with the rest of the body and is with the underparts of a dark greenish-brown colour. The rest is just that shade of greenish-grey which the leaves assume when withered, and is crossed by diagonal dark bands exactly representing the spaces between the leaflets as a painter would paint them—a most perfect disguise. The second form of the larva differs in having the head furcate, while the dorsal points are replaced by long spine-like processes. The figure will give a better idea of the difference than any description. The butterfly resulting from the larva with spines has a light male-mark; that resulting from the other a dark male-mark. The two forms of larva are never found together; the smooth type of caterpillar is often found in quantities on one bush the smooth caterpillar feeds on *Acacia* and *Albizzia*, the spined one has never been found on any plant but *Acacia*." (*Davidson, Bell & Aitken.*)

Race sinuata, Moore.—This is a slightly differentiated insular race. It differs constantly from the typical form in the margins of the discal markings (especially the outer margins) on the upperside of the fore wing and the margins of the subbasal and postdiscal bands of the hind wing being more sinuous.

Fig. 63.—*Rahinda hordonia*, Stoll. Race *sinuata*.

Exp. ♂ ♀ 44–56 mm. (1·77–2·2″).

Hab. Ceylon.

359. **Rahinda cnacalis** (Pl. IX. fig. 72), *Hewitson* (Neptis), *A. M. N. H.* (4) xiv, 1874, p. 357; *de N.* (Neptis) *Butt. Ind.* ii, 1886, p. 78; *Moore, Lep. Ind.* iv, 1899–1900, p. 33, pl. 301, figs. 2, 2 *a*–2 *e*, ♂ ♀

Closely resembles *R. hordonia*, Stoll, in both seasonal forms; the most striking point of difference is the conspicuous white instead of ochraceous subbasal band on the upperside of the hind wing.

♂ ♀ *Upperside*: the sinuous transverse postdiscal and subterminal grey lines in the fore wing more distinct; the postdiscal ochraceous band in the hind wing much narrower. *Underside*: ground-colour darker; the transverse short dark striæ more numerous; the ochraceous and white markings of the upperside replaced by pinkish-white, similar but broader and more diffuse markings, the discoidal streak on the fore wing only slightly ochraceous; the terminal half of the hind wing suffused with purplish over the dark markings and more closely set with transverse dark striæ. Antennæ, head, thorax and abdomen as in *R. hordonia*. In the dry-season form the ochraceous and white markings on the upperside are broader; between the postdiscal and subterminal transverse grey lines is a more or less distinct transverse ochraceous line; the postdiscal band on the hind wing slightly broader, sinuous, and more sharply defined. *Underside* similar to that in the wet-season form, but the short transverse dark striæ more numerous, as they are in the dry-season form of *R. hordonia*.

Exp. ♂ ♀ 41–52 mm. (1·62–2·04″).

Hab. The Andamans and Nicobars.

360. **Rahinda paraka**, *Butler* (Neptis), *Trans. Linn. Soc.* ser. 2, *Zool.* i, 1879, p. 542, pl. 68, fig. 2; *de N.* (Neptis) *Butt. Ind.* ii, 1886, p. 80; *Moore, Lep. Ind.* iv, 1899–1900, p. 36, pl. 302, figs. 2, 2 *a*–2 *d*, ♂ ♀.

Neptis dindinga, *Butler, Trans. Linn. Soc.* ser. 2, *Zool.* i, 1879, p. 542, pl. 68, fig. 6; *de N. Butt. Ind.* ii, 1886, p. 80; *Moore* (Rahinda), *Lep. Ind.* iv, 1899–1900, p. 38, pl. 203, figs. 2, 2 *a*–2 *e*, ♂ ♀.

Dry-season form.— ♂ ♀ *Upperside* dusky fuliginous black with very broad ochraceous-yellow markings. Fore wing: discoidal

streak very broad, indented anteriorly, posteriorly descending below median vein and vein 4; discal markings also remarkably broad, those on the posterior portion of the wing sometimes confluent with the discoidal streak; beyond this three slender bisinuate ochraceous transverse lines, sometimes ill-defined. Hind wing with a very broad subbasal, and a much narrower postdiscal transverse band; the dusky black termen traversed by a very slender ill-defined ochraceous transverse line. *Underside* pale ochraceous yellow; the intervening spaces of the black ground-colour of the upperside replaced by somewhat diffuse pale brownish markings defined by darker lines, a few dark brown specks in cellular areas and below costa of both fore and hind wing. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen pale ochraceous white.

Wet-season form.— ♂ ♀ Similar, but the markings on the upperside of a slightly deeper shade of ochraceous yellow, distinctly narrower; the three transverse ochraceous slender lines on the termen of fore wing more clearly defined. *Underside*: the pale brownish markings as in the dry-season form but somewhat broader.

Exp. ♂ ♀ 44–50 mm. (1·74–1·98″).

Hab. The hills of Assam, Burma, and Tenasserim, extending to the Malay Peninsula.

Var. *dindinga*, Butler, is larger, with the markings more neatly defined; the fore wing on the upperside with the transverse lines crossing the termen generally greyish.

361. **Rahinda aurelia**, *Staudinger. Exot. Schmett.* 1886, p. 145; *de Nicéville, Jour. Bomb. N. H. Soc.* x, 1895, p. 24, pl. S, fig. 15 ♀.

♂ ♀ Closely resembles *R. peraka*, Butler; but on the upperside the orange markings are of a deeper darker shade and narrower even than in the wet-season specimens of that form. *Upperside.* Fore wing: the discal markings more macular, the spots well divided from one another; subterminal line parallel to the terminal margin broad, slightly interrupted at vein 4, not forming two wide arches as they do in *R. peraka.* Hind wing: the subbasal line narrow and straight; the subterminal line very distinct. *Underside*: the markings as on the upperside but broader; on the hind wing slightly suffused with violaceous pink; the interspaces of ground-colour dusky black, somewhat mottled.

Exp. ♂ ♀ 40–50 mm. (1·59–1·98″).

Hab. Assam; Burma; Tenasserim; extending to the Malayan Subregion.

362. **Rahinda assamica**, *Moore, Trans. Ent. Soc.* 1881, p. 311 ♂; *de N.* (Neptis) *Butt. Ind.* ii, 1886, p. 80; *Moore, Lep. Ind.* iv, 1889–1900, p. 37, pl. 303, figs. 1, 1 *a*, ♂.

♂ *Upperside* black with rich orange markings. Fore wing

discoidal streak very broad, extending above into interspace 5 and below into interspace 3; discal markings very broad, the spots composing the upper and lower portions respectively connate among themselves, the lower portion constricted in the middle; a complete narrow transverse subterminal line. Hind wing: subbasal and postdiscal bands remarkably broad, meeting and coalescing along the dorsal margin, a subterminal line as on the fore wing. *Underside* dull ochraceous orange, with the following obscure dusky-black markings:—Fore wing: a narrow band along the costa to about the middle, an oblique band from thence to near apex of interspace 3, meeting another similar band from middle of vein 1, and a subterminal slender line. Hind wing: subbasal and discal straight bands, the latter extended to the dorsum. Fore and hind wings with the margin narrowly shaded with dusky black. Antennæ, head, thorax and abdomen black; beneath, the palpi and thorax bluish grey, abdomen touched with ochraceous.

Exp. ♂ 43 mm. (1·7″).

Hab. Recorded from Assam.

Genus **CYRESTIS.**

Cyrestis, *Boisduval, Voy. Astrolabe*, 1832, p. 117; *de N. Butt. Ind.* ii, 1886, p. 248; *Distant, Rhop. Malay.* 1883, p. 139; *Moore, Lep. Ind.* iv, 1899-1900, p. 46.

Apisithra, *Moore, Lep. Ind.* iv, 1899, p. 58.

Type, *C. thyoneus*, Cramer, from Europe.

Range. Indo- and Austro-Malayan Regions, and westwards to Africa.

♂ ♀ Typically the fore wing is very broadly triangular, the costa slightly arched, the apex obtusely pointed, the termen straight, the tornus truncate, the dorsum slightly sinuous; the cell short, not half the length of the wing, very slenderly closed (in the cleared wing the lower discocellular is just visible); veins 4 and 5 from lower apex of cell; veins 6 and 7 almost from a point, 8 and 9 out of 7, 10 and 11 free. Hind wing irregularly subtriangular, the costa very slightly arched; apex truncate, in some forms rounded; termen more or less scalloped, produced at vein 4 into a tail; tornus elongate, produced into a broad lobe; dorsum nearly straight, apical half bi-emarginate near tornal angle; cell very short, slenderly closed; veins 3 and 4 shortly stalked, from lower apex of cell, 6 and 7 closely approximate. Body slender; antennæ about half the length of fore wing, club gradual; palpi long, subporrect, third joint long; eyes naked; legs slender.

Key to the forms of Cyrestis.

a. Apex of hind wing abruptly truncate.

a'. Ground-colour on upperside rich dark ochraceous. . . . . *C. tabula*, p. 349.

b'. Ground-colour on upperside white or very pale ochraceous white.

a^2. Terminal margin and apex of fore wing narrowly black.
a^3. Terminal margin of hind wing ochraceous on tornal lobe and below tail only . . . *C. thyodamas*, [p. 349.
b^3. Terminal margin of hind wing entirely ochraceous . . . . . Race *andamanica*, [p. 351.
b^2. Terminal margin and apex of fore wing broadly black . . . . *C. nivea*, p. 351.
b. Apex of hind wing rounded.
a'. Apex and terminal margins of both fore and hind wing concolorous with bases of wings, not black . . . . . *C. cocles*, p. 352.
b'. Apex and terminal margins of both fore and hind wing broadly black, in strong contrast to ground-colour at bases of wings *C. periander*, [p. 353.

363. **Cyrestis tabula**, *de Nicéville, Jour. A. S. B.* 1883, p. 1, pl. 1, fig. 1 ♂; *id. Butt. Ind.* ii, 1886, p. 253; *Moore, Lep. Ind.* iv, 1899–1900, p. 52, pl. 307, figs. 2, 2 *a*, ♂.

♂ ♀ *Upperside* rich dark ochraceous. Fore and hind wings crossed by a subbasal, a median and two discal transverse somewhat sinuous black lines, the inner discal line bent outwards at vein 4 on the fore wing; both discal lines, the outer especially, more or less lunular; cell of fore wing with two short basal, a subapical and two outwardly curved postapical additional black lines; beyond the discal lines a transverse series of ochraceous-white spots inwardly margined by a series of black lunules; terminal margins of both fore and hind wings broadly dusky black, traversed by somewhat indistinct subterminal and terminal blacker lines. Hind wing with a large subcostal and an apical ochraceous-white spot; tornal lobe with a blue spot and two or three white specks. *Underside* very pale ochraceous yellow; markings similar to those on the upperside but more clearly defined, those on the terminal margin of the fore wing somewhat obsolescent; the broad terminal dusky-black border on both fore and hind wing absent. Antennæ dark brown tipped with ochraceous; head, thorax and abdomen bright ochraceous, the latter two striped longitudinally with black.

Exp. ♂ ♀ 64–68 mm. (2·53–2·7″).

Hab. The Nicobars.

Mr. Gilbert Rogers, of the Indian Forest Department, has kindly sent me a series of this form. The females are of the same ochraceous tint above as the males but are paler on the underside.

364. **Cyrestis thyodamas**, *Boisduval, Cuv. Règ. Anim., Ins.* ii, 1836, pl. 138, fig. 4; *de N. Butt. Ind.* ii, 1886, p. 251; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 351; *Mackinnon & de Nicéville, Jour. Bomb. N. H. Soc.* xi, 1898, p. 376, pl. U, figs. 11, 11 *a*–11 *d*, larva & pupa; *Moore, Lep. Ind.* iv, 1899–1900, p. 48, pl. 306, figs. 1, 1 *a*–1 *c*, larva & pupa, ♂ ♀.

Race andamanica.

Cyrestis thyodamus, var. andamanica, *Wood-Mason & de Nicéville, J. A. S. B.* 1881, p. 246.

Cyrestis andamanica, *Moore, Lep. Ind.* iv, 1899–1900, p. 51, pl. 306, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ *Upperside* white, in many specimens pale ochraceous yellow, veins black. Fore wing with four very slender irregularly sinuous transverse black lines, the costal margin shaded with ochraceous at base and fuscous beyond; cell crossed by three or four additional fine short lines; a postdiscal very incomplete series of white-centred broad fuscous rings in the interspaces, tinged with ochraceous near the tornus and broadly interrupted in interspaces 3 and 4; beyond this two transverse black lines not reaching the dorsal margin, shaded with fuscous between; the apex broadly and the termen also shaded with fuscous. Hind wing with three transverse fine lines; a pair of postdiscal broad black lines shaded with light sepia-brown between, forming a conspicuous band, the outer line broken and incomplete, followed by two irregular fine black lines, a subterminal more pronounced black line, and posteriorly a narrow black terminal margin; dorsal margin broadly fuscous at base; apical half and the tornal area and lobe rich ochraceous, with some sepia-brown and black markings. *Underside* similar, the markings of the upperside showing through by transparency; the ochraceous shading on dorsum and tornal area on hind wing of less extent, but the tornal lobe darker ochraceous with a central large round black spot. The markings both on upper and under sides vary a little in depth of colour and breadth. In many specimens there is a diffuse fuscous spot between the discal pair of transverse fine lines on fore wing. Antennæ, head, thorax and abdomen above black, thorax and abdomen with lateral greyish longitudinal stripes; beneath white. Body of the ♀ paler than that of the ♂

Exp. ♂ ♀ 58–70 mm. (2·3–2·75″).

Hab. Continental India generally, from the Himalayas to Travancore, in the hills, avoiding the hot dry plains of Northern and Central India; Assam; Burma; Tenasserim; extending to China and Japan.

Larva & pupa. "Mr. Bell noticed a ♀ on the 10th October depositing its eggs on the tenderest leaves and buds of a banian tree (*Ficus indica*) and secured six, of which two were reared. The eggs were curious and beautiful, high domed-shaped or almost conical, with an aperture at the top fitted with a deeply dentate flat cap like a cogged wheel. The larva escaped by raising this and did not eat the shell. The larva was unlike any other that we have ever seen, slender, cylindrical and smooth; with two long curved divergent filaments or soft horns on the head, a single stouter sword-shaped one on the back at the 5th or 6th segment curved backwards and serrated on its inner edge, and another on the last segment curved forwards and serrated on its outer edge. The colour was a fine reddish brown with a broad green band on the side from the 5th to the last segment. Pupa suspended by the

tail, very much compressed, with a dorsal ridge from head to tail, high and obtusely pointed in the middle, the palpi-cases united and produced into a long somewhat recurved snout; colour brown with fine dark striæ." (*Davidson & Aitken.*)

Race **andamanica**, W.-M. & de N.— ♂ ♀ Very closely resembles the typical form; the dark markings, however, are as a rule heavier and more pronounced, but in this some specimens from the Anaimalai hills approximate very closely to the lighter coloured Andaman individuals. One constant point of difference, however, seems to be the large amount of rich ochraceous colour on the upperside of the hind wing posteriorly. The costal margin and the postdiscal series of rings on the fore wing are also strongly tinged with ochraceous.

Exp. As in the typical form.

Hab. The Andamans. Apparently common at Port Blair.

365. **Cyrestis nivea**, *Zinken-Sommer* (Amathusia), *Nova Acta Acad. Leop.-Car.* 1831, p. 138, pl. 14, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 252.

Cyrestis nivalis, *Felder, Novara Reise, Lep. Rhop.* 1886, p. 414; *Moore, Lep. Ind.* iv, 1899–1900, p. 51, pl. 307, figs. 1, 1 *a*, ♂.

♂ ♀ *Upperside* pure white; markings resembling those on *C. thyodamas*. Fore wing: costal margin for about half its length dusky black, bordered on the extreme margin at the base with ochraceous; cell crossed by four slender black lines, the innermost but one continued to the dorsal margin; beyond the cell the disc crossed by three irregular slender black lines from costa to dorsum, the outermost widening posteriorly, where it is succeeded by a large ochraceous spot, bearing in the middle two minute black dots, at the tornal angle; apex and termen broadly dusky black, traversed by four or five very slender sinuous greyish-white transverse lines; the inner two form subapically an irregular triangle. Hind wing crossed by four slender, sinuous, parallel black lines, a broader black line parallel to the dorsal margin, a postdiscal black band traversed by a medial greyish line, succeeded by a slender, black, slightly curved line, a short somewhat oblique broader transverse streak, and a subterminal black line, broadening below vein 4. Apex narrowly and tail and margin for a short distance below it black, the apical half of the dorsal margin and tornal lobes rich ochraceous, this colour continued along the terminal margin to vein 4, within the black markings on the tail and termen posterior to latter. Tornal lobes with one or two black spots. *Underside* white, very similar, the black and ochraceous markings of the upperside

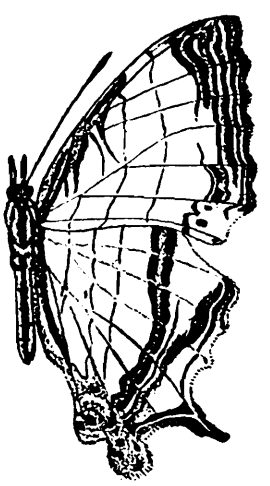

Fig. 64.
Cyrestis nivea. ½.

showing through by transparency. Antennæ black, head, thorax and abdomen black above; thorax and abdomen with greyish lateral stripes; beneath white.

Exp. ♂ ♀ 48–66 mm. (1·95–2·6″).

Hab. Burma; Tenasserim; the Malayan Subregion to Java.

The Javan form is typical *nivea*, the markings being somewhat broader and heavier, especially along the costal margin, than in the Indian form which Felder separated as *nivalis*.

366. **Cyrestis cocles**, *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 7; *de N. Butt. Ind.* ii, 1886, p. 254, pl. 23, fig. 107 ♂; *Moore* (Apisithra), *Lep. Ind.* iv, 1899–1900, p. 58, pl. 308, figs. 1, 1 *a*–1 *e*, ♂ ♀
Cyrestis cocles, var. andamanica, *W.-M. & de N. J. A. S. B.* 1881, p. 246.

Wet-season form.— ♂ ♀ *Upperside*: fore and hind wings with a transverse broad white median band, its outer margin straight, its inner margin highly sinuous; the basal and terminal portions of the wings on the inner side of the white band up to the base and on the outer side to the termen more or less greyish brown, traversed by slender sinuous black lines and broader ochraceous-brown lines, the black lines outwardly very narrowly margined with white; the subterminal slender black line on both fore and hind wing very conspicuous, and within it a transverse postdiscal series of obscure dusky-centred greyish irregular ocelli; the termen narrowly greyish; cilia white. *Underside* pearly white with a faint pinkish or pale lilac tinge, the markings of the upperside more or less faintly seen through by transparency; the transverse postdiscal line of greyish ocelli the most prominent, often centred with black. Antennæ dull brown, head, thorax and abdomen pale greyish brown, the latter two with white lateral longitudinal bands; beneath white.

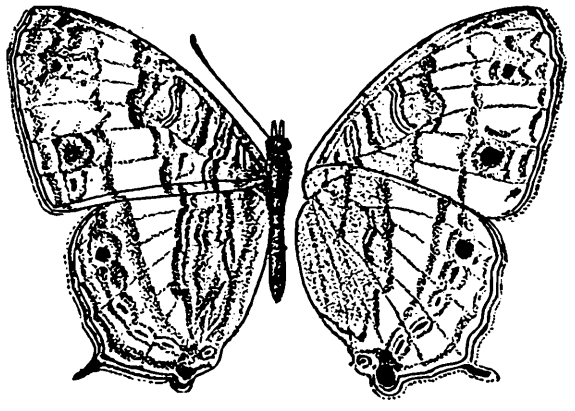

Fig. 65.—*Cyrestis cocles.* ½.

Dry-season form.— ♂ ♀ *Upperside* very much paler; in many specimens fading entirely to creamy white without any grey markings, except the slender transverse black lines and the line of postdiscal ocelli, which are always more or less present. *Underside* white, without any pink or pale lilac tint; the markings more faint, but as on the upperside.

Exp. ♂ ♀ 64–70 mm. (2·53–2·75″).

Hab. Sikhim southwards to Orissa in Bengal, and eastwards to Assam, Burma and Tenasserim; the Andamans; Malay Peninsula.

Var. *andamanica*, W.-M. & de N., is, as a rule, more ochraceous

than pale grey, and the markings are less blurred. Many Sikhim specimens, however, are very similar to the pale Andaman form.

367. **Cyrestis periander**, *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 9; *de N. Butt. Ind.* ii, 1886, p. 255; *Moore* (Apsithra), *Lep. Ind.* iv, 1899-1900, p. 61, pl. 308, figs. 2, 2 *a*, ♂ ♀.

Upperside white, often more or less irrorated with dusky scales, especially towards the bases of the wings; fore and hind wings crossed by transverse narrow interrupted bands of ochraceous yellow, four across the cell of the fore wing, of which the basal, preapical and apical are short, not continued to the dorsum; a broader posterior postdiscal transverse ochraceous band on the hind wing not extending beyond vein 6; apex of fore and termen broadly of both fore and hind wings dull blackish, traversed by a series of more or less hastate jet-black spots, which on the fore wing are minute, placed on the dull blackish margin, and on the hind wing larger, bordering the black margin; outwardly circled by very slender black lunules; fore and hind wings with a prominent subterminal black line bordered on either side very narrowly with white, tornal lobe often bluish. *Underside* pearly white with a pink tinge; markings as on the upperside, but more dull and faint. Antennæ ochraceous brown; head, thorax and abdomen dusky white.

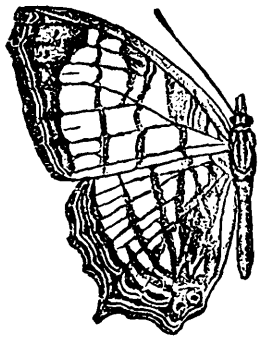

Fig. 66.
Cyrestis periander. ♀.

Exp. ♂ ♀ 48–54 mm. (1·9–2·12″).

Hab. Tenasserim and Siam, spreading through the Malayan Subregion to Java.

Genus **CHERSONESIA.**

Cyrestis, pt., *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 260; *de N. Butt. Ind.* ii, 1886, p. 248.
Chersonesia, *Dist. Rhop. Malay.* 1883, p. 142.

Type, *C. risa*, Doubleday, from India.

Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa arched, apex obtusely pointed, termen straight or convex, tornus angular obtuse, dorsum slightly bisinuate; cell short, about one-third length of wing; upper discocellular minute, middle about one-third length of lower, lower slightly curved outwards below; middle and lower discocellulars in a straight line inclined slightly inwards; veins 3 and 4 stalked, well beyond lower apex of cell, 10 out of 7, 11 free. Hind wing irregularly subtriangular; costa slightly arched, apex truncate; termen slightly curved, dentate at apex of vein 4; tornus lobed, but not so elongate as in *Cyrestis*; dorsum convex above lobe; cell

very short, about a quarter the length of the wings; veins 3 and 4 shortly stalked beyond lower apex of cell; veins 5, 6 and 7 approximate at base, 8 bent strongly upwards near base of wing. Body slender; antennæ longer than half length of fore wing, club long, slender; palpi, eyes and legs as in *Cyrestis*.

Key to the forms of Chersonesia.

a. Terminal margin of fore wing straight.
  a'. Inner postdiscal transverse line on fore wing straight . . . . . *C. risa*, p. 354.
  b' Inner postdiscal transverse line on fore wing bisinuous . . . . . Race *rahria*, p. 354.
b. Terminal margin of fore wing conspicuously convex . . . . . *C. peraka*, p. 355.

368. **Chersonesia risa**, *Doubleday* (Cyrestis), *in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1850, p. 262, pl. 32, fig. 4; *Distant, Rhop. Malay.* 1883, p. 142; *de N.* (Cyrestis) *Butt. Ind.* 1886, p. 256; *Moore, Lep. Ind.* iv, 1899–1900, p. 55, pl. 317, figs. 3, 3 *a*, 3 *b*, ♂ ♀

Race rahria.

Cyrestis rahria, *Moore, Cat. Lep. Mus. E. I. C.* 1857, p. 147, pl. 3 *a*, fig. 2 ♀; *Dist. Rhop. Malay.* 1883, p. 142; *de N. Butt. Ind.* ii, 1886, p. 256.

Chersonesia rahroides, *Moore, Lep. Ind.* iv, 1899-1900, p. 56, pl. 307, figs. 4, 4 *a*.

♂ ♀ *Upperside*: from a rich dark reddish ochraceous to a much paler shade of the same colour. Fore and hind wings crossed transversely by the following slender black lines more or less parallel to the body: a basal and subbasal pair, a discal single line, a postdiscal pair of lines, and a subterminal line. The interspace between the basal and subbasal pair of lines irrorated with dusky scales; the postdiscal pair convergent posteriorly, the interspace between them traversed medially by an irregular black fascia broken and interrupted on the fore wing; on the hind wing there is, in addition, an obliquely-placed, diffuse dusky-bluish fascia from apex to tornus, the tornal lobe and angle with a diffuse bluish spot and two minute black specks above it. *Underside* slightly paler, the black markings as on the upperside. Antennæ ochraceous brown annulated with white; head, thorax and abdomen ochraceous; the latter two with dark lateral stripes; beneath much paler ochraceous.

The ground-colour in many specimens is a much paler ochraceous yellow, with the markings darker ochraceous, not black. A series of dated specimens would probably show them to be the dry-season form.

Exp. ♂ ♀ 40–48 mm. (1·6–1·9″).

Hab. The Himalayas, Kumaun to Sikhim; Bhutan; Assam; Burma; Tenasserim.

Race rahria, Moore.— ♂ ♀ Very closely resembles the typical

form. Differs as follows: the discal single line crossing the wings very much broader, forming a diffuse fascia sometimes not black but of a darker ochraceous than the ground-colour; the inner of the pair of postdiscal lines always bisinuate on the fore wing; on the hind wing this pair sometimes form a loop near the tornal angle, the intermediate black fascia or line between this postdiscal pair of lines in many specimens not continuous on the hind wing, but broken into short streaks or lines between the veins.

Exp. ♂ ♀ as in the typical form.

Hab. Burma; Tenasserim; the Malayan Subregion to Borneo.

369. **Chersonesia peraka**, *Distant, A. M. N. H.* (5) xiv, 1884, p. 199; *id. Rhop. Malay.* 1884, p. 443, pl. 40, fig. 6; *de N.* (Cyrestis) *Butt. Ind.* ii, 1886, p. 257, footnote; *Moore, Lep. Ind.* iv, 1899–1900, p. 57.

♂ ♀ Closely allied to *C. rahria*, but the terminal margins of both fore and hind wings are very much more convex, the short tail at vein 4 on hind wing scarcely indicated, and there is apparently no tornal lobe on the hind wing. *Upperside* ochraceous. Fore and hind wings crossed by the following transverse fasciæ and lines: broad basal, subbasal and discal dusky-black fasciæ, the discal fascia with its outer margin diffuse, and a medial line of the ochraceous ground-colour showing through; two faint postdiscal black lines, the inner irregularly sinuous on the fore wing, the space between them traversed by a narrow black fascia broken into short streaks between the veins; terminal margins somewhat broadly dusky black. *Underside* much paler; markings similar to those on the upperside but much less distinct. Antennæ ochraceous annulated with white; head, thorax and abdomen ochraceous with lateral paler stripes; beneath whitish.

Exp. ♂ ♀ 28–36 mm. (1·10–1·4″).

Hab. Tenasserim; Malay Peninsula.

Genus **JUNONIA.**

Junonia, *Hübner, Verz. bek. Schmett.* 1816, p. 34; *Moore, Lep. Ceyl.* i, 1880, p. 40; *de N. Butt. Ind.* ii, 1886, p. 65; *Moore, Lep. Ind.* iv, 1899–1900, p. 62.

Precis, *Moore* (*nec Hübner*), *Lep. Ceyl.* i, 1880, p. 39; *de N. Butt. Ind.* ii, 1886, p. 63.

Type, *J. lavinia*, Cramer, from America.

Range. Neotropical, Ethiopian, Indo- and Austro-Malayan, and Oceanic Regions.

♂ ♀ Fore wing: costa moderately arched, apex bluntly angular; termen to a little below vein 6 straight, outwardly oblique, then angulate (in the dry-season forms acutely angulate), and below strongly concave to vein 2, thence inwardly oblique; tornus rounded; dorsum straight; cell to upper apex less than

half length of wing; lower discocellular absent; cell open; vein 6 closely approximate at base to vein 7, 10 and 11 free. Hind wing: costa widely arched, apex rounded; termen arched and slightly scalloped; tornus produced, acutely angulated, especially in the dry-season forms; cell open; distance at base of veins 6 and 7 about half that between 7 and 8. Antennæ about half length of fore wing, club more or less abrupt, flattened; palpi subporrect, broad in front, second joint gradually incrassate, third joint short, acute.

The forms in this genus are very variable. Seasonal polymorphism is very prevalent among them, and individual aberrations not uncommon. One such aberration of *J. iphita* has been described by Möschler, Stett. ent. Zeit. 1872, p. 337, under the name *Precis hopfferi*.

Key to the forms of Junonia.

a. Upperside ground-colour brown.	
a' Fore wing without yellow spots or discal band on upperside	*J. iphita*, p. 356.
b'. Fore wing with yellow spots or a whitish discal band on upperside.	
a^2. Fore wing with yellow spots on upperside	*J. lemonias*, p. 357.
b^2. Fore wing with an oblique whitish short discal band on upperside	*J. orithya* ♀, p. 358.
b. Upperside ground-colour yellow.	*J. hierta*, p. 360.
c. Upperside ground-colour: fore wing black, hind wing blue	*J. orithya* ♂, p. 358.
d. Upperside ground-colour pale lavender-grey or brown.	*J. atlites*, p. 359.
e. Upperside ground-colour rich orange-yellow.	*J. almana*, p. 361.

370. **Junonia iphita**, *Cramer* (Papilio), *Pap. Exot.* iii, 1779, pl. 209, figs. C, D; *Butler, Cat. Fab. Lep. Brit. Mus.* 1869, p. 76; *Moore* (Precis), *Lep. Ceyl.* i, 1881, p. 39, pl. 21, figs. 1, 1 *a*, 1 *b*; *de N.* (Precis) *Butt. Ind.* ii, 1886, p. 63, pl. 19, fig. 84 ♂; *Davidson & Aitken* (Precis), *Jour. Bomb. N. H. Soc.* 1890, p. 271; *Moore, Lep. Ind.* iv, 1899–1900, p. 64, pl. 309, figs. 1, 1 *a*–1 *e*, ♂ ♀.

♂ ♀ *Upperside* brown of varying depths of colour. Fore wing: cell with one pair of subbasal and one pair of apical transverse sinuous fasciæ, the outermost defining the discocellulars; a short, broad, dark, oblique fascia beyond to vein 4, its inner margin diffuse, its outer sinuous but sharply defined; below vein 4 a sinuous, transverse, more faint fascia, followed by a discal blackish fascia, very broad and diffuse, below costa, bordered by a row of faint ocelli, and a postdiscal and a subterminal similar fascia following the outline of the termen. Hind wing with a slender blackish loop near apex of cellular area; a broad inwardly diffuse, outwardly well-defined short discal fascia in continuation of the one on the fore wing; a series of postdiscal somewhat ochraceous ocelli with black pupils minutely centred with white;

postdiscal and subterminal broad lines as on the fore wing. *Underside* brown, with very broad darker brown transverse fasciæ, the interspaces between the markings irrorated with purplish silvery scales. Fore wing with two sinuous fasciæ on basal half succeeded by a discal fascia, very broad at the costal margin and decreasing in width to the dorsum, bearing on its outer border a row of obscure ocelli. This is succeeded by a zigzag dark line, and sinuous subterminal and terminal lines; apex and tornal area suffused with purplish silvery. Hind wing: two irregular, very broad, dark brown, curved short fasciæ near base; a straight, transverse, prominent, narrow ochreous-brown discal band defined outwardly by a black line; a transverse postdiscal dark brown fascia, widest in the middle and bearing outwardly a curved row of ochreous-brown white-centred ocelli, followed by a zigzag dark line in continuation of the one on the fore wing; a subterminal somewhat diffuse dark fascia and a terminal dark line. Antennæ, head, thorax and abdomen dark brown.

Exp. ♂ ♀ 56–77 mm. (2·2–3″).

Hab. More or less throughout our limits and extending to China and Sumatra.

The ground-colour and even the markings vary very much, some specimens being almost ochreous brown, the ocelli often ochreous-ringed on the underside; the transverse discal fascia on hind wing often with one or two subcostal white spots.

Larva. "Cylindrical, slightly pubescent and armed with nine longitudinal rows of many-branched spines, except on the head which is clothed with short bristles. Colour dark dull brown." (*Davidson & Aitken.*)

Pupa "is regular, with three or five dorsal rows of small tubercular points, hung perpendicularly. Colour smoky brown." (*Davidson & Aitken.*)

Food-plant, *Strobilanthus.*

371. **Junonia lemonias**, *Linn.* (Papilio) *Syst. Nat.* ed. x, 1758, p. 473; *Doubleday, in Dbldy., Westw. & Hew. Gen. Di. Lep.* p. 208; *Moore, Lep. Ceyl.* i. 1881, p. 41, pl. 21, figs. 3, 3 *a*, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 70; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 272; *Moore, Lep. Ind.* iv, 1899–1900, p. 75, pl. 313, figs. 1, 1 *a*–1 *e*, ♂ ♀.

♂ ♀ *Upperside* olive-brown. Fore wing with four sinuous, short, black, transverse bars across cell-area, the outermost defining the discocellulars; the space between the middle pair of these bars, two spots beyond the apex of cell, an outwardly angulated sinuous discal series of spots, a postdiscal interrupted series of similar spots yellowish or light ochraceous; also an ochraceous inner subterminal, anteriorly broken line, inwardly margined with dark brown; a large discal black, blue-centred, reddish-ringed ocellus and a much smaller very obscure brown subapical ocellus between the discal and postdiscal series of spots; finally, a dark brown terminal line

following the outline of the margin. Hind wing: a slender black loop in the apex of the cellular area, a large ocellus similar to the discal ocellus on the fore wing across interspaces 4, 5 and 6, often with its outer rings enclosing a much smaller ill-formed ocellus anteriorly; postdiscal, subterminal and terminal dark brown, somewhat lunular lines. *Underside* in the wet-season form ochraceous brown. Fore wing: basal half crossed by three broad pale dark-edged sinuous bands, beyond which the angulated discal, the postdiscal, subterminal and terminal markings of the upperside show faintly through; the discal ocellus as on the upperside, but not so clearly defined and without the blue centre. Hind wing with three or four sinuous, ill-defined, band-like pale markings on the basal half, the outer faint bands coalescing; followed by a postdiscal dark broad band traversed by a row of minute dots interrupted by two large black ocellar spots, and a faint subterminal lunular brownish line. In the dry-season form the ground-colour is ochraceous yellow, often ochraceous red, the markings more obscure, the two large black ocellar spots reduced to the size of the others in the row. Antennæ, head, thorax and abdomen dark brown; beneath, the palpi, thorax and abdomen pale dull ochraceous.

Exp. ♂ ♀ 56–62 mm. (2·2–2·45″).

Hab. Throughout our limits.

Larva. "*After first moult.* Black, with four rows of branched spines, abdomen pale brown-black, legs black, head with a transverse yellow band behind; stigmata white. *After last moult.* Length 1 inch, cylindrical and spiny, lead-colour minutely spotted with darker and whitish dots; head brown, spiny, spotted with black, with a white central triangular patch; anterior portion of first segment yellow; stigmata black." (*Capt. Chaumette fide Moore.*)

Pupa. "Light brown speckled with whitish and variegated with darker brown." (*Capt. Chaumette fide Moore.*)

372. **Junonia orithya**, *Linn.* (Papilio) *Syst. Nat.* ed. x, 1758, p. 473; *Moore, Lep. Ceyl.* i, 1881, p. 41, pl. 22, figs. 1, 1 *a*, 1 *b*, ♂ ♀, larva & pupa; *id. Lep. Ind.* iv, 1899–1900, p. 69, pl. 311, figs. 1, 1 *a*–1*e*, ♂ ♀, larva & pupa.

Junonia orithyia, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* i, 1849, p. 209; *de N. Butt. Ind.* ii, 1886, p. 73.

♂ *Upperside*: somewhat more than half the fore wing from base velvety black, apical half dull fuliginous; cell-area with or without two short transverse orange bars; a blue patch above the tornus; the outer margin of the basal black area obliquely zigzag in a line from the middle of costa to apex of vein 2, including a large discal, generally obscure ocellus, which, however, in some specimens is prominently ringed with orange-yellow. Beyond this a broad white irregularly oblique discal band followed by a short oblique preapical bar from costa; a small black orange-ringed ocellus beneath the bar, a subterminal continuous line of white spots in the

interspaces and a terminal jet-black slender line; cilia alternately dusky black and white. Hind wing blue shaded with velvety black towards base; a postdiscal black white-centred orange and black-ringed ocellus in interspace 2, a round minutely white-centred velvety black spot (sometimes entirely absent) in interspace 5; the termen narrowly white, traversed by an inner and an outer subterminal and a terminal black line; cilia white. *Underside* fore wing: basal half with three black-edged, sinuous, broad, ochraceous-orange transverse bands, followed by the pale discal band; ocelli, preapical short bar, subterminal and terminal markings much as on the upperside; the discal band margined inwardly by a broad black angulated line which follows the outline of the black area of the upperside. Hind wing irrorated with dusky scales and transversely crossed by subbasal and discal slender zigzag brown lines and a postdiscal dark shade, on which are placed the two ocelli as on the upperside; subterminal and terminal faint brown lines, and a brownish short streak tipped black at the tornal angle below the lower ocellus.— ♀ Similar, with similar but larger and more clearly defined ocelli and markings; the basal half of the fore and hind wings on the upperside fuliginous brown, scarcely any trace of blue on the hind wing. Antennæ brown, head reddish brown, thorax and abdomen above brownish black; palpi, thorax and abdomen beneath dull white.

Exp. ♂ ♀ 54–62 mm. (2·15–2·45″).

Hab. India; Ceylon; Assam; Burma; Tenasserim; extending to China and the Malayan Subregion.

Larva. "Head and body of a very dark shining black shading into brown head on a short neck, latter of an orange colour for a short distance; caudal extremity also tipped with orange. Body covered with perpendicular spines armed with strong radial hairs Head bifurcated, reddish spot in centre of face, a small spinous process in the angle of each eye." (*Forsayeth fide de Nicéville.*)

"*Pupa* suspended by tail, naked; wing-covers of a muddy yellow; rest of body of a purplish colour variegated by lines of a dull creamy white. Slight projections of an angular nature along abdomen." (*Idem.*)

Specimens from Burma and other regions of heavy rainfall are more richly coloured than those procured from the dry districts of India.

373. **Junonia atlites**, *Johansson* (Papilio), *Centur. Ins.* 1763, p. 24; *Kirby, Trans. Ent. Soc.* 1870, p. 145; *de N. Butt. Ind.* ii, 1886, p. 69; *Davidson, Bell & Aitken, Jour. Bomb. N. H. Soc.* x, 1896, p. 250; *Moore, Lep. Ind.* iv, 1899–1900, p. 67, pl. 310, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva & pupa.

Papilio laomedia, *Linn. Syst. Nat.* ed. xii, 1767, p. 772; *Moore* (Precis), *Lep. Ceyl.* i, 1881, p. 40, pl. 21, fig. 2.

♂ ♀ *Upperside* pale lavender-brown, apical half of wings paler. Fore wing: cell with three transverse, short, sinuous black

bands, the outermost defining the discocellulars; a similar short, somewhat broader band beyond apex of cell; two transverse discal dusky black fasciæ, the inner highly sinuous and outwardly angulate above vein 4, the outer straighter, somewhat lunular, bordered by a series of whitish ovals with dusky or black centres; the black-centred spots in the ovals in interspaces 2, 5 and 6 margined posteriorly with rich ochraceous yellow. Beyond this series of ovals is a lunular, narrow, transverse dark band, followed by sinuous subterminal and terminal broad dark lines. Apex of wing slightly fuliginous. Hind wing; a short slender black loop from veins 6 to 4 at apex of cell-area; two discal sinuous transverse dark fasciæ in continuation of those on the fore wing; followed by a series of dark-centred ovals in interspaces 2–6, the ovals in interspaces 2, 5 and 6 with the dark centres inwardly broadly bordered with ochreous yellow; postdiscal, subterminal and terminal dark lunular lines as on the fore wing. *Underside*: lilacine white markings as on the upperside but very delicate, slender and somewhat obsolescent. In the dry-season forms of the males the rows of oval ocelli are only indicated by the yellow-centred ovals. The most prominent marking is the inner discal fascia crossing the wings; this is much less sinuous than on the upperside and not angulated on the fore wing. In the females the markings are all heavier and more distinct, the space between the various transverse fasciæ tinged with ochraceous.

Exp. ♂ ♀ 60–66 mm. (2·35–2·75″).

Hab. Terai, at the foot of the Himalayas from Kumaun to Sikhim; Eastern Bengal; Central Provinces; Kanara; Ceylon; Assam; Burma; Tenasserim; extending into the Malayan Subregion.

Larva. In form resembles that of *J. iphita*; colour "dull smoky black with a well-defined orange-brown stripe above the legs." (*Davidson, Bell & Aitken.*)

Pupa. "Of a uniform slate-colour." (*Iidem.*)

374. **Junonia hierta** (Pl. VI, fig. 41), *Fabricius* (Papilio), *Ent. Syst. Suppl.* 1798, p. 424; *de N. Butt. Ind.* ii, 1886, p. 71, pl. 20, fig. 94, ♂ ♀; *Moore, Lep. Ind.* iv, 1899–1900, p. 72, pl. 312, figs. 1, 1 *a*–1 *e*, larva & pupa, ♂ ♀.

Junonia œnone, *Moore* (*nec Linn.*), *Lep. Ceyl.* i, 1881, p. 42, pl. 22, figs. 3, 3 *a*, ♂ ♀

♂ *Upperside* bright yellow. Fore wing: the costa with a broad triangular projection downwards at the discocellulars, the apex broadly, the terminal margin, and the dorsum with a triangular projection upwards near the tornus, jet-black; this black margin narrows near the middle of the termen and bears on the apex two short transverse preapical white streaks crossed by the black veins, below these an obscure ocellus sometimes absent. Hind wing: the anterior half and the terminal margin black, the dorsum broadly shaded with ochraceous brown, the anterior black area with a large brilliant blue central spot. Cilia of both fore

and hind wings white alternated with brown. *Underside*: fore wing pale yellow; cell crossed by three laterally black-margined orange-yellow bars; beyond the cell a short, broad, irregular jet-black oblique band from costa to base of vein 4; apex and dorsal margin broadly, termen in the middle narrowly, dusky brownish black with some obscure paler markings; a round jet-black discal spot in interspace 2 and another smaller one in interspace 5. Hind wing greyish yellow; in the dry-season form strongly irrorated with dusky scales; a prominent transverse brown discal fascia, its margins highly sinuous; a brownish broad shade on the middle of the termen; some obscure lunular marks on the basal area, a postdiscal line of minute dots, and subterminal and terminal zigzag slender lines pale brown. Antennæ pale, head, thorax and abdomen dark brownish black; beneath dull ochraceous white.— ♀ similar, the colours duller. *Upperside* fore wing: cell with a more or less complete transverse black fascia and another at the discocellulars; blue-centred well-marked ocelli in interspaces 2 and 5 on the disc of the fore wing, and smaller ocelli in interspaces 2 and 5 on the disc of the hind wing. Fore and hind wings with a fairly well-defined pale subterminal line, the blue spot on the anterior black area on the hind wing small and ill-defined or entirely wanting; the rest as in the ♂ *Underside* as in the ♂, but generally with the markings heavier and more clearly defined.

Exp. ♂ ♀ 54–58 mm. (2·16–2·3″).

Hab. Nearly throughout our limits, extending to China.

Larva. "Ground-colour dark brown or grey with a broad dorsal stripe formed of minute white and blue spots, spines black." (*Davidson & Aitken.*)

Pupa. "Dull reddish; head obtuse in front; thorax dorsally convex; abdomen with a dorsal and lateral row of small blackish points." (*Moore.*)

375. **Junonia almana**, *Linn.* (Papilio) *Syst. Nat.* ed. x, 1758, p. 472; *Dbldy., Westw. & Hew. Gen. Di. Lep.* 1849, p. 209; *de N. Butt. Ind.* ii, 1886, p. 68; *Moore, Lep. Ind.* iv, 1899–1900, p. 78. pl. 314, figs. 1, 1*a*–1*f*, larva & pupa, ♂ ♀.

Papilio asterie, *Linn. Syst. Nat.* ed. x, 1758, p. 472; *Moore* (Junonia), *Lep. Ceyl.* i, 1881, p. 43, pl. 22, fig. 2; *de N.* (Junonia, *Butt. Ind.* ii, 1886, p. 67.

Dry-season form.— ♂ ♀ *Upperside* rich orange-yellow. Fore wing with a pale dusky and a much darker short transverse bar with lateral jet-black marginal lines across cell, another somewhat similar bar defining the discocellulars; costal margin, an inner and an outer subterminal line, and a terminal line dusky black; a large minutely white-centred ocellus with an inner slender and outer black ring on disc in interspace 2; two similar but smaller geminate subapical ocelli with an obscure pale spot above them and a short oblique bar connecting them to the black on the

costa. Hind wing: a small minutely white-centred and very slenderly black-ringed discal ocellus in interspace 2, with a very much larger pale yellow and black-ringed ocellus above it spreading over interspaces 4, 5 and 6, the centre of this ocellus inwardly brownish orange, outwardly bluish black, with two minute white spots in vertical order between the two colours; finally postdiscal, subterminal and terminal black sinuous lines. *Underside* ochraceous brown, very variable. In most specimens the cell of the fore wing is crossed by three dark sinuous bands, the outermost along the discocellulars; these are very faint in some; both fore and hind wings crossed by a basal and a discal pale sinuous line, the latter margined outwardly by a dark shade, which is traversed by an obscure somewhat obsolescent row of dark spots, and outwardly bounded by a subterminal sinuous line, the dark shade in many cases spreading on the fore wing to the terminal edge of the wing; on the hind wing the subterminal line meets the discal in an acute angle at the tornus. Antennæ dark brown; head, thorax and abdomen more or less orange-brown; paler beneath.

Wet-season form.— ♂ ♀. *Upperside* similar, the black markings deeper in colour and heavier, the subterminal and terminal lines more clearly defined. *Underside* pale ochraceous. Fore wing: cell crossed by five short sinuous dark brown lines, a similar line on the discocellulars and another beyond it, both bent inwards at an angle and continued to the dorsum, the space between them forming a discal broad fascia, which pales to whitish posteriorly; the postdiscal ocelli, subterminal and terminal lines as on the upperside but paler. Hind wing: a slender transverse subbasal dark line, a discal whitish straight fascia in continuation of the one on the fore wing; the postdiscal ocelli, the subterminal and terminal lines much as on the upperside but paler; the anterior ocellus with a double iris and centre. Antennæ dark brown; head, thorax and abdomen slightly darker than in the dry-season form.

Exp. ♂ ♀ 54–62 mm. (2·13–2·42″).

Hab. Throughout our limits; abundant in some districts. Found also in the Malayan Subregion, and in China and Japan.

Larva. "Cylindrical. Head blackish, slightly hairy. Body pale ochreous-brown, with a dorsal, subdorsal and lateral blackish line, and a row of small-ringed spots below the latter; second segment anteriorly with a transverse reddish stripe; second, third and fourth segments posteriorly with a transverse blackish stripe; second to last segment armed with a dorsal, subdorsal, and two lateral rows of short, fine-branched spines." (*Moore.*)

Pupa. "Rather short and thick; head and thorax broad, head-piece pointed beneath; thorax and abdomen dorsally with short tubercular points; colour brownish-ochraceous." (*Moore.*)

Genus **VANESSA.**

Vanessa, *Fabr. Illig. Mag.* vi, 1807, p. 281; *de N. Butt. Ind.* ii, 1886, p. 229; *Moore, Lep. Ind.* iv, 1899–1900, p. 102.
Aglais, *Dalmann, Kongl. Vet.-Akad. Handl.* xxxvii, 1816, pp. 54, 64; *Moore, Lep. Ind.* iv, 1899–1900, p. 87.
Pyrameis, *Hübner, Verz. bek. Schmett.* 1816, p. 33; *de N. Butt. Ind.* ii, 1886, p. 225.
Eugonia et Polygonia, *Hübner, Verz. bek. Schmett.* 1816, p. 36; *Moore, Lep. Ind.* iv, 1899–1900, pp. 84 & 95.
Euvanessa, *Scudder, Butt. E. U. States*, i, 1889, p. 387; *Moore, Lep. Ind.* iv, 1899–1900, p. 82.
Kaniska, *Moore, Lep. Ind.* iv, 1899, p. 91.

Type, *V atalanta*, Linn., from Europe.
Range. Both hemispheres.

♂ ♀ Fore wing: costa slightly arched; apex produced, rounded; termen scalloped, concave below vein 5; tornus rounded, dorsum straight; cell about half length of wing; upper discocellular very short, middle oblique, slightly concave, lower long, oblique; vein 3 from well before lower apex of cell, 4 from apex; 9 from middle of 7, 10 and 11 free. Hind wing irregularly subtriangular, apex not well-marked; costa and termen together forming a curve; tornus somewhat produced, dorsum slightly arched, cell not quite half length of the wing; discocellulars oblique, upper and middle subequal, lower longer, slightly sinuous; veins 3 and 4 from lower apex of cell. Antennæ a little over half length of fore wing, club short, broad, abrupt; palpi stout, subporrect, third joint short, somewhat blunt at apex; eyes hairy; thorax robust.

The above characters are of those typical *Vanessa*. The Indian forms can be divided into three sections or groups differing slightly in structure from each other:—

(1) Typical *Vanessa*, including the forms placed by Moore under *Aglais*, and under *Polygonia* pt.

(2) *Eugonia*, Hübner, including *Euvanessa*, Scudder, with the costa of fore wing studded with long stiff hairs projecting anteriorly.

(3) *Polygonia*, Hübner, typical, including *Kaniska*, Moore, characterized by the extremely uneven terminal margins to the wings, the strongly bisinuate dorsum and broadly lobed tornus of the fore wing.

In venation, in the form of the antennæ, in the hairiness of the eyes and in the cryptic coloration of the underside of the wings, the forms arranged under the above subgenera constitute a homogeneous natural group.

Key to the forms of Vanessa.

A. Dorsum of fore wing straight or slightly convex, not sinuous; tornus not lobed.
  a. Costa of fore wing not studded with stiff anteriorly projecting hairs.
    a'. Termen of hind wing not produced into a prominent tooth or tail at apex of vein 4.
      a^2. Hind wing upperside with terminal half more or less ochraceous or orange-yellow ... . *V. cardui*, p. 365.
      b^2. Hind wing upperside: terminal margin only, and a postdiscal band confluent with it, orange-yellow .. . . *V. indica*, p. 366.
    b' Termen of hind wing produced into a prominent tooth or tail at apex of vein 4.
      a^2. Upperside of hind wing with a subterminal series of blue spots.
        a^3. Disc of fore wing on upperside red, not crossed by a yellow transverse band ... . *V. cashmirensis*, [p. 367.
        b^3. Disc of fore wing on upperside red, crossed by a yellow transverse band.
          a^4. Termen of fore wing produced and angulated between veins 5 and 6. .... *V. rizana*, p. 368.
          b^4. Termen of fore wing not produced or angulated between veins 5 and 6.... .. . . *V. ladakensis*, p. 368.
      b^2. Upperside of hind wing without a subterminal series of blue spots ... *V. vau-album*, p. 369.
  b. Costa of fore wing studded with stiff anteriorly projecting hairs.
    a'. Upperside ground-colour deep maroon; terminal margins of both fore and hind wings broadly creamy white .. *V. antiopa*, p. 370.
    b'. Upperside ground-colour dark orange-yellow; terminal margins of both fore and hind wings narrowly brown *V. xanthomelæna*, [p. 369.

B. Dorsum of fore wing strongly sinuous, tornus lobed.
  a. Upperside ground-colour dark indigo-blue-black; fore and hind wings crossed by a prominent broad postdiscal blue band.
    a'. Upperside fore wing: postdiscal blue band continued anteriorly to preapical white spot.. .. .. *V. canace*, p. 371.
    b'. Upperside fore wing: postdiscal blue band not continued anteriorly to preapical white spot . ... Race *haronica*, [p. 372.
  b. Upperside ground-colour fulvous.
    a'. Upperside hind wing: dorsal margin very broadly dusky brown irrorated with grey scales.

a^2. Upperside fore and hind wings with a subterminal series of pale yellow spots.	
a^3. These spots small, round, traversing broad dusky terminal margin of hind wing	*V. c-album*, p. 372.
b^3. These spots transverse, bordering broad dusky terminal margin of hind wing on inner side ...	Var. *cognata*, p. 373.
b^2. Upperside fore and hind wings without a subterminal series of pale yellow spots.	Race *agnicula*, [p. 373.
b' Upperside hind wing: dorsal margin paler brown irrorated with golden scales	*V. egea*, race *interposita*, p. 374.

376. **Vanessa cardui**, *Linn.* (Papilio) *Syst. Nat.* ed. x, 1758, p. 475; *Moore* (Pyrameis), *Lep. Ceyl.* i, 1881, p. 50, pl. 27, figs. 1, 1 *a*; *de N.* (Pyrameis) *Butt. Ind.* ii, 1886, p. 227; *Moore, Lep. Ind.* iv, 1899–1900, p. 105, pl. 320, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ ♀ *Upperside* fore wing: interspace 1 and extreme base of wing dusky black, irrorated with golden scales; apical half of wing and termen dusky black; discal and median area of wing ochraceous orange, with the following black markings: an irregular oblique band consisting of two detached spots across middle of cell, a patch in base of interspace 2 and a curved transverse bar across interspace 1; on the black apical area an obliquely placed series of three quadrate white spots from costa, followed by a curved transverse series of four white spots, and on the broad dusky-black terminal margin an obscure transverse series of pale slender lunular marks. Hind wing dusky brown, covered with long silky brown hairs at base; a large spot beyond apex of cell; a broad transverse discal irregular band and the termen ochraceous orange; the ochraceous discal band does not extend to the costa and bears a round black spot in each of the interspaces 2 to 6; on the termen there is an inner transverse series of black lunules and an outer series of black spots at the apices of the veins. *Underside* fore wing: cell and discal area from vein 1 irregularly to vein 4 ochraceous orange, rest of wing greyish brown; base of cell red, apical portion white; black marking in and below cell much as on the upperside; beyond the cell the white markings on the apical area and on the termen as on the upperside. Hind wing mottled with olive-brown and ochraceous, the olive-brown markings with slender white margins; a postdiscal transverse series of ocelli in interspaces 2 to 6, those in interspaces 3 and 4 with blue, the rest with black centres; all with inner rings of ochraceous and outer rings of black; a series of black subterminal lunules and terminal black spots as on the

Fig. 67.
Vanessa cardui.

upperside, but not so distinct. Antennæ brown, ochraceous yellow at apex; head, thorax and abdomen with ochraceous pubescence, the thorax beneath the pubescence metallic green; on the underside, the palpi, thorax and abdomen pale ochraceous white.

Exp. ♂ ♀ 58–68 mm. (2·2–2·7″).

Hab. The "Painted Lady" is distributed over the whole world. It occurs in and is recorded from all parts of India, Ceylon, Assam, Burma and Tenasserim; more plentifully in the hills and often sporadically in certain districts.

Larva. "Blackish brown, with a longitudinal pale interrupted line on each side, the segments armed with short branched spines. Feeds on *Artemisia*." (*Moore.*)

Pupa. "Tuberculate; head bluntly cleft, pale ochreous or brown, more or less spotted with yellow." (*Moore.*)

Mr. E. H. Aitken records the larva as feeding on different species of *Blumea* (fide *de Nicéville*, *t. c.*).

377. **Vanessa indica**, Pl. VI, fig. 39, *Herbst* (Papilio atalanta indica), *Natursyst. Schmett.* vii, 1794, p. 171, pl. 180, figs. 1, 2; *Moore* (Pyrameis), *Lep. Ceyl.* i, 1881, p. 50, pl. 27, fig. 2; *de N.* (Pyrameis) *Butt. Ind.* ii, 1886, p. 229, pl. 18, fig. 74 ♀; *Moore*, *Lep. Ind.* iv, 1899–1900, p. 103, pl. 320, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ Resembles *V cardui*, but the ground-colour is darker both on the upper and under sides, and the orange markings deeper and richer in tint. Differs also as follows:—*Upperside* fore wing: the ochraceous orange-red on disc and across cell proportionately of less extent, and uniform, not getting paler towards apex of cell; the upper four spots of the preapical transverse series on the black apical area minute. Hind wing: the postdiscal transverse band much narrower and shorter, not extending below vein 1, margined inwardly by a series of broad black subcrescentic marks; the tornal angle with a small patch of violet scales bordered inwardly by a short black transverse line. *Underside* very much darker than in *V cardui*, the orange-red on disc and in cell of fore wing restricted as on the upperside; three small transversely placed blue spots beyond the cell. Hind wing: the mottling comparatively very dark, purplish black, with slender white margins, shaded on disc with rich dark olive-brown; the postdiscal series of ocelli dark and somewhat obscure; an inner subterminal transverse series of blue, and an outer very much slenderer transverse series of black lunules. Cilia of both fore and hind wings white, alternated with brown. Antennæ black, tipped with pale ochraceous; head, thorax and abdomen with dark olive-brown pubescence; beneath, the palpi, thorax and abdomen pale ochraceous brown.

Exp. ♂ ♀ 58–70 mm. (2·3–2·75″).

Hab. Throughout our limits, in the hills above 2000 feet; only

sporadically taken in the plains, more common in the higher hills at elevations above 4000 feet. This form extends to Southern Europe and the Canaries, and eastwards to China, Japan and the Malay Peninsula.

378. **Vanessa cashmirensis**, *Kollar, Hügel's Kaschmir*, iv, pt. 2, 1844, p. 442, pl. 11, figs. 3, 4; *de N. Butt. Ind.* ii, 1886, p. 233; *Moore* (Aglais), *Lep. Ind.* iv, 1899–1900, p. 87, pl. 316, figs. 3, 3 *a*, ♂ ♀

♂ ♀ *Upperside* fore wing: basal half of costa and the termen pale brown, the former flecked with pale yellow, the latter bordered inwardly by a narrow darker brown band bearing a series of black lunules; outwardly traversed by sinuous slender subterminal and more slender terminal black lines; base of wing and the greater part of interspace 1 *a* and of 1 posteriorly brown, irrorated with golden scales, the rest of the wing anteriorly yellow, posteriorly and at base of cell red, with the following black markings: a broad band across the cell, another broader short band beyond, touching the discocellulars, not extending below vein 4, and a third not extending below vein 5, with a white patch beyond before apex, all three short bands rounded posteriorly; on the disc there is a large oval black spot, followed by a yellow patch in interspace 1, and above it smaller black spots in interspaces 2 and 3. Hind wing: basal half dusky brown, covered posteriorly with long brown hairs; anteriorly beyond the bases of veins 5, 6 and 7 black, followed by a broad red band anteriorly turning to yellow; a broad terminal brown band, traversed by a series of black-bordered blue lunules, and beyond them by very slender inner and outer black sinuous lines. *Underside* brown, with closely-set transverse short black striæ; basal half of wings clouded with dark purplish brown, the outer margin of the dark portion defined by a highly sinuous jet-black transverse line, most distinct on the hind wing, and also crossed, nearer the base of the wings, by two or three similar, much interrupted lines; terminal half of the wings paler, with two dark irregular patches below costa of fore wing; finally a sinuous transverse subterminal narrow dark blue band across both fore and hind wings, bordered on both sides by slender black lines, widening into spots on the veins of the fore wing. This band is more distinct in the ♀ than in the ♂ Antennæ dark brown, minutely ringed with white; head, thorax and abdomen dark brown above and below.

Exp. ♂ ♀ 52–62 mm. (2·05–2·43″).

Hab. The Himalayas from Kashmir to Sikhim at elevations of 2000 to 18,000 feet.

The two forms next described are very closely allied to but distinguishable from *V cashmirensis*; both occur at high elevations in the Himalayas.

379. **Vanessa rizana**, *Moore, P. Z. S.* 1872, p. 559; *de N. Butt. Ind.* ii, 1886, p. 234; *Moore* (Aglais), *Lep. Ind.* iv, 1899–1900, p. 89, pl. 317, figs. 1, 1 *a*, ♂ ♀.

♂ ♀ "Markings and colours disposed as in *V kashmirensis*, but more sharply defined and the colours much brighter" (*Moore*). *Upperside* fore wing: the black spot on the disc in interspace 1 not oval, quadrate, the two spots above it also quadrate, placed on a transverse broad yellow band which crosses the wing in continuation of the intervening yellow space between the short broad black band beyond the discocellulars and the preapical similar band. Hind wing: the dusky black on the basal area more extensive, covering about two-thirds of the wing and produced to the tornus, its outer margin very sinuous, bordered outwardly by a narrow sinuous band of bright yellow. Both fore and hind wings with a comparatively broad terminal border, dusky brown, traversed by a series of triangular black spots centred with blue, that are outwardly margined by a more or less continuous obscure pale line. "*Underside* much darker than in *kashmirensis*, markings similar." (*Moore.*)

Exp. ♂ ♀ 47–52 mm. (1·85–2·05″).

Hab. The Himalayas from Kashmir to Sikhim at high elevations; not recorded from below 10,000 feet.

380. **Vanessa ladakensis**, *Moore, A. M. N. H.* (5) i, 1878, p. 227; *id. Yarkand Exped., Lep.* 1879, p. 2, pl. 1, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 234; *Moore* (Aglais), *Lep. Ind.* iv, 1899–1900, p. 90, pl. 317, figs. 2, 2 *a*, ♂ ♀

♂ ♀ Differs from *V cashmirensis* as follows:—Fore wing: termen convex, not falcate, not produced between veins 5 and 6. *Upperside*: colours and markings similar to and disposed as in *V rizana*; but the lower blackish discal spot or patch in fore wing much broader, extended to the median vein joining the transverse band across the cell, joined also by a triangular patch at base of interspace 3 to the short band beyond the discocellulars; two small rounded spots in interspaces 2 and 3 respectively placed on a yellow band, as in *V rizana*. Hind wing with the subterminal series of conical black spots larger, each centred with a large spot of blue. *Underside* much paler than in either *V cashmirensis* or *V rizana*, not so thickly studded with dark transverse short striæ. Fore wing: the cell with an ochraceous subbasal and a whitish median transverse broad band; beyond apex of cell a curved, broad, whitish, irregular postdiscal band from costa to dorsum, and a short oblique preapical whitish mark. Hind wing: basal two-thirds dusky brown, outwardly margined by a sinuous jet-black line; both fore and hind wings with the transverse series of triangular dark marks of the upperside showing through. Antennæ, head, thorax and abdomen as in *V cashmirensis*.

Exp. ♂ ♀ 46–53 mm. (1·8–2·1″).

Hab. The Northern Himalayan ranges, Ladak; Chitral; W. Tibet; Nilang Pass beyond Mussporee; Sikhim, Chumbi Valley.

381. **Vanessa vau-album**, *Denis & Schiffermüller* (Papilio), *Wien. Verz.* 1776, p. 176; *de N. Butt. Ind.* ii, 1886, p. 236; *Moore* (Polygonia), *Lep. Ind.* iv, 1899–1900, p. 96, pl. 317, figs. 3, 3 *a*, ♂.

♂ ♀ *Upperside* dark fulvous; base of wings suffused with brown, extending on the hind wing along dorsum towards tornus. Fore wing: two confluent spots across the cell, a short broad band beyond the discocellulars, another similar, more oblique, slightly sinuous band, followed by a narrow sinuous transverse postdiscal band, margined inwardly by a row of pale yellow spots, and finally two inner and three outer comparatively large discal spots, all black. The apex of the cell and the subcostal space between the two short broad black bands a paler yellow than the ground-colour; a narrow transverse white preapical spot on the inner side of the postdiscal band; the terminal margin beyond the latter dusky black, traversed by a darker sinuous line. Hind wing: two short transverse broad black bands from costa, not extending below interspace 4, the outer band diffuse posteriorly, the space between the two bands white from costa to vein 6; a postdiscal transverse incomplete series of pale yellow spots followed by a narrow black band, outwardly sharply defined by a pale yellow line; the terminal margin beyond this pale brown, traversed by an obscure subterminal dark line. *Underside* pale brown, irrorated with transverse dark brown striæ; basal half of wings darker brown, the outer margin of this colour sharply defined and on the hind wing margined by a slender black line. Fore wing: anterior half of cell pale ochraceous, with three elongate oval dark spots, the terminal margin between veins 1 and 5 dark brown, traversed by a slender obscure pale line, inwardly bordered by a narrow blue band, defined on either side by dark lines. Hind wing with a very conspicuous white L-shaped mark at apex of cell; a subterminal narrow brown sinuous transverse band, blue in the middle; the terminal margin narrowly but evenly of a darker brown than the ground-colour. Fore and hind wings crossed by a transverse postdiscal line of small black dots in the interspaces.

Exp. ♂ ♀ 64–71 mm. (2·51–2·79″).

Hab. A Palæarctic form recorded within our limits from Kashmir and Chitral.

382. **Vanessa xanthomelæna**, *Denis & Schiffermüller* (Papilio), *Wien. Verz.* 1776, p. 176; *de N. Butt. Ind.* ii, 1886, p. 235, pl. 18, fig. 73 ♂; *Moore* (Eugonia), *Lep. Ind.* iv, 1899–1900, p. 85, pl. 316, figs. 2, 2 *a*, ♂ ♀.

♂ ♀ *Upperside* rich orange-yellow. Fore wing: costal margin dusky black on the basal half flecked with brown; two oval black spots in cell, a quadrate subcostal black patch just beyond the discocellulars, a second more oblique irregular black patch beyond this, and three large oval discal black spots, with a smaller dusky patch beyond the lowest spot. Hind wing uniform, with a large subcostal black patch. Fore and hind wings with a common

sinuous transverse subterminal black band, and a terminal dusky band flecked with golden brown; the black subterminal band on the hind wing with an outer border of blue lunules margined outwardly by a slender black line; the fore wing just below the costa, between the black patches beyond the cell and between the outer black patch and subterminal band, prominently pale yellow. In the ♀ an incomplete series of yellow lunules also borders the subterminal black band on the outer side. *Underside* dull ochraceous brown, the basal half of both fore and hind wings and a broad terminal margin darker brown; the wings entirely and thickly covered with slender transverse dark brown striæ; irregular cell-marks on the fore wing and a transverse highly sinuous subterminal band of dark blue lunules on both wings; these lunules defined by slender black lines on both sides. Bases of the wings with a clothing of long stiff black hairs, which are blunt at their apices, and on the fore wing extend along the basal half of the costal margin, projecting outwards beyond it. Antennæ, head and thorax very dark brown, abdomen fulvous; beneath very hairy; palpi, thorax and abdomen dark brown, the abdomen towards the apex paler.

Exp. ♂ ♀ 63–68 mm. (2·49–2·7″).

Hab. E. Europe; the Himalayas from Kashmir to Mussooree; China and Japan.

"*Larva.* Cylindrical, slightly hairy. Head subquadrate, vertex sharply indented in front, slightly hairy, front and cheeks with several small pointed tubercles. Third to last segments armed with a dorsal row of short spines, and three lateral rows of long rigid branched spines. Colour dark purpurescent-brown, almost black, palest beneath; with two dorsal slender yellowish macular lines, and a single similar lateral line, the subdorsal and sublateral areas longitudinally speckled with numerous irregular-shaped yellow dots. Spines black; head black. Reared on willow." (*Moore.*)

383. **Vanessa antiopa**, *Linnæus* (Papilio), *Syst. Nat.* ed. x, 1758, p. 476; *de N. Butt. Ind.* ii, 1886, p. 232; *Moore* (Euvanessa), *Lep. Ind.* iv, 1899–1900, p. 83, pl. 316, figs. 1, 1 *a*, ♂.

♂ ♀ *Upperside* rich dark maroon-red; costal margin of fore wing broadly black, flecked with rich creamy-white on basal half and with two short broad cream-coloured oblique bands on the apical half; the terminal margins of the maroon ground-colour on both fore and hind wings darkening into a comparatively broad black postdiscal band with a row of superposed spots, deep blue in the female, violet-blue in the male; the outer margin of the black band on the fore wing sinuous, on the hind wing evenly rounded; terminal margins of wings very broadly creamy-white flecked with minute black dots somewhat closely on the anterior half of the margin of the fore wing, thus forming a distinct slender black border; dorsal margin of the hind wings broadly dull blackish brown. *Underside* rich purpurescent black, densely set with short slender

jet-black striæ; the short oblique subcostal cream-coloured oblique bands on the fore wing and the broad cream-coloured terminal margins of both fore and hind wings much as on the upperside but sprinkled with minute black dots; the short oblique bands much narrower than on the upperside; small cream-coloured spots also at the apices of the cells in both wings; finally, numerous stiff black hairs extend along the basal half of the costal margin of the fore wing and project prominently beyond it. Antennæ, head, thorax and abdomen very dark brownish black above and beneath; the antennæ ochraceous at apex; the palpi, thorax and base of the abdomen beneath very hairy.

Exp. ♂ ♀ 74–80 mm. (2·91–3·17″).

Hab. Within our limits the "Camberwell Beauty" has been taken only in the Chumbi Valley east of Sikhim and in Bhutan. It occurs in Europe, Central Asia, China and Japan.

384. **Vanessa canace**, *Johanssen* (Papilio), *Centur. Ins.* 1763, p. 23; *de N. Butt. Ind.* ii, 1886, p. 231; *Hampson, J. A. S. B.* 1888, pt. 2, p. 355; *Moore* (Kaniska), *Lep. Ind.* iv, 1899–1900, p. 92, pl. 315, figs. 1, 1 *a*, ♂ ♀.

Race haronica (Pl. VI, fig. 40).

Vanessa haronica, *Moore, P. Z. S.* 1879, p. 137; *id. Lep. Ceyl.* i, 1881, p. 49, pl. 25, figs. 2, 2 *a*, ♂, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 232; *Moore* (Kaniska), *Lep. Ind.* iv, 1899–1900, p. 94, pl. 315, figs. 2, 2 *a*, 2 *b*, larva & pupa, ♂ ♀.

♂ ♀ *Upperside* deep indigo-blue black; a postdiscal slightly sinuous blue band crossing both fore and hind wings, on the fore wing commencing immediately below a preapical white spot just beneath the costa and broadening gradually to the dorsum, on the hind wing broadening from the costa and extending to vein 1. On the fore wing this band is crossed by the black veins, the portion in each interspace, except in 1 *a* and 1, rounded interiorly; anteriorly beyond the cell a short broad obliquely-placed bar joins the band almost to the costa. On the hind wing this band is traversed along its outer margin by a series of small black dots. On both wings there are some transverse, more or less broken, subterminal and terminal linear blue marks, more clearly defined and more continuous on the hind wing. In the ♀ the postdiscal band is broader than in the ♂ *Underside* brownish black, covered thickly with short transverse jet-black striæ; the basal halves of the wings defined outwardly by a highly sinuous, somewhat broken, jet-black broad line; some similarly coloured transverse short broad marks in and below cell of fore wing; apex of fore wing broadly pale brown, that colour continued as a very broad irregular discal band to the dorsum; touched at the costa and outwardly near the tornus with greyish white; beyond this band a curved postdiscal sinuous series of jet-black lunules followed by a black subterminal ill-defined line, both the latter commencing at the falcate angle of the termen and extending to the tornus. Hind

wing with a white spot at apex of cell and a continuation of the pale discal band of the fore wing, but far less prominent, much narrower and sinuous; beyond this the terminal half of the wing dull black, the transverse short striæ very sparse, but with a transverse postdiscal series of minute black dots as on the upperside. Antennæ black, flecked with minute ochraceous dots; head and thorax dark blue; abdomen dull black; beneath, the palpi and thorax with slightly bluish long hairs, the abdomen black flecked with white.

Exp. ♂ ♀ 61–75 mm. (2·4–2·95″).

Hab. The Himalayas, Kashmir to Sikhim; Southern India, the Nilgiris, Mysore and Travancore; the hills of Assam, Burma and Tenasserim above 3000 ft.

Larva. "Segments alternately orange and white, with numerous black spots on the orange segments and black streaks on the white; seven white, branching, black-tipped spines on each orange segment." (*G. F. Hampson.*)

Pupa. "Variegated reddish brown, with frontal gold and silver spots; head produced and bifid." (*G. F. Hampson.*)

Race **haronica**, Moore.— ♂ ♀ Closely resembles the typical form, but on the upperside the ground-colour at the bases of the wings is sometimes suffused with green, the transverse broad blue band is discal not postdiscal, and anteriorly is continuous with the broad short oblique bar beyond the cell, not commencing as in *canace* below the preapical white spot. On the hind wing the band is without the series of black dots, but beyond it there is a transverse postdiscal row of small blue spots. Underside as in *canace*, but the ground-colour paler.

Exp. ♂ ♀ slightly greater than in the typical form.

Hab. The hills of Ceylon.

Larva. "Light red; spotted with black, the segments divided by blackish and purple lines; anal segment slightly humped; segments armed with eight longitudinal rows of yellow branched spines; head and legs black. Feeds on *Smilax*." (*Moore.*)

Pupa. "Reddish brown; abdominal segment with two dorsal rows of small reddish pointed tubercles; thorax angular; headpiece produced and bifid." (*Moore.*)

385. **Vanessa c-album**, *Linn.* (Papilio) *Syst. Nat.* ed. x, 1758, p. 477; *de N. Butt. Ind.* ii, 1886, p. 237; *Moore* (Polygonia), *Lep. Ind.* iv, 1899–1900, p. 97, pl. 318, figs. 2, 2 *a*–2 *e*, ♂ ♀

Polygonia cognata, *Moore, Lep. Ind.* iv, 1899–1900, p. 98, pl. 319, figs. 1, 1 *a*–1 *d*, ♂ ♀

Race agnicula.

Grapta agnicula, *Moore, P. Z. S.* 1872, p. 559 (♂ only); *Moore* (Polygonia), *Lep. Ind.* iv, 1899–1900, p. 99, pl. 319, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Vanessa c-album, var. tibetana, *Elwes, Trans. Ent. Soc.* 1888, p. 363, pl. 10, fig. 1.

Wet-season form.— ♂ *Upperside* deep fulvous. Fore wing

with the following black markings: two spots transversely across middle of cell, three spots placed in an oblique line in interspaces 1, 2 and 3 respectively, and a short band beyond the discocellulars not descending below vein 4; a very dark chestnut similar short preapical band; a postdiscal, somewhat obscure, transverse series of pale yellow spots; and a broad dark chestnut terminal band, irrorated along the outer margin with grey scales; the costa between the short discocellular and preapical bands paler than the ground-colour. Hind wing: the costal margin above cell and above vein 7, the termen broadly and the dorsal margin below the cell and vein 2 dusky brown, the latter covered with long hairs and irrorated with grey scales; a spot at base of interspace 3; a transverse spot across bases of interspaces 4 and 5, and a larger spot near base of interspace 6, black; terminal margin traversed by a row of small pale yellow spots and outwardly irrorated with grey scales. *Underside*: brownish-grey variegated with dark brown and irrorated with numerous transverse slender dark striæ. Fore wing: a dark, short, linear and a similar transverse zigzag mark in cell; beyond the cell a transverse outwardly produced or angulated dark irregular discal band, followed on the posterior portion of the wing by a mottled-grey subtriangular area; a transverse obscure series of greenish ocelli and a series of greenish lunules; a dark terminal band between veins 1 and 6; the costal margin above vein 7 grey, the apex clouded darker. Hind wing: cellular transverse markings, the markings along the dorsum, and a transverse discal irregular band darker than the ground-colour, the last outwardly margined by an interrupted black line and crossed, just beyond lower apex of cell, by a snow-white **C**-shaped mark; beyond this, a postdiscal row of obscure greenish ocelli, the ocellus in interspace 6 surrounded by a diffuse brown spot, and a subterminal series of obscure black-margined greenish lunules. Antennæ, head, thorax and abdomen dark brown; beneath, the abdomen slightly paler.—♀ *Upperside* similar. *Underside* more uniform brown, not so mottled; the greenish ocelli and lunules still more obscure; the **C**-shaped mark beyond apex of cell less clearly defined, forming only a short, curved, slender line.

Dry-season form.—♂ ♀ Similar to the wet-season form, but paler fulvous above and paler brownish grey below; the black markings above similar, smaller.

Exp. ♂ ♀ 56–60 mm. (2·2–2·37″).

Hab. The Himalayas, Kashmir to Kumaun.

The larva and pupa, so far as I know, have not yet been found in India.

Var. *cognata*, Moore, differs as follows:—♂ ♀ *Upperside*: the two medial cellular black spots connate, an obscure spot at base of interspace 2; the terminal dark brown margin of the hind wing less broad, the pale yellow spot traversing it larger, transverse, almost lunular. *Underside*: the postdiscal transverse series of obscure ocelli and lunules pink not greenish.

Race **agnicula**, Moore, differs from the typical form as follows :— ♂ ♀. *Upperside*: ground-colour a deeper richer fulvous, terminal margins of both fore and hind wings jet-black, the black much narrower on the hind wing; the inner margin more sharply defined and without the border of yellow spots, the irroration of grey scales along their outer margin less conspicuous. *Underside*: ground-colour brown, more uniform in both sexes; the transverse series of ocelli more conspicuous, the ocelli smaller, the series of lunules very obscure.

Exp. ♂ ♀ 58–62 mm. (2·3–2·43″).

Hab. Recorded from Eastern Kumaun, Nepal and the Chumbi Valley east of Sikhim.

386. **Vanessa egea**, *Cramer* (Papilio), *Pap. Exot.* i, 1775, pl. 78, figs. C, D.

Race interposita.

Vanessa egea, *de N.* (*nec Cramer*) *Butt. Ind.* ii, 1886, p. 237.
Vanessa c-album, var. interposita, *Staudinger, Stett. ent. Zeit.* 1881, p. 286; *Moore* (Polygonia), *Lep. Ind.* iv, 1899–1900, p. 100, pl. 318, figs. 1, 1 *a*, ♂ ♀

Race **interposita**, Staudinger. — ♂ ♀ Closely resembles *V c-album*, Linn., but differs as follows :—*Upperside*: ground-colour paler fulvous, black markings much smaller, the terminal dusky black margin of both fore and hind wings much narrower; the discal spots on fore wing variable in number, often reduced to only one in interspace 1; the spot at base of interspace 4 in hind wing wanting, the dorsal margin of the same wing fulvous brown, in certain lights golden. *Underside* pale ochraceous brown, the slender transverse striæ not so short as in *V c-album*, the basal area of both wings, from below the cell in the fore wing, dark, sharply defined on the outer side, the markings somewhat similar to those in *V c-album*, but the white mark beyond cell of hind wing **L**-shaped not **C**-shaped: the greenish ocelli absent; the greenish lunules present. Antennæ, head, thorax and abdomen brown; the palpi, thorax and abdomen beneath much paler.

Exp. ♂ ♀ 56–58 mm. (2·2–2·3″).

Hab. Recorded within our limits from Chitral.

From typical *V egea* this race differs in the darker shade of both upper and under sides of the wings.

Genus **ARASCHNIA**.

Araschnia, *Hübner, Verz. bek. Schmett.* 1816, p. 37; *Leech, Butt. China*, i, 1892, p. 267; *Moore, Lep. Ind.* iv, 1899–1900, p. 108.

Type, *A. levana*, Linn., from Europe.

Range. Europe; Western Asia; Japan; China, extending to the hills of Assam; Manipur; Northern Burma.

♂ ♀ Fore wing: costa very slightly arched; apex broadly rounded; termen concave in the middle; tornus rounded; dorsum straight; cell slenderly closed; upper discocellular minute, middle

concave, lower oblique; vein 3 from a little before lower apex of cell, 4 from apex, 9 and 10 from basal half of 7, 11 free. Hind wing: costa nearly straight, strongly curved at base; termen slightly scalloped, strongly arched; tornus angulated; dorsum slightly arched; cell open; vein 7 about four times as far from 8 as from 6 at base. Antennæ about half length of fore wing; club well-marked, but long and gradual; palpi porrect, acutely pointed at apex; third joint long; eyes hairy.

A single form, a local race of the Chinese *Araschnia prorsoides*, Blanchard, is recorded from the Nága Hills, in Assam.

387. **Araschnia prorsoides**, *Blanchard* (Vanessa), *Compt. Rend. Acad. Sci.* lxxii, 1871, p. 810.

Race dohertyi.

Araschnia prorsoides, *Elwes* (*nec Blanchard*), *P. Z. S.* 1891, p. 285, pl. 27, figs. 5, 6, ♂ ♀.

Araschnia dohertyi, *Moore*, *Lep. Ind.* iv, 1899–1900, p. 108, pl. 320, figs. 3, 3 *a*, 3 *b*, ♂ ♀

Race **dohertyi**, Moore.— ♂ ♀ *Upperside* dark brown: three or four very slender transverse white lines across cell of fore wing, the middle one continued across the base of the hind wing; a lunular white spot beyond apex of cell in fore wing, followed by an ochraceous small spot, an outwardly oblique series of two very slender, short, ochraceous subcostal lines, two larger white spots in interspaces 5 and 6 and a minute white spot in interspace 4; a short, broad, oblique, white, somewhat macular discal band, not extending beyond interspace 2, two detached white spots in continuation of it above in interspaces 3 and 4, and above them three ochraceous preapical spots in interspaces 6, 7 and 8; beyond these there is a very incomplete subterminal line of broad, somewhat lunular, ochraceous transverse markings on fore wing; on the hind wing the discal band is continued transversely across the wing to vein 1 *a*, and the subterminal line of ochraceous lunules to a little above the tornus; there is also a slender ochraceous postdiscal line on the posterior half of the wing. *Underside* beautifully variegated with bands and lines of chestnut-purple ochraceous, creamy white and black; the pale cream-coloured discal band as on the upperside. Fore wing: the basal half crossed by pale yellow-margined broad bands, the basal ochraceous, the outer two castaneous purplish posteriorly and with outer black lines; the veins pale yellow; a pale yellow, short, oblique bar from costa beyond the cell with a purplish patch below it bearing two white spots, the apex and the termen medially creamy white; an inner and an outer subterminal, sinuous, black line. Hind wing: basal area similarly banded; beyond the broad discal band is a sinuous, irregular, very narrow, transverse cream-white broad line followed by a medial purplish patch; a postdiscal series of pale ochraceous lunules bordered by dark ochraceous, and subterminal and terminal black lines as on the fore wing. Antennæ, head,

thorax and abdomen dark brownish black; palpi, thorax and abdomen beneath dusky pale brown.

Exp. ♂ ♀ 51–54 mm. (2–2·15″).

Hab. Manipur, the Nága Hills, 6000–8000 feet.

A slightly divergent form. Differs from *prorsoides* in the white, not ochraceous discal band on the upperside of the wings and the more slender subterminal markings.

Genus **SYMBRENTHIA.**

Symbrenthia, *Hübner, Verz. bek. Schmett.* 1816, p. 43; *de N. Butt. Ind.* ii, 1886, p. 238; *Moore, Lep. Ind.* iv, 1899–1900, p. 110.

Type, *S. hippoclus*, Cramer, from Amboina.

Range. Indo-Malayan Region, extending into China.

♂ ♀ Fore wing broadly triangular; costa regularly and widely arched; apex blunt; termen entire, slightly concave in the middle; tornus rounded; dorsum straight; cell closed, about half length of wing; upper discocellular minute, middle concave, about half length of lower, lower oblique; vein 3 from before lower apex of cell, 4 from apex, 8 and 9 from apical half of 7, 10 and 11 free. Hind wing pear-shaped, costa widely arched, apex rounded; termen slightly scalloped, produced at apex of vein 4 into a short tail; tornus angular; dorsum straight, slightly emarginate above tornus. Antennæ longer than half length of fore wing; club rather broad but gradual; palpi broad in front, third joint short, conical; eyes hairy; body comparatively robust.

Key to the forms of Symbrenthia.

A. Underside with ferruginous markings; without black tesselations... . ..	*S. lucina*, p. 376.
B. Underside with black tesselations.	
a. Underside hind wing: subterminal lunules metallic green.	
a'. Upperside fore wing: preapical oblique fulvous or yellow irregular short band not extended to costal margin	*S. hypselis*, p. 378.
b'. Upperside fore wing: preapical oblique fulvous or yellow irregular short band extended to costal margin.	
a^2. Underside fore wing: discoidal streak ochraceous orange	*S. brahira*, p. 378.
b^2. Underside fore wing: discoidal streak white or pinkish white	*S. niphanda*, p. 379.
b. Underside hind wing: subterminal lunules metallic cerulean blue	Race *silana*, p. 380.

388. **Symbrenthia lucina,** *Cramer* (Papilio), *Pap. Exot.* iv, 1780, p. 82, pl. 330, figs. E, F, ♀; *Moore, Lep. Ind.* iv, 1899–1900, p. 111, pl. 321, figs. 1, 1 *a*–1 *g*, larva & pupa, ♂ ♀

Symbrenthia hippoclus, *de Nicéville* (*nec Cramer*), *Butt. Ind.* ii, 1886, p. 240; *id. Jour. Bomb. N. H. Soc.* vi, 1891, p. 354, pl. F, fig. 10 ♀.

Symbrenthia khasiana, *Moore, P. Z. S.* 1874, p. 569 ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 241.

Wet-season form.— ♂ *Upperside* black, with orange-yellow markings as follows:—Fore wing: discoidal streak clavate, bi-indentate above; a contiguous spot at base of interspace 3; a short, outwardly oblique band from middle of dorsum contracted in the middle; another outwardly oblique, somewhat macular, short, broad, preapical band from beyond middle of costa to interspace 4, with two small spots above it in interspaces 5 and 6. Hind wing: a very broad subbasal transverse band narrow at the costal margin, a postdiscal narrower similar band contracted into a line towards costal margin, sometimes traversed by a line of black spots and a subterminal very slender line. *Underside* ochraceous orange with numerous spots and lines of ferruginous, that form on fore wing a short, outwardly oblique streak not extending beyond interspace 3, and on hind wing a subbasal transverse streak in continuation of the above streak on the fore wing; also on both wings a series of obscure postdiscal cone-shaped marks, irrorated and rendered indistinct on the hind wing by a large patch of pink scales turning to a bluish lunule in interspace 3; fore wing with a ferruginous, hind wing with a pale yellow subterminal line. Antennæ black, ochraceous at apex; head with ferruginous pubescence; thorax and abdomen black on upperside, ochraceous beneath.— ♀ Similar, the orange markings broader and somewhat paler on the upperside.

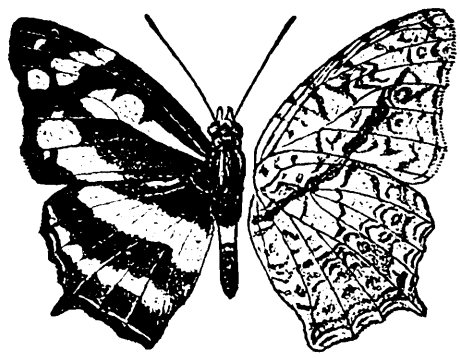

Fig. 68.—*Symbrenthia lucina.* ½.

Dry-season form differs in both sexes as follows:—The orange markings on the upperside broader and paler in the middle, the short bands on the anterior and posterior portions of the wing coalescing. *Underside* paler, all the dark markings less clearly defined than in the wet-season form.

Exp. ♂ ♀ 46–50 mm. (1·8 to nearly 2″).

Hab. The Himalayas from Simla to Sikhim; Assam; Burma; Tenasserim, extending to the Malayan Subregion.

Larva. "Body cylindrical. Head black, flattened in front, vertex broad and sharply depressed in the middle, minutely hairy, cheeks slightly tuberculous; third to the last segment armed with a dorsal and four lateral rows of black, rigid, branched spines on each side; segments fuliginous black, second segment with a slender pale ochreous dorsal line, third to last segment with two sublateral rows of small pale ochreous spots."

Pupa. "Pale purpurescent ochreous; thorax and abdomen laterally protuberant in front; with a thoracic and anterior-dorsal pointed prominence; abdominal segment with a row of dorsal and lateral small points; head-piece projecting and widely cleft." (*Moore.*)

389. **Symbrenthia hypselis**, *Godart* (Vanessa), *Encycl. Méth.* ix, *Suppl.* 1823, p. 818; *de N. Butt. Ind.* ii, 1886, p. 241.
Symbrenthia cotanda, *Moore, P. Z. S.* 1874, p. 569, pl. 66, fig. 9 ♂; *de N. Butt. Ind.* ii, 1886, p. 242; *Moore, Lep. Ind.* iv, 1899–1900, p. 114, pl. 322, figs. 1, 1 *a*–1 *h*, ♂ ♀.
Symbrenthia sinis, *de Nicéville, Jour. Bomb. N. H. Soc.* vi, 1891, p. 357, pl. F, fig. 9 ♂.

Wet-season form.— ♂ ♀. *Upperside* black, with deep fulvous-red markings of a darker shade than in *S. lucina*. Fore wing: discoidal streak broad, clavate, its anterior and posterior margins irregularly uneven; a short, broad, outwardly oblique band from beyond the middle of the dorsum to vein 3, and a preapical irregular spot across the middle of interspaces 5 and 6. Hind wing: a subbasal broad transverse band in continuation of the short oblique band on the fore wing; an equally broad postdiscal band narrowing anteriorly, not extending beyond vein 5, and a subterminal narrow line from vein 1 to 4. *Underside* white washed with pale yellow, sometimes pearly white, with darker ochraceous blotches in cell and at apices of interspaces 1 and 2 on the fore wing and near apex of hind wing; the black of the upperside replaced by tesselations of black with the pale ochraceous white ground-colour between them. Fore wing: the discoidal streak not well-defined, an inner and an outer slender subterminal broken black line. Hind wing with a prominent postdiscal series of metallic-green cone-like marks surrounded by yellowish white, both the cone-like marks and a narrow surrounding of yellowish white defined by black lines; an inner and an outer slender subterminal broken black line as on the fore wing, but the inner line below the short tail bordered outwardly by three metallic-green lunules, with a more obscure green lunule above the tornus. Antennæ black, ringed with pale yellow; head, thorax and abdomen dark fulvous red, banded with black; beneath, the palpi, thorax and abdomen pale yellowish white.

Dry-season form.— ♂ ♀ *Upperside* similar, but the fulvous-red markings paler, almost yellow, especially in the female, much broader and more extended in both sexes, with the margins more crenulate and irregular. *Underside*: the ground-colour paler, sometimes nearly white, the black tesselations smaller and more restricted.

Exp. ♂ ♀ 47–52 mm. (1·86–2·05″).

Hab. The Himalayas from Eastern Kumaun to Sikhim; the hills of Assam, Burma and Tenasserim, extending in the Malayan Subregion to Java.

390. **Symbrenthia brabira**, *Moore, P. Z. S.* 1872, p. 558; *de N. Butt. Ind.* ii, 1886, p. 244; *Moore, Lep. Ind.* iv, 1899–1900, p. 116, pl. 323, figs. 1, 1 *a*–1 *e*, ♂ ♀.
Symbrenthia hysudra, *Moore, P. Z. S.* 1874, p. 268, pl. 43, fig. 8; *de N. Butt. Ind.* ii, 1886, p. 244; *Moore, Lep. Ind.* iv, 1899–1900, p. 118, pl. 324, figs. 1, 1 *a*–1 *g*, ♂ ♀

Symbrenthia asthala, *Moore, P. Z. S.* 1874, p. 269, pl. 43, fig. 9; *de N. Butt. Ind.* ii, 1886, p. 244, pl. 23, fig. 106 ♂.
Symbrenthia sivokana, *Moore, Lep. Ind.* iv, 1899–1900, p. 117, pl. 323, figs. 2, 2 *a*, 2 *b*, ♂ ♀

Wet-season form.— ♂ ♀ Closely resembles the wet-season form of *S. hypselis*, but differs as follows:—*Upperside*: the fulvous-red markings paler, the preapical spot on fore wing formed into a narrow irregular band extending to the costal margin, almost invariably with one or two small orange-yellow spots beyond; the subbasal band on the hind wing narrowing towards the costal margin. *Underside* ground-colour darker ochraceous yellow, black tesselations smaller in size and somewhat more restricted in extent, on the hind wing the postdiscal cone-shaped metallic-green markings smaller. Antennæ, head, thorax and abdomen black; beneath, the palpi pale ochraceous, the thorax and abdomen blackish, marked and spotted with pale ochraceous.

Dry-season form.— ♂ ♀ Similar, the markings paler and much broader, especially in the ♀ The preapical narrow band and posterior oblique band on the upperside of the fore wing coalescing. *Underside*: the ground-colour paler, the black tesselations fewer and smaller in size; the postdiscal cone-shaped markings almost entirely of the ground-colour defined by a black line, either not at all or only sparsely irrorated with greenish scales.

Exp. ♂ ♀ 45–58 mm. (1·87–2·29″).

Hab. The Himalayas, Kashmir to Sikhim; Nepal.

S. brabira, Moore, and *S. hysudra*, Moore, are the paler, more western forms, *S. sivokana*, Moore, the Sikhim or Eastern form. In the last the preapical marking on the upperside of the fore wing, though it always forms a narrow band, in a few specimens does not reach the costal margin.

391. **Symbrenthia niphanda**, *Moore, P. Z. S.* 1872, p. 559; *de N. Butt. Ind.* ii, 1886, p. 243; *Moore, Lep. Ind.* iv, 1899–1900, p. 119, pl. 325, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Race silana.

Symbrenthia silana, *de Nicéville, J. A. S. B.* 1885, p. 117, pl. 2, fig. 9 ♂; *id. Butt. Ind.* ii, 1886, p. 243; *Moore, Lep. Ind.* iv, 1899–1900, p. 121, pl. 325, figs. 2, 2 *a*, ♂.

Wet-season form.— ♂ ♀ Closely resembles *S. hypselis*, but the markings on the upperside are always much paler, being yellowish white in the middle; on the fore wing the preapical marking forms a narrow zigzag band extending to the costa; and the postdiscal band on the upperside of the hind wing is proportionately very much narrower. *Underside* ground-colour pearly white, the black tesselations on both fore and hind wings more heavily marked than in *S. hypselis*; the discoidal streak on the fore and the subbasal transverse band of ground-colour on the hind wing are rendered thereby very conspicuous. Antennæ, head, thorax and

abdomen black; beneath, the palpi, thorax and abdomen pale ochraceous, shotted and marked with black.

Dry-season form.—Very similar, the markings slightly paler. The seasonal dimorphism in this and in the form next described seems to be much less marked than in the previously enumerated forms.

Exp. ♂ ♀ 48–62 mm. (1·88–2·45″).

Hab. Apparently confined to Sikhim, 3000–5000 ft.

Race **silana**, de Nicéville.—Differs from the typical form chiefly on the *underside*. Black tesselations, though quite as prominent and as heavily marked as in the typical form, are much more restricted, the ground-colour of pinkish-pearly white showing up most prominently as discoidal and preapical streaks on the fore wing and as transverse subbasal and postdiscal bands on the hind wing. The most conspicuous difference, however, between the race *silana* and *S. niphanda* is in the colour of the subterminal lunules on the underside of the hind wing; these in *niphanda*, as in *hypselis*, are always metallic green, in the race *silana* a beautiful metallic cerulean blue.

Exp. ♂ ♀ as in the typical form.

Hab. Sikhim; Bhutan.

Genus **PROTHOË**.

Prothoë, *Hübner, Samml. exot. Schmett.* ii, 1823–26, pl. 54; *de N. Butt. Ind.* ii, 1886, p. 293; *Moore, Lep. Ind.* iv, 1899–1900, p. 123.

Type, *P. francki*, Godart, from Java.

Range. Eastern and Southern divisions of the Indo-Malayan Region.

♂ ♀ Fore wing very broadly triangular; costa widely arched; apex blunt; termen straight, erect; tornus blunt; dorsum straight; cell closed; upper discocellular very short, middle twice length of upper, erect, lower long, deeply concave in its anterior portion, oblique posteriorly; vein 3 from well before lower apex of cell, 4 from apex; veins 8 and 9 remarkably long, emitted from basal half of 7; 10 and 11 free. Hind wing: costa long, widely arched; apex and anterior portion of termen curved, lower portion of termen produced, forming, between veins 3 and 4, a broad spatular tail, from apex of which to tornus the termen is oblique and conspicuously scalloped; dorsum arched; cell open; vein 7 closer to 6 than to 8. Antennæ long, a little longer than half length of fore wing; club long, narrow, gradual; palpi short, somewhat compressed; eyes naked. Male with a tuft of long hair at base of hind wing, overlapping a patch of specialized scales.

The larger forms of *P. calydonia*, Hewitson, and its race *belisama*, Crowley, have been separated as *Agatasa*; the differences, chiefly of neuration, are, however, very slight.

Key to the forms of Prothoë.

a. Upperside: ground-colour black.	
a'. Upperside fore wing: discal blue band medially marked with white..... .. .	*P. francki*, race [*angelica*, p. 381.
b'. Upperside fore wing: discal blue band medially not marked with white	*P. regalis*, p. 382.
b. Upperside: ground-colour, fore wing creamy yellow, hind wing bluish white.	*P. calydonia*, race *belisama*, p. 382.

392. **Prothoë francki**, *Godart, Encycl. Méth.* ix, *Suppl.* 1823, p. 825.

Race angelica (Pl. VIII, fig. 60, ♀).

Prothoë angelica, *Butler, A. M. N. H.* (5) xvi, 1885, pp. 53, 54; *de N. Butt. Ind.* ii, 1886, p. 295, front plate, fig. 120 ♂; *Moore, Lep. Ind.* iv, 1899–1900, p. 124, pl. 326, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Race **angelica**, Butler.— ♂ *Upperside*: black basal area of fore wing and posterior two-thirds of the hind wing from base to near termen irrorated with greenish scales, turning to blue outwardly on the hind wing. Fore wing: discocellulars with an angular black mark bordering them on the inner side, followed by a very broad blue discal band from costa to tornus; this band traversed medially by a series of white markings from costa to interspace 1, the white markings more or less faint posteriorly on the wing; two preapical spots and a subterminal spot in interspace 5 white. Hind wing touched with white at the apical angle and with a pale blue subterminal interrupted line between veins 1 *a* and 4. *Underside* pale ochraceous greyish brown. Fore wing: the greater portion of interspaces 1 *a* and 1 fuliginous black; cell with the following black markings: three heavily lined circular basal marks, a narrow zigzag medial band, and a transverse heavily lined loop along the discocellulars; the discal band and three white spots of the upperside indicated by obscure bluish-white markings; an irregular upper postdiscal black subtriangular patch traversed below the costa by a narrow, uninterrupted, short, transverse band of the ground-colour, the margins of this patch highly sinuous; a basal and subterminal black spot in interspace 2; a basal, medial and subterminal black spot in interspace 3; an irregular, elongate, inwardly constricted black mark in interspace 4; a black spot above it in interspace 5, and a subterminal broken transverse black line from interspace 5 to costa just before the apex. Hind wing variegated at base and in cell by a number of transverse heavily lined black markings and loops; a black irregular upper discal patch; an elongate conspicuous series of broad cone-like greyish-green markings defined inwardly and outwardly by black lines and irrorated with dusky black scales; an ochraceous-red spot near apex of interspace 1; the anterior portion of the tail and the interspace above it subterminally black. Antennæ dark ochraceous red; head, thorax and abdomen dark greyish brown;

beneath, the palpi white, thorax and abdomen pale greyish marked with black. Sex-mark, the tuft of hairs overlying the patch of specialized scales at base of hind wing on the upperside pale chestnut.— ♀ differs in the duller coloration on both upper and under sides; the discal band on the upperside of fore wing broader; on the underside this band and the white spots on the apical area are more clearly indicated than they are in the ♂.

Exp. ♂ ♀ 82–86 mm. (3·22–3·39″).

Hab. Tenasserim; Malay Peninsula; Sumatra; Borneo.

This form is very close to *P. francki*, Godart. Dr. Butler indicates the following differences:—

Discal band on fore wing "shining azure or greenish with a series of irregular white dashes prevalent colouring on external area below pale green." *P. angelica.*

Discal band on fore wing "cobalt-blue intersected by a broad white band prevalent colouring on external area below grey." *P. francki.*

393. **Prothoë regalis**, *Butler*, *A. M. N. H.* (5) xvi, 1885, pp. 53, 54, pl. 8, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 296; *Moore*, *Lep. Ind.* iv, 1899–1900, p. 126, pl. 326, figs. 2, 2*a*, ♂

♂ Closely resembles *P. francki*, race *angelica*, but on the upperside of the fore wing the discal blue band is replaced by a very broad, irregular, oblique patch of blue, uniform without any white medial markings, extending to the termen below vein 6 but subterminally interrupted in interspaces 3, 4 and 5 by a narrow band of the ground-colour; the portion thus cut off macular, traversed by the black veins; preapical spots as in *angelica* but bluish. *Underside* similar to that in *angelica*, but the black markings on the fore wing less, on the hind wing more extensive than in that form; the basal markings in the cell of the fore wing form spots, not rings as in *angelica*. On the hind wing the green cone-shaped postdiscal markings are much darker and inwardly margined with reddish lunules. Antennæ, head, thorax and abdomen as in *angelica*, but darker beneath.—Female unknown.

Exp. ♂ 84 mm. (3·32″).

Hab. Recorded only from Manipur and Upper Assam.

394. **Prothoë calydonia**, *Hewitson* (Nymphalis), *Exot. Butt.* i, 1855, p. 86, pl. 43, figs. 3, 4.

Race belisama.

Prothoë belisama, *Crowley*, *Trans. Ent. Soc.* 1891, p. 403, pl. 18, figs. 1, 2, ♂; *Moore* (Agatasa), *Lep. Ind.* iv, 1899–1900, p. 128, pl. 327, figs. 1, 1*a*, ♂.

Race **belisama**, Crowley.— ♂ *Upperside.* Fore wing creamy white; a short streak at base of costa, and interspaces 1*a* and 1 at extreme base bluish white; the costa and the apical half of the

wing black, following a curved highly sinuous black line, commencing above the white short streak at base of costa, circling round through apex of cell, base of interspace 3, across apical fourth of interspaces 2 and 1 to tornus; a spot on costa above the discocellulars, another beyond on middle of costa, three very obliquely placed detached elongate spots in interspaces 5, 6 and 7 and a preapical obscure spot creamy white. Hind wing bluish white; a subterminal black irregular band, very broad in interspace 6, decreasing to a slender line below the tail to tornus; a slender white terminal line, interrupted in interspaces 4 and 5. *Underside*: fore wing white, the cell anteriorly and the discal and apical areas above vein 3 variegated with black, with intervening spaces of red, ochraceous brown and the white ground-colour; interspace 2 suffused with yellow, interspace 1 with a diffuse black spot spreading into the interspaces above and below; the terminal margin from apex to tornus narrowly black. Hind wing with broad transverse black markings at base, interrupted by an oblique elongate red spot, followed by a transverse band, and a discal series of elongate black markings in the end of the cellular area and interspaces, these latter traversed by the veins with narrow ochraceous-brown intervening spaces; four transverse postdiscal highly sinuous greyish lines on a black ground, these lines diffuse and broadened posteriorly; a subterminal incomplete narrow transverse band and an incomplete terminal black line; the tail black; the apices of interspaces 1 and 2 and of the tail bluish white. Antennæ black; head, thorax and abdomen bluish white, the pronotum with transverse, the mesonotum with longitudinal lines of black; beneath, the palpi bluish white with a lateral line of red, thorax white variegated with black and red; abdomen white, with a longitudinal line of black.—Female unknown.

Exp. ♂ 112 mm. (4·41″).

Hab. Recorded only from Tenasserim and Lower Burma.

This race differs prominently from the typical form by the black on the terminal area of the hind wing on the upperside being very much narrower and more restricted.

Genus **RHINOPALPA.**

Rhinopalpa, *Felder, Wien. ent. Monatsch.* iv, 1860, p. 399; *de N. Butt. Ind.* ii, 1886, p. 245; *Moore, Lep. Ind.* iv, 1899–1900, p. 130.

Type, *R. polynice*, Cramer, from India.

Range. Indo- and Austro-Malayan Regions.

♂ ♀ Fore wing: costa strongly arched, apex truncate and falcate below; termen from beneath falcate, angle of apex to middle of interspace 1 deeply concave, thence bent at an angle inwards to tornus; dorsum straight; cell open; veins 5 and 6 crowded up near 7 at base; upper and middle discocellulars very

short, subequal; veins 8 and 9 out of apical half of 7, 10 and 11 free, from just below apex of cell. Hind wing: costa arched; termen scalloped outwardly, oblique to apex of vein 3, there produced into a tail, below which it is inwardly oblique, slightly concave to tornal lobe at apex of vein 1; dorsum straight from base for about two-thirds of its length, then deeply emarginate and again notched slightly beyond; cell open. Antennæ long, more than half length of fore wing, club gradual, long; palpi obliquely porrect, broad and somewhat flat in front, third joint long, acute at apex; eyes naked.

A single form occurs within our limits.

395. **Rhinopalpa polynice** (Pl. X, fig. 75), *Cramer* (Papilio), *Pap. Exot.* iii, 1780, pl. 195, figs. D, E; *Moore, Lep. Ind.* iv, 1899–1900, p. 131, pl. 327, figs. 2, 2*a*, 2*b*, ♂ ♀

Rhinopalpa fulva, *Felder, Wien. ent. Monatsch.* iv, 1860, p. 399; *Dist. Rhop. Malay.* 1883, p. 98, pl. 12, figs. 1, 2, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 246, pl. 23, fig. 102 ♂

♂ *Upperside* reddish fulvous. Fore and hind wings with the apex and terminal margins broadly black, broader on the fore than on the hind wing; on the latter sometimes conspicuously narrowing posteriorly especially between the tail and tornus; three postdiscal posterior round black spots, and the tail and interspaces outwardly touched with reddish fulvous, the tornal angle with blue. *Underside* rich dark brown; basal halves of both fore and hind wings with several very slender delicate transverse silvery lines, the outer three of which form a sort of discal inwardly curved band on fore wing; beyond this a dark brown transverse shaded narrow band, double on the hind wing, the inner one somewhat lunular, followed by a series of somewhat obscure round white-centred brown ocelli, and three broken subterminal silvery lines. The ocellus in interspace 1 on the fore wing inwardly bordered by a conspicuous transverse white spot; on the hind wing the ocelli in interspaces 2, 4, 5 and 6 inwardly bordered with rich dark ochraceous; a spot of the same colour on the tail; the tornal lobe with a short transverse line above it. Antennæ dark brown, head and thorax somewhat greenish brown, abdomen fulvous red; beneath brown, palpi ochraceous white.—♀ *Upperside*: ground-colour ochraceous yellow, basal areas of wings shaded broadly with brown; black terminal margins of the wings and markings as in the ♂ *Underside*: basal areas of wings from costa beyond bases of veins 5, 6 and 7 in the fore wing to a point about middle of dorsal margin of hind wing brown, the outer border of this brown shading outwardly concave on fore, inwardly oblique on hind wing; a very broad brown, transverse, pale ochraceous band, darkening to yellow outwardly, followed by a broad brown terminal margin, traversed by a series of ocelli as in the ♂, and an inner and outer subterminal sinuous white fascia; the basal area and the inner half of the broad discal band also crossed by several similar white lines. Antennæ, head, thorax and abdomen ochraceous, paler beneath.

Exp. ♂ ♀ 76–82 mm. (3″–3·25″).

Hab. Assam; Cachar; through the hills of Burma to Tenasserim; the Malay Peninsula; Sumatra and Borneo.

Genus **YOMA.**

Yoma, *Doherty, J. A. S. B.* 1886, p. 258; *de N. Butt. Ind.* ii, 1886, p. 245 note; *Moore, Lep. Ind.* iv, 1899–1900, p. 133.

Type, *Y. vasuki*, Doherty, from Burma.

Range. Indo-Malayan Region.

♂ ♀ Resembles *Rhinopalpa*, but the terminal margin of the fore wing is not angular below vein 2, and the terminal margin of the hind wing is entire, not scalloped, with a comparatively shorter tail and smaller tornal lobe. The venation of the wings is quite different. Cell of fore wing broad, not quite half length of wing entirely closed; upper discocellular very short, middle deeply concave, very little shorter than lower, lower concave; veins 3 and 4 from lower apex of cell; 8 and 9 out of 7, latter emitted much closer to base of 7 than in *Rhinopalpa*; 10 and 11 free, emitted as in *Rhinopalpa* but much shorter. Hind wing: cell slenderly closed, short, much less than half length of wing; veins 3 and 4 stalked, vein 6 a very little closer to vein 7 than to vein 5. Antennæ and palpi much as in *Rhinopalpa*, the former proportionately somewhat shorter; eyes naked.

396. **Yoma vasuki**, *Doherty, J. A. S. B.* 1886, p. 259; *de N.* (Rhinopalpa) *Butt. Ind.* ii, 1886, p. 247; *Moore, Lep. Ind.* iv, 1899–1900, p. 133, pl. 328, figs. 1, 1 *a*–1 *c*, ♂ ♀

♂ ♀ *Upperside* dark brown. Fore and hind wings with a broad transverse discal orange-yellow fascia, its inner margin sinuous on fore wing; on the hind wing the fascia pales to white on the costa, and narrows to a point posteriorly. Fore wing with a more or less obsolescent postdiscal sinuous series of yellowish-white spots, the subapical three or four only, as a rule, clearly defined. Hind wing with two subapical white spots. Both fore and hind wings with an inner obscure and an outer more clearly defined dark brown subterminal line, following the contour of the margin. *Underside* mottled grey and brown; the basal halves of both wings abruptly much darker, the yellow discal fascia of the upperside showing through as a pale transverse band, followed by a sinuous irregular dark-shaded band, traversed by a series of black specks; on the fore wing two white spots in interspaces 3 and 4; lastly, faint dark inner and outer subterminal lines. Antennæ, head, thorax and abdomen dark brown; beneath dull greyish white.

Exp. ♂ ♀ 84–92 mm. (3·34–3·62″).

Hab. Burma; Tenasserim.

Specimens taken in April and beginning of May are paler both above and below.

Genus HYPOLIMNAS.

Hypolimnas, *Hübner, Verz. bek. Schmett.* 1816, p. 45; *de N. Butt. Ind.* ii, 1886, p. 121.
Diadema, *Boisduval, Voy. Astr., Lép.* 1832, p. 135; *Wallace, Trans. Ent. Soc.* 1869, p. 277.
Apatura, *Moore, Lep. Ind.* iv, 1899–1900, p. 135.

Type, *H. bolina*, Linn., from India.
Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa well arched; apex slightly produced and very broadly rounded; termen slightly concave, tornus rounded; dorsum straight; cell closed, rather short, not half length of wing; upper discocellular minute, middle deeply concave, lower very slender, slightly concave; vein 3 from before lower apex of cell, 4 from apex, 9 from about middle of 7, 10 and 11 free. Hind wing very broadly oval; costa arched; termen strongly curved, scalloped; dorsum arched, emarginate above tornus; cell slenderly closed; veins 3 and 4 from apex of cell. Antennæ not quite half length of fore wing, club well-developed but gradual; palpi subporrect, broad in front, third joint short, pointed; eyes naked; thorax moderately robust.

Key to the forms of Hypolimnas.

a. Upperside ♂ ♀ black: fore and hind wings with a postdiscal series of white spots always present ... ... *H. bolina*, p. 386.
b. Upperside ♂ black: fore and hind wings without a postdiscal series of white spots; ♀ tawny *H. misippus*, p. 388.

397. **Hypolimnas bolina,** *Linn.* (Papilio) *Syst. Nat.* ed. x, 1758, p. 479; *Moore* (Apatura), *Lep. Ceyl.* i, 1881, p. 58, pl. 30, figs. 1, 1 *b*, ♂, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 123; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 273; *Moore* (Apatura), *Lep. Ind.* iv, 1899–1900, p. 137, pl. 329, figs. 1, 1 *a*–1 *f*, larva & pupa, ♂ ♀, & pl. 330, figs. 1, 1 *a*–1 *f*, ♂ ♀

Wet-season form.— ♂ *Upperside* velvety black. Fore wing: an oval shining iridescent blue patch broadly centred with white and traversed by the black veins obliquely crossing interspaces 3, 4 and 5; two preapical, obliquely placed, elongate white spots and a postdiscal inwardly curved transverse series of minute white dots. Hind wing: a central oval shining iridescent blue patch broadly centred with white and traversed by the black veins as on the fore wing but larger; a postdiscal series of minute white dots in continuation of that on the fore wing. Fore and hind wings: cilia white alternated with black. *Underside* deep purplish brown. Fore wing: some minute white flecks on and just below basal half of costal margin, an oblique discal series of three very slender streaks and elongate oval spots from costa to interspace 3, two

preapical white spots continued as a postdiscal transverse row of white spots as on the upperside, followed by an inner and an outer transverse subterminal series of lunular white marks and a terminal dark line. The series of lunular white marks sometimes complete, but generally well-defined only below vein 5. Hind wing: a tolerably broad discal white band traversed by the black veins; a postdiscal transverse series of minute white dots in continuation of that on the fore wing; an inner subterminal series of elongate whitish markings and an outer subterminal slender white lunular broad line, followed by a terminal dark line. Antennæ, head, thorax and abdomen black; beneath, the palpi, thorax and abdomen dark purplish brown.

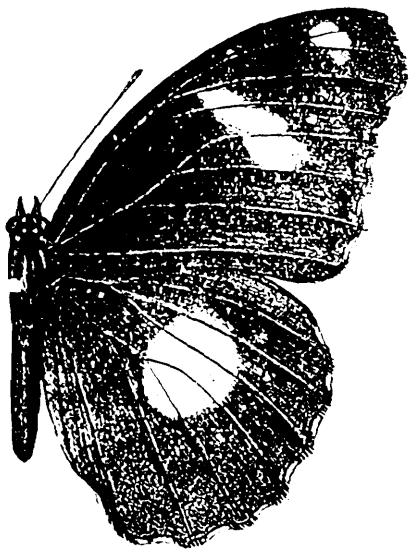

Fig. 69.
Hypolimnas bolina, ♂. ½.

♀ *Upperside* dark velvety brown, paling towards the outer margins. Fore wing: an oblique series of rich iridescent blue spots from just below middle of costa to interspace 3, a postdiscal sinuous transverse series of white spots, an inner subterminal series of short transverse white narrow markings in the interspaces, and an outer subterminal series of white lunules. Hind wing: a postdiscal transverse series of white spots followed by a series of double cone-shaped white marks, two in each interspace, and an outer subterminal series of white lunules. *Underside* dull brown. Fore wing: minute white flecks on, and one or two white spots just below, basal half of costal margin; an oblique discal series of spots, two preapical spots, a postdiscal transverse series of spots, an inner subterminal series of somewhat cone-shaped marks and an outer subterminal series of lunules white, often sullied with yellowish. Hind wing as on the upperside, but with the addition of a very broad discal, somewhat diffuse, and obscure whitish transverse band, and the cone-shaped inner subterminal white markings of the upperside more continuous, separated only by the slender black veins. Antennæ, head, thorax and abdomen as in the ♂

Dry-season form.— ♂ ♀ Similar to the ♂ and ♀ of the wet-season form but with the following differences:—Larger; the iridescent blue patches proportionately larger; the hind wing in the ♂ with, on the upperside, a more or less well-marked subterminal highly sinuous pale line; the fore wing in the ♀ with, on the upperside, one or two additional iridescent blue spots just below basal half of costa; the inner subterminal transverse line of white markings much broader, each emarginate on the inner side. *Underside* ♂: ground-colour hair-brown; basal half of fore wing dark brown. Hind wing: the discal band and inner subterminal markings

broader, diffuse and irrorated with dusky scales.— ♀. Hind wing entirely without the transverse broad discal whitish band, or sometimes this band represented only by a pale shading.

Exp. ♂ 74–96, ♀ 90–114 mm. (♂ 2·94–3·8″, ♀ 3·55–4·5″).

Hab. Throughout our limits, extending to the Malayan Subregion and to China.

Larva. "Cylindrical, armed with nine longitudinal rows of fine branched spines; a single pair of longer and stouter spines on the head. Colour very dark rich brown; head light brown." (*Davidson & Aitken.*)

Pupa. "Dark earthy brown mottled with a lighter shade; somewhat angular about the head and thorax; abdominal segments armed with dorsal rows of short sharp tubercles." (*Davidson & Aitken.*)

This is a variable insect.— ♂. The blue patch on the upperside of the hind wing is sometimes in both seasonal forms entirely devoid of the pale centering.— ♀. The discal oblique iridescent blue spots on upperside of fore wing in both seasonal forms occasionally reduced to one spot. The underside in both seasonal forms is also variable; as to the presence or absence of the discal white band and subterminal white markings on the hind wing, these latter are often much reduced in size.

398. **Hypolimnas misippus**, *Linn.* (Papilio) *Mus. Ulr.* 1764, p. 264 ♀; *Moore* (Apatura), *Lep. Ceyl.* i, 1881, p. 59, pl. 29, figs. 1, 1 *a*–1 *c*, ♂ ♀, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 126, pl. 20, fig. 85, ♂ ♀; *Betham, Jour. Bomb. N. H. Soc.* v. 1890, p. 282; *Moore* (Apatura), *Lep. Ind.* iv, 1899–1900, p. 144, pl. 332, figs. 1, 1 *a*–1 *f*, ♂ ♀.

♂ *Upperside* rich velvety dark brownish black. Fore wing: a broad oval oblique white spot from below vein 3 to vein 7, and a preapical smaller similar white spot; both spots crossed by black veins and surrounded by iridescent blue. Hind wing with a much larger similar rounded white spot, surrounded with iridescent blue, but the veins crossing it yellowish, not so prominent as on the fore wing; two or three minute specks of white at the tornus. Cilia of both fore and hind wings white alternated with black. *Underside* fore wing: bases of interspaces 1 and 2 and cell rich light castaneous, discal area fuscous brown; apical half golden brown; basal half of costal margin flecked with white: cell anteriorly black with three white spots; a narrow, transverse, very short, white mark beyond apex of cell; a very broad, somewhat oval, white discal patch from costa to middle of interspace 2 edged with diffuse dusky black; the preapical white spot as on the upperside but not surrounded with blue, continued posteriorly as a transverse series of small postdiscal white spots; an inner and an outer transverse series of white lunules divided by a sinuous black line followed by a terminal black line. Hind wing: basal and postdiscal areas chestnut-red; a black spot at base of vein 8

defined by white lines; a very broad medio-discal white band from costa to dorsum, crossed at apex of interspace 1 *a* by a transverse black mark, beyond the middle of interspace 7 by a broad black bar, and in interspace 7 bordered inwardly by black; a postdiscal series of small white spots in continuation of those on the fore wing; an inner subterminal series of paired subtriangular small white spots, an outer subterminal line of slender white lunules, an intervening black sinuous line between the two series and a black terminal line. Cilia of both fore and hind wings white alternated with black. Antennæ, head, thorax and abdomen dark brown; beneath, the palpi and thorax white, the abdomen castaneous.

♀ Polymorphic. *First form*: *Upperside* rich tawny. Fore wing: the costa, the apical half of the wing and the termen black, the inner margin of this black area follows a line crossing the cell obliquely and curving round to near apex of interspace 1 *a*; a white spot beyond apex of cell; an oblique band of elongate white spots, a more transverse short subapical series of three or four much smaller white spots, and an inner and an outer subterminal transverse series of very small slender white lunules. Hind wing: a transverse round spot in interspace 7, the terminal margin broadly black, the latter traversed by two transverse series of paired small white lunules. Cilia of fore and hind wings white alternated with black. *Underside* paler tawny yellow, the disc of the fore wing deeper tawny; the markings are much as on the upperside but differ as follows:—Fore wing: three white spots along the anterior margin of cell, the black on the apical area beyond the oblique band of white spots replaced by golden. Hind wing: a black spot at base of vein 8, another at base of interspace 5, and a postdiscal transverse series of small white spots in addition to the markings as on the upperside.

Second form. Similar to the above but the disc of the hind wing on both upper and under sides white. =*alcippoides*, Butler.

Third form. Similar to the first form, but on the fore wing the oblique series of elongate spots yellowish and the middle portion of the black apical area tawny.

Exp. ♂ ♀ 70–93 mm. (2·75–3·66″).

Hab. Throughout our limits; in the Himalayas up to 6000 feet; extending to the Malayan Subregion and China.

Larva. Capt. H. L. de la Chaumette (*teste* Moore) describes this as cylindrical, black, with a darker black dorsal line, banded transversely with pale brown transverse tuberculated small spots; beneath dark olive-brown; legs and head brick-red; head furnished with two long black thick branched spines; the rest of the segments except the anal with ten branched spines, dirty, transparent white in colour and disposed in longitudinal rows, anal segment with two similar spines. Food-plant, *Portulaca oleracea.*

Pupa. "Pendulous. Short and thick; light brown, without metallic spots, variegated and streaked with bistre, particularly towards the head and tail." (*de la Chaumette.*)

Genus **PENTHEMA**.

Penthema, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1847, pl. 39; *de N. Butt. Ind.* ii, 1886, p. 144; *Moore, Lep. Ind.* iv, 1899–1900, p. 150.

Type, *P. lisarda*, Doubleday, from Sikhim.

Range. N.E. India; Assam; Burma; Tenasserim; China.

♂ ♀. Fore wing: costa well-arched; apex slightly produced, broadly rounded; termen oblique, very slightly concave in the middle; tornus blunt, dorsum straight; cell not half length of wing; upper and middle discocellulars erect, short, lower oblique, longer than the upper and middle together; vein 3 from well before lower apex of cell, 4 from apex, 8 and 9 from apical half of 7, 10 and 11 free; 10 running approximate to 7 for basal half of its length, but not touching or anastomosed with it. Hind wing: costa widely arched, termen strongly curved, tornus rounded; dorsum straight, slightly emarginate above tornus; cell closed, short, not nearly half length of wing; veins 3 and 4 from lower apex of cell; precostal vein strongly curved inwards. Antennæ about half length of fore wing, filiform; club very narrow and long, barely thicker than the stalks of the antennæ; palpi somewhat clavate, broadening upwards to base of third joint, this latter short, attenuated, acute at apex; eyes naked.

I have followed Messrs. de Nicéville and Moore in keeping the three Indian forms separate, but they are all very closely related. *P. darlisa*, Moore, and *P. binghami*, Wood-Mason, are probably races of the typical form.

Key to the forms of Penthema.

a. Hind wing: cell entirely white ..	*P. lisarda*, p. 390.
b. Hind wing: cell bluish black, with two longitudinal white streaks near apex	*P. darlisa*, p. 391.
c. Hind wing entirely bluish black, without any white markings	*P. binghami*, p. 392.

399. **Penthema lisarda**, *Doubleday* (Diadema), *A. M. N. H.* (1) xvi 1845, p. 233; *de N. Butt. Ind.* ii, 1886, p. 144; *Moore, Lep Ind.* iv, 1899–1900, p. 151, pl. 333, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀. *Upperside* brownish black, fore wing in certain lights suffused with blue. Fore wing with the following white or yellowish-white markings: a broad short streak at base of cell, two outwardly pointed elongate spots placed somewhat obliquely across middle of cell, a streak extending from base to near apex in interspace 1 *a*, successively shorter, very broad streaks in nterspaces 1, 2 and 3; a series of five much narrower streaks above, placed obliquely to the costa; a postdiscal and a subterminal series of transverse spots, the former oval or rounded, in inter-

spaces 2 to 7, the latter somewhat quadrate, in interspaces 1 to 7. Hind wing: cell and interspaces 1 *a* and 1 *b* entirely white, the latter two divided by a black vein, and 1 *a* margined outwardly with broad, black streaks; discal streaks of white in the rest of the interspaces, shortest in interspace 3, and joining on to the postdiscal spots beyond in interspaces 5 and 6; a postdiscal series of round spots and a subterminal series of quadrate spots white, as on the fore wing but smaller; cilia of both fore and hind wings white alternated with black. *Underside* dusky brown, purpurescent black in cell of fore wing; the white markings as on the upperside but tinged with blue, on the hind wing not so well defined; the discal streaks shorter; the postdiscal series of spots small, the subterminal series of spots somewhat cone-shaped. Antennæ brownish black; head, thorax and abdomen brown with spots and markings white; beneath, the palpi and thorax dusky black, the abdomen greyish.

Exp. ♂ ♀ 120–130 mm. (4·75–5·13″).

Hab. Sikhim; Assam; Upper Burma, always in deep forest from about 1500 to 4000 feet elevation.

400. **Penthema darlisa,** *Moore, P. Z. S.* 1878, p. 829; *de N. Butt. Ind.* ii, 1886, p. 145; *Moore, Lep. Ind.* iv, 1899–1900, p. 152, pl. 334, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ ♀ Closely resembles *P. lisarda*, but on the upperside the ground-colour is darker, the streaks and spots very much narrower and smaller, and those on the fore wing conspicuously suffused with blue. Fore wing: the streak at base of cell broken, forming two elongate narrow spots, the spot in interspace 4 of the postdiscal series conspicuously out of line with the rest. Hind wing: the white in the discoidal cell reduced to two short streaks. On both fore and hind wings the spots of the subterminal series more or less hastate in shape with the points directed inwards. *Underside*: ground-colour as in *P. lisarda*, the streaks and spots of white as on the upperside but broader and somewhat larger; those on the fore wing more decidedly suffused with blue. Antennæ, head, thorax and abdomen as in *P. lisarda* but darker; beneath, the abdomen white along the sides.

Fig. 70.
Penthema darlisa. ⅔.

Exp. ♂ ♀ 128–132 mm. (5·07–5·21″).

Hab. Lower Burma, Tenasserim.

401. **Penthema binghami**, *Wood-Mason, J. A. S. B.* 1881, p. 87, pl. 4, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 146, front plate, fig. 121 ♂; *Moore, Lep. Ind.* iv, 1899–1900, p. 153, pl. 335, figs. 1, 1 *a*, ♂

♂ ♀ Closely resembles *P. darlisa* in the ground-colour of the upperside being somewhat darker than in the type of the genus, *P. lisarda*, but the white markings are still more restricted. On the fore wing only one or two of the oblique streaks beyond the cell and the postdiscal and subterminal spots are left; the basal three-fourths of the wing are immaculate, though in certain lights showing marks paler than the ground-colour, and representing the lost markings. Hind wing: basal half similarly immaculate, but the postdiscal and subterminal spots present and larger than in *P. darlisa*. *Underside*: ground-colour much darker, markings as on the upperside; one or two additional spots on the disc in the fore wing. Antennæ, head, thorax and abdomen as in *P. darlisa* but darker.

Exp. ♂ ♀ 133 mm. (5·2″).

Hab. Tenasserim.

Genus **DOLESCHALLIA.**

Doleschallia, *Felder, Ein Neues Lep.* 1861, p. 14; *Moore, Lep. Ceyl.* i, 1881, p. 38; *de N. Butt. Ind.* ii, 1896, p. 267; *Moore, Lep. Ind.* iv, 1899–1900, p. 154.

Type, *D. bisaltide*, Cramer, from Java.

Range. Indo-Malayan Region.

♂ ♀. Fore wing very broad and short; costa strongly arched, apex produced, truncate; termen sinuous, below vein 7 angulate, then concave, and again convex posteriorly; tornus bluntly angulate, dorsum straight; cell open; upper discocellular minute, middle concave, emitting a short spur inwards; vein 9 from just beyond middle of 7, 10 and 11 free. Hind wing: costa at base very strongly arched, then nearly straight to apex; termen slightly arched; tornus produced at apex of vein 1 into a long spatulate tail; dorsum sinuous, basal two-thirds strongly arched, then deeply concave; cell open; vein 7 closer to 6 than to 8. Antennæ not quite half length of fore wing; club long, narrow, gradual; palpi broadened in front, acutely pointed at apex, third joint long; eyes naked.

Key to the forms of Doleschallia.

a. Upperside fore wing: oblique golden yellow band from middle of costa extending to interspace 5, a spot of like colour beyond in interspace 4	*D. bisaltide*, race [*malabarica*, p. 393.
b. Upperside fore wing: oblique golden yellow band from middle of costa extending to interspace 4, no spot of like colour beyond	*D. basaltide*, race [*andamanensis*, p. 394.

402. **Doleschallia bisaltide**, *Cramer* (Papilio), *Pap. Exot.* ii, 1779, pl. 102, figs. C, D.

Race malabarica (Pl. X, fig. 74).

Doleschallia bisaltide, *Moore* (*nec Cramer*), *Lep. Ceyl.* 1881, p. 38, pl. 19, figs. 1, 1 *a*, 1 *b*, ♀, larva & pupa.
Doleschallia polibete, *de Nicéville* (*nec Cramer*), *Butt. Ind.* ii, 1886, p. 268; *Davidson, Bell & Aitken* (*nec Cramer*), *Jour. Bomb. N. H. Soc.* x, 1896, p. 257, pl. 3, figs. 2, 2 *a*, larva & pupa.
Doleschallia bisaltide malabarica, *Fruhstorfer, Berl. ent. Zeitsch.* xliv, 1899, p. 279, pl. 2, fig. 8.
Doleschallia bisaltide continentalis, *Fruhstorfer, Berl. ent. Zeitsch.* xliv, 1899, p. 279.
Doleschallia indica, *Moore, Lep. Ind.* iv, 1900, p. 155, pl. 336, figs. 1, 1 *a*–1 *c*, & 2, 2 *a*, 2 *b*, ♂ ♀, larva & pupa.

Race andamanensis.

Doleschallia polibete, pt., *de N.* (*nec Cramer*) *Butt. Ind.* ii, 1886, p. 268, pl. 23, fig. 103 ♂
Doleschallia bisaltide andamanensis, *Fruhstorfer, Berl. ent. Zeitsch.* xliv, 1899, p. 280.
Doleschallia andamanica, *Moore, Lep. Ind.* iv, 1900, p. 157, pl. 335, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Race **malabarica**, Fruhstorfer.—♂ ♀ *Upperside* yellowish brown, paling anteriorly to rich golden yellow on the fore wing, shading anteriorly into dusky brown on the hind wing. Fore wing: the apical half black, following a line from vein 12 opposite the discocellulars, passing through apex of cell, obliquely across middle of interspace 3 and curving down to tornus; a black spot near apex of cell coalescing with the inner margin of the black colour; a short, very oblique, broad golden-yellow band, broader in the ♀ than in the ♂, from middle of costal margin to interspace 5; a spot beyond in line with it in interspace 4; two, sometimes three, minute preapical white specks; the cilia fulvous, touched with white anteriorly. Hind wing uniform; the costal margin broadly as noted above, a subterminal narrow band and narrower terminal line posteriorly, dusky black; a postdiscal black spot in interspaces 2 and 5 respectively; the cilia fulvous. *Underside* very variable, closely resembling a dry leaf. No two specimens are ever alike. The ground-colour varies from reddish to dark greenish brown with irrorations of greyish and black scales; apex of the fore and the terminal margin posteriorly of the hind wing more or less lilacine; fore and hind wings crossed by a dark narrow discal fascia, generally bordered on the inner side by a greyish line; this fascia bent inwards at right angles above vein 6 of the fore wing, and, in most specimens, bordered internally by a diffuse pale patch and externally by an oblique whitish mark, beyond which is a subcostal white spot, followed by a transverse sinuous postdiscal series of obscure ocelli crossing both wings, each ocellus centred by a minute dot, white on the fore, black on the hind wing. In the ♂ there are generally, but not

invariably, a number of whitish spots on the basal areas of both wings. Antennæ blackish brown, ochraceous at apex; head, thorax and abdomen dark fulvous brown; beneath, the palpi white, the thorax and abdomen pale brown.

Exp. ♂ ♀ 84–88 mm. (3·31–3·48″).

Hab. Sikhim; S. India; Ceylon; Assam; Burma and Tenasserim.

Larva. Black, with two rows of dorsal white spots. Head with a pair of branched spines; rest of the segments with a dorsal and a lateral row of blue branched spines on each side.

Pupa. Yellowish with numerous black spots; constricted in the middle; head produced into two points. (Described from figure in Jour. Bomb. N. H. Soc.)

Race **andamanensis**, Fruhstorfer, closely resembles the Indian form, but differs in the oblique yellow band on the upperside of the fore wing, which is broader and extends from the middle of the costal margin uninterruptedly to interspace 4, though it is preapically constricted. On the upperside of the hind wing there is an inner as well as an outer conspicuous subterminal narrow black band. On the *underside* this race is as variable as the typical form, but the ground-colour in many specimens (presumably wet-season broods) is of a richer, almost metallic green, with the basal snow-white spots defined with black lines; the ocelli in interspaces 2 and 5 seem also to be more clearly defined than in the Indian form. Antennæ, head, thorax and abdomen as in *malabarica*.

Exp. ♂ ♀ 71–82 mm. (2·81–3·22″).

Hab. The Andamans.

The forms of *Doleschallia* are all eminently variable. Within our limits I have, after the examination of a long series, been able to clearly discriminate only two fairly constant races, and specimens of these even vary not only on the underside, which is cryptic in coloration and therefore liable to much variation, but also on the upperside. A ♂ from the Andamans, in my collection, has the band remarkably short, about half the length of that in other specimens; while a ♀ from Upper Burma, also in my collection, has the band broad and long, precisely as in the race *andamanensis*. A ♂ specimen from Sikhim, in the collection of the British Museum, has the ground-colour on the underside of the wings up to the transverse discal band dark brownish black, and beyond the band violaceous grey, in striking contrast.

Genus **KALLIMA**.

Kallima, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1849, p. 324, pl. 52; *Moore, Lep. Ceyl.* i, 1881, p. 36; *de N. Butt. Ind.* ii, 1886, p. 257; *Moore, Lep. Ind.* iv, 1899–1900, p. 159.

Type, *K. paralekta*, Horsfield, from Java.

Range. The Indo-Malayan Region.

♂ ♀. Fore wing very broadly triangular, the costa and termen

subequal in length, dorsum shorter; costa arched, apex acute, often produced and slenderly acuminate; termen oblique, inclined outwards from below apex to vein 2, then directed somewhat obliquely inwards; tornus angulated; dorsum slightly sinuous; cell closed, short, very little more than one-third the length of the wing; veins 6 and 7 from a point; upper discocellular therefore minute, middle inclined obliquely inwards, lower slender, concave; veins 3 and 4 from lower apex of cell, 9 out of basal half of 7, 10 and 11 free. Hind wing irregularly triangular or subtriangular; costa widely arched, termen more rounded, apex angulated; tornus produced into a long spatulate tail; dorsum above it emarginate, basal portion forming a broad abdominal fold; cell slenderly closed, very short, about one-third the length of the wing; veins 3 and 4 stalked, 6 and 7 well apart, precostal nervure forked at apex. Antennæ a little less than half length of fore wing; club long, narrow, gradual; palpi long, flattened anteriorly and projecting well beyond the head, third joint long, pointed at apex; eyes naked.

Key to the forms of Kallima.

a. Upperside fore wing: discal band orange	*K. inachus*, p. 395.
b. Upperside fore wing: discal band blue or bluish white.	
a' Upperside fore wing: distance of outer edge of discal band from base of wing, measured on costal margin, greater than half length of wing. ..	*K. horsfieldi*, p. 397
b' Upperside fore wing: distance of outer edge of discal band from base of wing, measured on costal margin, much less than half length of wing	*K. knyvetti*, p. 398.
c. Upperside fore wing: discal band pure white without a trace of blue	*K. albofasciata*, p. 399.

403. **Kallima inachus** (Pl. X, fig. 76), *Boisduval* (Paphia), *in Crochard's ed. Cuv. Règ. Anim., Ins.* ii, 1836, pl. 139, fig. 3 ♀; *Dudgeon, Jour. Bomb. N. H. Soc.* ix, 1895, p. 342; *Moore, Lep. Ind.* iv, 1899–1900, p. 165, pl. 340, figs. 1, 1 *a*–1 *c*, ♂ ♀, & pl. 341, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Paphia hügelii, *Kollar, in Hügel's Kaschmir*, iv, 1844, p. 432, pl. 9, fig. ♂ ♀; *de N.* (Kallima) *Butt. Ind.* ii, 1886, p. 261; *Moore* (Kallima), *Lep. Ind.* iv, 1899–1900, p. 162, pl. 337, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Kallima limborgii, *Moore, P. Z. S.* 1878, p. 828; *de N. Butt. Ind.* ii, 1886, p. 262; *Moore, Lep. Ind.* iv, 1899–1900, p. 168, pl. 342, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Kallima atkinsoni, buckleyi, boisduvali, huttoni, et ramsayi, *Moore, Trans. Ent. Soc.* 1879, pp. 10–12.

Kallima inachis et boisduvalli, *de N. Butt. Ind.* ii, pp. 261 & 262.

Kallima buckleyi, *Moore, Lep. Ind.* iv, 1899–1900, p. 164; pl. 338, figs. 1, 1 *a*–1 *c*, & pl. 339, figs. 1, 1 *a*–1 *d*, ♂ ♀

Dry-season form.— ♂ ♀ Fore wing: discoidal cell, interspace

1 *a*, 1 to near apex, basal half of 2, and extreme bases of 3 and 4 rich violescent blue, margined along the discocellulars and in interspaces 2, 3 and 4 by black, spread diffusely outwards in interspaces 1 *a* and 1. A very broad obliqne discal orange band from costa to apices of interspaces 1 and 2, thickly irrorated in these latter with dusky violaceous black scales; apical third of wing velvety purpurescent black; a hyaline transverse spot near middle of interspace 2, and a subtriangular similar small preapical spot. Hind wing more uniform violescent blue; the costal margin and apex very broadly brown, somewhat densely irrorated with dusky violescent black scales; dorsal margin brown; a ridge of long brownish hairs along vein 1 spreading on to the dorsal margin. Fore and hind wings crossed by a subterminal dusky zigzag line commencing about the middle of interspace 3 in the fore wing, and most conspicuous on the hind wing. *Underside* very closely resembles a dry leaf; ground-colour very variable, but usually some shade of brown (rusty, greyish and yellowish browns being the most common), always with scattered dark dots or little dark patches having the appearance of fungus-like or lichenous growths so common on dead leaves in the tropics. When the insect closes its wings over its back the likeness to a dead leaf is most striking, and is heightened by a straight transverse, narrow, dark band running from the apex of the fore to the tornus of the hind wing, often with oblique narrower similar bands or lines given off from it, all simulating very closely the midrib and lateral veins of a leaf. The hind wing in all specimens has a more or less obsolescent or faint series of postdiscal ocelli, traces of which are also apparent on the fore wing. Antennæ dark brown; head, thorax, and abdomen dark violescent brown; beneath, the palpi, thorax and abdomen paler earthy brown.

Wet-season form.— ♂ ♀ Smaller than the dry-season form, but very similar to it. The colours are richer and darker, and the orange discal band more broadly bordered with black on the inner side. On the underside some of the specimens from areas of heavy rainfall have the ground-colour very dark ochraceous brown.

Exp. ♂ ♀ 100–120 mm. (3·95–4·73″).

Hab. The Himalayas, from Kashmir to Sikhim at low elevations Orissa; Eastern Ghâts; Pachmarhi; the lower hills of Assam Burma and Tenasserim.

Mr. G. C. Dudgeon gives a detailed account of the transformation of this form, from which the following descriptions of the caterpillar in its last stage and of the pupa are extracted.

Larva. "Velvety black, covered with rather long yellowish hair. All the spines reddish." Of these last it is stated that there are eleven on each segment, a dorsal, two subdorsal and three lateral on each side.

Pupa. "Simple. Thorax slightly keeled; abdomen with small dorsal conical points. Colour pale brownish buff, variegated with slaty irrorations." (*G. C. Dudgeon teste Moore.*)

After a long and careful examination of large series of specimens,

I am unable to find any constant difference between the various forms that have been considered distinct and received specific names. *K. hügelii*, the supposed pale form from Kashmir and the N.W Himalayas, can be matched by just as pale a form from Darjeeling, while the dark and richly-coloured *K. limborgii*, Moore, from Tenasserim, does not equal in depth and richness of colouring some specimens of *K. inachus* from Sikhim. So far as I can make out, all the characters relied on for the separation of the various named forms are eminently variable.

404. **Kallima horsfieldi**, *Kollar* (Paphia), *in Hügel's Kaschmir*, iv, 1844, p. 434, pl. 10; *de N. Butt. Ind.* ii, 1886, p. 265; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 277; *iid. ib.* x, 1896, p. 256, pl. 2, figs. 5, 5*a*, larva & pupa; *Moore, Lep. Ind.* iv, 1899–1900, p. 170, pl. 345, figs. 1, 1 *a*–1 *c*, ♂ ♀, & pl. 346, figs. 1, 1 *a*–1 *c*, larva & pupa, ♂ ♀.

Kallima philarchus, *Westwood* (Amathusia), *Cab. Or. Ent.* 1848, p. 56, pl. 27, fig. 4 ♂; *Moore, Lep. Ceyl.* i, 1881, p. 37, pl. 20, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 265; *Moore, Lep. Ind.* iv, 1899–1900, p. 169, pl. 343, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Kallima alompra, *Moore, Trans. Ent. Soc.* 1879, p. 14, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 265; *Moore, Lep. Ind.* iv, 1899–1900, p. 173.

Kallima mackwoodi, doubledayi, et wardi, *Moore, Trans. Ent. Soc.* 1879, p. 14; *de N. Butt. Ind.* ii, 1886, p. 266, pl. 23, fig. 104 (*K. wardi* ♀).

Dry-season form.— ♂ ♀ *Upperside* indigo-blue. Fore wing with a broad, oblique, slightly curved, sinuous-edged, pale blue band, turning to white on the anterior half; the distance measured on the costa of the outer edge of this band greater than half the length of the wing from the base; its inner margin bordered by short, obliquely-placed, detached linear black markings; apical area beyond the band jet-black, with a preapical white spot; medial hyaline spots, the lower varying in size, in interspaces 2 and 3. Hind wing uniform, the costa and apex broadly and the abdominal fold brown; vein 1 with long soft greyish-brown hairs along its length, extending also over the abdominal fold. Fore and hind wings as in *K. inachus*, with a dark brown subterminal zigzag line, commencing below vein 3 on the fore wing. *Underside* as in *K. inachus*, simulating a dry leaf, but the resemblance on the whole is perhaps less perfect. Antennæ dark brown; head, thorax and abdomen very dark greenish brown; beneath, the palpi, thorax and abdomen ochraceous earthy brown.

Wet-season form.— ♂ ♀ Similar. Differs in the colour of the discal band on the upperside of the fore wing; this is of a uniform pale blue of a slightly lighter or darker shade, varying individually, but not turning to white towards the costal margin as in the dry-season specimens. *Underside*: ground-colour on the whole darker than in the dry-season form, but with the same protective colouring.

Exp. ♂ ♀ 84–120 mm. (3·32–4·75″).

Hab. ? Himalayas (*Kollar*); W and S. India, from Bombay southwards; Ceylon; Burma; Tenasserim.

Ceylon dry-season specimens range the largest, but are otherwise indistinguishable from specimens from the Nilgiris in the British Museum collection, while specimens of the small wet-season form from Ceylon are absolutely identical with specimens of *K. wardi*, Moore, regarded by the author himself as the wet-season form of *K. horsfieldi*. Again, the type of *K. alompra*, Moore, is now in the British Museum, and in shades of colour and in markings it is absolutely inseparable from many specimens of the wet-season form of *K. horsfieldi*, as are also the two specimens in the Hewitsonian collection mentioned by Moore, and a specimen from "East Pegu," collected by Doherty, in the Godman-Salvin collection.

Larva. "Cylindrical, finely pubescent, armed with nine longitudinal rows of fine branched spines; head surmounted by two long straight horns set with minute spines; colour a beautiful golden brown, spines red, head black. We found one specimen of this in July on Karvee (*Strobilanthus*) " (*Davidson & Aitken.*)

Pupa. Earthy brown suffused with a slight pinkish tinge and variegated with patches of darker brown; thorax angulate, abdomen with apparently a linear series of short broad tubercles. (Described from the plate in the Bombay Nat. Hist. Soc. Journ. x, 1896.)

405. **Kallima knyvetti**, *de N. Butt. Ind.* ii, 1886, p. 267: *Elwes, P. Z. S.* 1891, p. 283; *Smith & Kirby, Rhop. Ex.* pt. 22, 1892, *Kall.* pl. i, figs. 3, 4, ♂; *Moore, Lep. Ind.* iv, 1899–1900, p. 173, pl. 347, figs. 1, 1 *a*, ♂

♂ *Upperside* fore wing: basal area to near apex of cell and thence obliquely to the zigzag subterminal line as it crosses interspace 1 dark green, succeeded by a black line along the discocellulars, and a broad sinuous discal band (not curved as in *K. horsfieldi*) bluish white below vein 3, pure white with bluish suffused inner margin above vein 3 to costa; measured on the costal margin, the outer edge of this band less than half the length of the wing from base, the rest of the wing to apex black, with a preapical white spot; a medial discal hyaline spot in interspace 2. Hind wing dark ochraceous brown, the costal margin and apex broadly and the abdominal fold much paler brown, irrorated with scattered dusky scales; vein 1 and the abdominal fold with long soft brown hairs. Fore and hind wings with a dark subterminal zigzag line commencing somewhat below vein 3 on the fore wing. *Underside* as in *K. inachus* protectively coloured. Antennæ black; head and thorax anteriorly dark green, thorax posteriorly and abdomen olivaceous brown.

Exp. ♂ 108–112 mm. (4·1–4·25″).

Hab. Sikhim; Bhutan; Assam, the Nága hills; Tenasserim.

A rare form. One specimen was brought to me by a Lepcha at Darjeeling freshly caught, taken, he said, below Goom, 6000 ft. It was still in a sufficiently relaxed state to permit of the wings being opened without difficulty.

406. **Kallima albofasciata**, *Moore, P. Z. S.* 1877, p. 584; *de N. Butt. Ind.* ii, 1886, p. 263; *Moore, Lep. Ind.* iv, 1899–1900, p. 174, pl. 347, figs. 2, 2 *a*, ♀.

♂ ♀ *Upperside* blue. Fore wing with a broad pure white obliquely-placed discal sinuous band, its inner margin defined in black along the discocellulars and base of interspace 3, with a round black hyaline-centred spot in interspace 2; the width of this discal band decreases posteriorly; measured on the costal margin its outer edge is at a distance greater than half the length of the wing from base; apical area beyond discal band black with a preapical white spot, larger in the ♀ than in the ♂ Hind wing with the costal margin and apex broadly, and the abdominal fold pale earthy brown. Fore and hind wings with the usual subterminal dark zigzag line. *Underside* as in *K. inachus*. Antennæ black; head, thorax and abdomen dark indigo-blue; beneath, the palpi, thorax and abdomen earthy brown.

Exp. ♂ ♀ 96–112 mm. (3·8–4·42″).

Hab. The Andamans.

Genus **CETHOSIA.**

Cethosia, *Fabr. Illig. Mag.* vi, 1807, p. 280; *Moore, Lep. Ceyl.* i, 1881, p. 51; *de N. Butt. Ind.* ii, 1886, p. 31; *Moore, Lep. Ind.* iv, 1899–1900, p. 176.

Type, *C. cydippe*, Linn., from the Moluccas.

Range. Indo- and Austro-Malayan Regions.

♂ ♀ Fore wing triangular; costa evenly arched, apex rounded; termen scalloped, sometimes a little concave in the middle; tornus rounded, dorsum straight; cell short, not half length of fore wing; upper discocellular very short, middle about half length of lower, lower slender; veins 3 and 4 from lower apex of cell, 8, 9 and 10 out of 7, 11 from upper apex of cell, 12 terminating on apical half of costal margin. Hind wing broadly ovate; costa well arched, apex rounded, termen scalloped; dorsum convex, apically emarginate; cell short; lower discocellular slender, concave; veins 3 and 4 from lower apex of cell, 6 equidistant from 7 and 5; precostal spur straight, simple. Antennæ about half length of fore wing; club long and gradual, cylindrical; palpi subporrect, third joint moderately long, not attenuate; eyes naked.

The forms in this genus are said to be protected. They have certainly a disagreeable odour if squeezed in the fingers.

Key to the forms of Cethosia.

A. With a broad oblique discal white or yellowish band on upperside of fore wing in both sexes.
  a. A few or no black spots in interspaces beyond apex of cell on upperside of hind wing.
    a'. Oblique discal band on upperside of fore wing white; veins crossing it distinct, black. *C. cyane*, p. 400.

b' Oblique discal band on upperside of fore wing cream-coloured; veins crossing it indistinct, concolorous . . . . . *C. hypsina*, p. 402.

b. Broad black streaks followed by a series of large oval spots in interspaces beyond apex of cell on upperside of hind wing. *C. mahratta*, p. 403.

B. Without a broad oblique discal band on upperside of fore wing in either sex.

a. A few or no black spots in interspace beyond apex of cell on upperside of hind wing.

a' Black terminal margins of both fore and hind wings broad, uniform; white lunular markings obsolescent . . . . . *C. nicobarica*, p. 401.

b'. Black terminal margins of both fore and hind wings narrower, not uniform; white lunular markings prominent . . *C. biblis*, p. 402.

b. Broad black streaks followed by a series of large oval spots in interspaces beyond apex of cell on upperside of hind wing. *C. nietneri*, p. 404.

407. **Cethosia cyane**, *Drury* (Papilio), *Ill. Exot. Ent.* i, 1770, pl. 4, fig. 1; *Kollar, in Hügel's Kaschmir*, iv, 1844, p. 443; *de N. Butt. Ind.* ii, 1886, p. 33; *Moore, Lep. Ind.* iv, 1899–1900, p. 177, pl. 348, figs. 1, 1 *a*–1 *e*, ♂ ♀.

♂ *Upperside* tawny, in fresh specimens a rich reddish tawny. Fore wing: anterior and apical two-thirds black, the margin of this colour waved and irregular, following a line dividing the cell longitudinally and circling round to near the posterior angle; a short, broad, oblique, white bar beyond apex of cell, the veins crossing it and a spot in interspaces 3 and 4 black; a transverse indistinct row of small spots and a terminal series of <-shaped lunules white. Hind wing: three or four spots just beyond apex of cell, a subterminal row of spots and the termen broadly black, the last with a series of white lunules as on the fore wing. *Underside* variegated with red, white, pale blue, ochraceous and black; the terminal margins of both wings broadly black with white lunules as on the upperside; in the middle of each lunule a short white streak from the margin; cilia alternately black and white. Fore wing: the cell with transverse bands of red, blue and black; the base and disc below the cell red spotted with black, followed by pale blue, ochraceous and black; the white oblique band as on upperside, beyond it a transverse incomplete row of lanceolate white marks, with three black

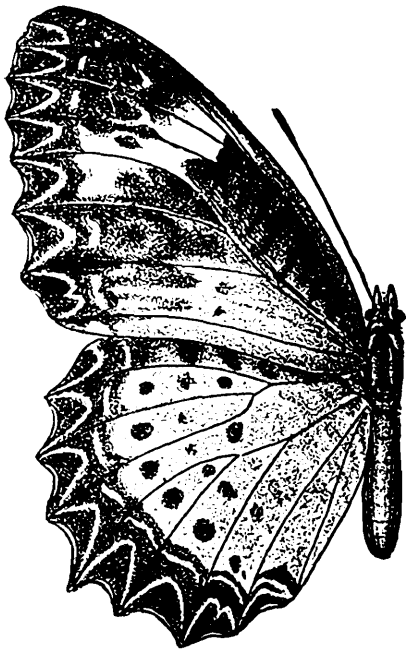

Fig. 71.—*Cethosia cyane*. ½.

spots in each, followed by a subterminal ochraceous band paling inwardly. Hind wing: the base and cell pale blue and red, crossed by several broken incomplete black lines, then alternate bands of white and ochraceous, two of each; the outer white band narrow and marked in each interspace with three black spots arranged as a triangle. Antennæ, head and thorax dusky brown; abdomen above tawny, beneath white.

♀ Similar to the male in markings, but the tawny ground-colour replaced by pale greenish white, somewhat brownish on the upperside of fore wing, the extent of black on this wing larger. *Underside* with all the markings paler than in the ♂, the red at the base of the wings replaced by brownish yellow on the fore, white on the hind wing. Antennæ, head and thorax dusky brown; abdomen dusky above, white beneath.

Exp. ♂ ♀ 90–100 mm. (3·55–3·9″).

Hab. The Himalayas, Mussooree to Sikhim, rare towards the west; Bengal; Orissa; Assam; Cachar; Arrakan; throughout Burma and Tenasserim.

"*Larva.* Cylindrical, purplish-black segments with alternate yellow and crimson bands. Head armed with two long spines, segments with dorsal and lateral rows of fine spines. Feeds on *Passiflora*, July. (Described from drawing by Major C. H. E. Adamson.)."—*Moore.*

408. **Cethosia nicobarica** (Plate VII. fig. 53), *Felder, Verh. zool.-bot. Ges. Wien*, xii, 1862, p. 484; *de N. Butt. Ind.* ii, 1886, p. 37; *Moore, Lep. Ind.* iv, 1899–1900, p. 180, pl. 349, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ Closely resembles *C. cyane*, but in the ♂ the ground-colour is a rich almost vermilion red on the upperside, and the markings differ as follows:—Fore wing: the cell crossed by alternate bands of red and black, the oblique white bar limited to two elongate costal spots followed by a transverse incomplete row of white lanceolate marks, the mark in interspace 3 forming an irregular small white patch, a double row of indistinct white spots beyond, no lunular marks on termen. Hind wing: no white lunules on termen, a row of postdiscal and one or two subbasal spots black. *Underside* differs from the underside in *C. cyane* in the terminal black margin on both wings being narrower, and the ochraceous band next to it broader and of deeper richer colour; on the fore wing the oblique white discal band is replaced by a transverse row of irregular white oval spots with

Fig. 72.
Cethosia nicobarica, ♀.

their inner margins black, and the median ochraceous transverse band on the hind wing is tinged with vermilion.— ♀. *Upperside* differs from upperside in *C. cyane* ♀ as follows:—the oblique white bar on the fore wing broadly interrupted just beyond apex of cell, the hind wing less spotted on the disc, and the black terminal margin to both fore and hind wings without the white <-shaped marks. On the underside the difference between the females of the two forms is similar to the difference between the males.

Exp. ♂ ♀ 82–86 mm. (3·22–3·38″).

Hab. Andaman and Nicobar Islands.

409. **Cethosia hypsina**, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 385; *Dist. Rhop. Malay.* 1882, p. 172, pl. 8, figs. 6, 7, 8, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 35 footnote.

♂ Closely resembles *C. cyane*. *Upperside* differs in the greater and more uniform extent of black on the fore wing, the greater width of the black terminal border on the hind wing, the almost complete obsolescence of the lunular white terminal markings on both wings, and in the oblique white bar on the fore wing being slightly ochraceous, the veins crossing it white, not black, and the black spot in interspaces 3 and 4 absent. On the *underside* the red is of a duller ochraceous not vermilion tint, the outer white band on both wings is wanting, the inner and outer ochraceous bands on the hind wing are merged to form one prominent broad subterminal band, marked with an inner marginal and a median row of small black spots, and an outer row of short transverse black bars in the interspaces.—The ♀ is altogether different from the ♀ of *C. cyane*. It resembles its own ♂, but on the upperside the fore wing is almost entirely black, the tawny-yellow ground-colour occupying only the middle of interspace 1 *a*, extending into interspace 1, with a bluish-white diffuse spot above it. On the underside it is precisely similar to the underside in the ♂.

Exp. ♂ ♀ 90–95 mm. (3·55–3·7″).

Hab. Within our limits I procured this species in the extreme south of Tenasserim, and lately Mr. Allan sent me a single male caught in the Pegu Yoma. Further south it occurs in the Malay Peninsula. The British Museum has a specimen labelled Nepal, but this locality is open to doubt.

410. **Cethosia biblis**, *Drury* (Papilio), *Ill. Ex. Ent.* i, 1770, pl. 4, fig. 2 ♂; *de N. Butt. Ind.* ii, 1886, p. 36, ♂ ♀; *Moore, Lep. Ind.* iv, 1899–1900, p. 184, pl. 352, figs. 1, 1 *a*–1 *d*, ♂ ♀, pl. 353, figs. 1, 1 *a*–1 *c*, ♂.

Cethosia thebava, *Grose-Smith, A. M. N. H.* (5) xix, 1887, p. 296.

♂ *Upperside* rich orange-red; terminal margins of both fore and hind wings black, with slender deep lunules of white as in

C. cyane. Fore wing: apical half black, cell crossed by three pairs of transverse black lines, the outermost pair with the discocellular nervules between defined by black; a discal, faintly-marked series of black spots continued on to the hind wing; three short, obliquely-placed white streaks close to costal margin beyond apex of cell, followed by a transverse series of four or five slender lanceolate white loops, and an outer postdiscal row of white spots in interspaces 2 to 6. Hind wing almost precisely similar to that of *C. cyane.* *Underside* ochraceous, the outer margins of both wings dusky black, with white lunules bearing a medial line as in *C. cyane*; discoidal cell of fore wing with a basal and a subbasal band on the hind wing dull red, the former crossed by three short bands, the basal area of the hind wing by two bands of pale blue, all marked with sinuous black lines; beyond the cell in the fore wing, and the subbasal red band on the hind wing, both wings crossed by a band of white bordered more or less on both sides by broken black lines; finally a postdiscal series, crossing both wings, of lanceolate white spots, each spot bearing inwardly an oval black mark divided by a white line and outwardly two small black spots. Antennæ black, head and thorax dusky black; abdomen ochraceous, shaded with dusky blackish above, white beneath.— ♀ similar. *Upperside* much darker, sometimes dusky greenish; markings as in the ♂

Exp. ♂ ♀ 72–93 mm. (2·9–3·75″).

Hab. Sikhim; Nepal; Bhutan; Assam; Cachar; Arrakan; throughout Burma and Tenasserim; extending to the Malay Peninsula and to China.

411. **Cethosia mahratta,** *Moore, P. Z. S.* 1872, p. 556; *de N. Butt. Ind.* ii, 1886, p. 34, pl. 22, fig. 98 ♀; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 270, pl. B, figs. 1, 1 *a*, larva & pupa; *Moore, Lep. Ind.* iv, p. 181, pl. 350, figs. 1, 1 *a*–1 *c*, larva & pupa, ♂ ♀

♂ *Upperside* tawny yellow. Fore wing: cell anteriorly along its length and the outer half of the wing, following an irregular line from apex of cell to tornus, black, the black in cell formed of coalescent transverse bars; a broad discal oblique fascia traversed by the black veins, followed by a postdiscal series of black-centred, outward turned, slender white lunules, a transverse series of white spots, and another, subterminal series of similar white lunules; interspaces 1 and 2 with three or four black spots. Hind wing with broad black costal and terminal margins and black markings somewhat similar to those on the hind wing of *C. nietneri,* but the markings in the interspaces narrower, the row of large spots margined with white, the inner series of lunules beyond the spots black, followed by a subterminal tawny-yellow band and a row of white, outward-turned, slender lunules as in *C. nietneri.* *Underside* variegated with ochraceous red, bluish white, yellow and black; the terminal margins of both fore and hind

wings broadly black with white lunules, as on the upperside, and median short white lines from the margin in each lunule; cilia alternately black and white. Fore wing: basal area ochraceous red, cell with transverse short bands of black and bluish white, below the cell the ochraceous red at base, followed by whitish and then yellow, the disc spotted with black; the oblique white band as on the upperside, succeeded by a transverse postdiscal series of large black spots, ringed narrowly with white, with a row of paired black dots beyond, and a subterminal broad yellow band, its inner margin sinuous. Hind wing: basal area bluish, crossed by broken transverse broad black lines, and followed by a red, a bluish-white, a yellow, a purer white, and lastly a subterminal yellow band with rows of black spots between; on the white band a median series of large black spots. Antennæ black, head and thorax brownish black, abdomen ochraceous; the thorax beneath ochraceous, banded with black.— ♀. Similar, but the tawny yellow on the upperside paler, the markings larger and somewhat diffuse.

Exp. ♂ ♀ 72–100 mm. (2·85–3·95″).

Hab. Southern India.

"*Larva* cylindrical, but much constricted between each pair of segments, and tapering somewhat towards the head. Six longitudinal rows of fine-pointed spines; on the head only one pair of longer blunt spines. Colour dark brown, with bright red bands encircling all the segments except the 1st, 2nd, 6th, and 8th; on the 6th and 8th the red is replaced by broader bands of lemon-yellow.

"*Pupa*: hanging vertically, slender, with two large foliaceous processes springing from the middle of the back, and many less prominent processes on the head, thorax and abdomen; colour purplish brown, much mottled with lighter and darker shades; six dorsal spots of bright gold . . found on the wild passion-flower (*Modecca palmata*). The caterpillar is gregarious through life." (*Davidson & Aitken.*)

412. **Cethosia nietneri**, *Felder, Novara Reise, Lep. Rhop.* 1867, p. 380, pl. 48, figs. 5, 6, ♂; *Moore, Lep. Ceyl.* i, 1880, p. 51, pl. 27, figs. 3, 3 *a*, ♂ ♀, 3 *b*, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 35; *Moore, Lep. Ind.* iv, 1899–1900, p. 183, pl. 351, figs. 1, 1 *a*–1 *c*, larva & pupa, ♂ ♀.

♂. *Upperside* deep black. Fore wing: a broad line along both sides of the basal halves of veins 1 and 2 and of median vein ochraceous; a curved series of short bluish streaks between the veins beyond apex of cell, terminating in a much longer streak above vein 4; a transverse discal series of similarly coloured slender oval loops, open outwardly, followed by a series of transverse white spots, the upper two bluish, and a subterminal row of slender lunules, the tornal lunule double. Hind wing: interspace 1 *a* and interspace 1 to near the tornus pinkish or bluish white, the markings of the underside showing through; cell

black, with an ochraceous black-centred spot; interspaces 1–5 bluish white on disc, with very broad median short streaks, followed by a series of large oval spots of the black ground-colour; terminal and costal margins very broadly black, traversed by a post-discal row of transverse short, white, inwardly-turned lunules, and a subterminal row of much more slender, outwardly-turned, similarly coloured lunules. Cilia white. *Underside*: basal and discal areas of both fore and hind wings bluish green, variously barred and spotted with black, the short white streaks between the veins beyond apex of cell as on the upperside; a postdiscal band of pinkish white, somewhat obscure on the fore, more clearly defined on the hind wing, traversed by a series of oval black spots, followed by a broad subterminal even band of ochraceous yellow, inwardly margined by a row of black dots; terminal margins broadly black, traversed by a series of slender outwardly turned white lunules, each lunule with a short white median streak from the margin. Antennæ black; head and thorax black above, greenish white spotted with black beneath; abdomen ochraceous, barred with black, beneath whitish with numerous black dots.—♀ Similar, all the black markings smaller; the base posteriorly of the fore wing on the upperside greenish blue, no trace of ochraceous.

Fig. 73.—*Cethosia nietneri*, ♂. ½.

Exp. ♂ ♀ 82–110 mm. (3·22–4·32″).

Hab. Ceylon.

Larva. "Cylindrical, purplish black with red transverse bands, the sixth and eighth segments with a yellow band. Head armed with two long branched spines, the segments with two dorsal and two lateral rows of long, slender, finely-branched spines. Feeds on *Modecca*." (*Moore.*)

Pupa. "Brown mottled with ochreous-white, abdominal segments tubercular; wing-case dilated and exfoliated beneath. Head-piece with two pointed processes." (*Moore.*)

Genus **CYNTHIA.**

Cynthia, *Fabr. Illig. Mag.* vi, 1807, p. 281; *Moore, Lep. Ceyl.* i, 1880, p. 52; *de N. Butt. Ind.* ii, 1886, p. 40; *Moore, Lep. Ind.* iv 1899–1900, p. 187.

Type, *C. arsinoë*, Cramer, from Sumatra.

Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa arched; apex produced, rounded;

termen slightly concave, sinuous; tornus blunt; dorsum slightly sinuous; cell closed, not quite half length of wing; upper discocellular minute; middle oblique, slightly concave; lower also oblique but longer, more strongly concave; vein 3 from just before lower apex of cell, 4 from apex, 8 and 9 from terminal half of 7, 10 and 11 free. Hind wing irregularly oval; costa arched; termen from vein 1 to vein 4 produced, elongate at vein 4, forming a conspicuous tail, above the latter to apex and below to the tornus scalloped; tornus angulated, dorsum just above it widely emarginate, then convex to base; cell open, but apparently closed by a transverse fold in the membrane of the wing between veins 4 and 5 well on towards the terminal margin. Antennæ long and slender, more than half length of fore wing; club long, narrow, gradual; palpi broad in front, subporrect, blunt at apex, third joint short; eyes naked; thorax moderately broad.

Key to the forms of Cynthia.

♂ ♂

a. Upperside ground-colour bright orange-yellow, shaded with olivaceous brown at base of wings.	*C. erota*, p. 406. *C. asela*, p. 409.
b. Upperside ground-colour distinctly paler, not shaded with olivaceous brown at base of wings..	*C. erota*, var. *pallida*, p. 408.
c. Upperside ground-colour distinctly darker, shaded with olivaceous brown on basal half of wings.	*C. asela*, race *saloma*, p. 410.

♀ ♀.

a. Upperside: discal white band crossing fore and hind wings extending up to vein 2 on the latter wing	*C. erota*, p. 407. *C. erota*, var. *pallida*, p. 408.
b. Upperside: discal white band crossing both fore and hind wings terminating at vein 6.	
a'. Upperside ground-colour blue	*C. asela*, p. 409.
b'. Upperside ground-colour very dark olivaceous brown	Race *saloma*, p. 410.

413. **Cynthia erota**, *Fabr* (Papilio), *Ent. Syst.* iii, pt. 1, 1793, p. 76; *de N. Butt. Ind.* ii, 1886, p. 41, pl. 21, fig. 97, ♂ ♀: *Manders, Ent. Month. Mag.* 1888, p. 37, larva & pupa; *Moore, Lep. Ind.* iv, 1899–1900, p. 188, pl. 354, figs. 1, 1 *a*–1 *c*, ♂ ♀, pl. 355, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Cynthia erota, var. pallida, *Staudinger, Exot. Schmett.* i, 1885, p. 89.
Cynthia pura *Swinhoe, A. M. N. H.* (6) xiv, 1894, p. 429, ♂ ♀
Cynthia circe, *Fawcett, A. M. N. H.* (6) xx, 1897, p. 111, ♂ ♀.

Wet-season form.— ♂ *Upperside* bright orange-yellow. Fore wing olivaceous brown at base with the following black markings: three short sinuous transverse lines across the cell; the discocellulars with an inner and outer slender line; a lunular inner discal broken transverse line, a zigzag outer discal broken transverse line, a transverse inwardly curved series of postdiscal spots, those in interspaces 5 and 6 the largest, and an inner and an outer subterminal conspicuous zigzag narrow band. Hind wing with

inner and outer discal black lines and inner and outer subterminal narrow black bands as on the fore wing, but the outer discal transverse line faint and ill-defined posteriorly; the space anteriorly between the two discal lines much paler yellow than the general ground-colour; in addition there is a dark straight postdiscal diffuse fascia with a superposed ocellus in interspaces 2 and 5 respectively, and a lilac spot at the tornal angle. *Underside* similar, the basal area enclosed by the inner discal line suffused with cinnabar-red, as is also the outer zigzag transverse ill-defined discal line. Fore wing with, in addition, two cream-white preapical spots and a purplish suffusion between the two subterminal lines, the inner line straight, not zigzag; interspace 1 *a*, and 1 posteriorly from base to inner subterminal line, paler than the ground-colour. Hind wing with some additional transverse linear and loop-like slender black markings at base; a conspicuous, straight, transverse, narrow dark ferruginous postdiscal band, and a pale purplish suffusion beyond it between veins 2 and 5, not reaching the termen. Antennæ dark ferruginous; head, thorax and abdomen olivaceous orange; beneath, the palpi, thorax and abdomen ochraceous.—♀ *Upperside* dull brown, the basal area of both fore and hind wings, on the inner side of a vertical transverse line from just beyond apex of cell in fore wing to vein 2 on the hind wing, suffused with olivaceous green; the terminal margin, broadly, of the hind wing suffused with reddish ochraceous; a broad, posteriorly narrowing, discal white band inclined obliquely inwards from below the costa of the fore wing to vein 2 on the hind wing, conspicuously interrupted and crossed by the dark veins on the fore wing. Fore wing with the following dusky brownish-black markings: three short transverse sinuous lines crossing the cell; a sinuous line on either side of the discocellulars; a broad line, interrupted by the veins, defining the inner side of the white discal band; a zigzag medial transverse line and a transverse series of very diffuse spots traversing the same band, followed by a postdiscal narrow band and a zigzag subterminal line; finally, a conspicuous white preapical spot in interspace 7. Hind wing: a dusky-brown zigzag line along the outer margin of the white discal band; a diffuse broad postdiscal transverse shading, bearing a white-centred, dusky-brown, ochraceous-ringed ocellus, in interspaces 2 and 5 respectively, followed by an inner subterminal lunular band and an outer subterminal zigzag line of brownish black; the abdominal fold ochraceous.

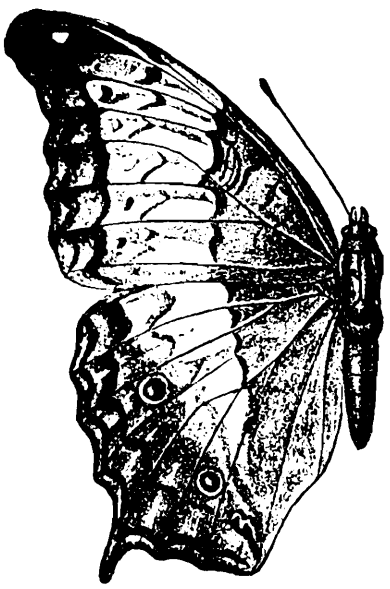

Fig. 74.—*Cynthia erota*, ♀. ½.

Underside very similar to that in the ♂, but differs as follows:—ground-colour ochraceous yellow, the basal area on both fore and hind wings darker ochraceous without any tinge of cinnabar-red; all the markings similar as to form to those in the ♂, but chestnut-brown; the ocelli on the hind wing larger, but otherwise similar. Antennæ dark ochraceous, turning to brownish black on the apical half; palpi ochraceous; head, thorax and abdomen olivaceous green; beneath, the palpi, thorax and abdomen pale ochraceous.

Dry-season form.— ♂ ♀ Smaller, the tail at apex of vein 4 in the hind wing very much shorter as a rule. ♂ *Upper* and *under sides* similar to those in the wet-season form, but the ground-colour very much paler; on the underside entirely suffused with pale cinnabar-red; the markings smaller, often more or less obsolescent, always more faintly defined; above, the markings are dusky brownish black, beneath pale chestnut-red; the pale purplish suffusion on the terminal margins of both fore and hind wings on the underside, so conspicuous in the wet-season form, entirely wanting.— ♀ Differs very remarkably from the wet-season form. *Upperside*: fore and hind wings with a very broad pale ochraceous-white discal band from costa of fore wing to the dorsal margin just above the tornus on the hind wing, narrowing posteriorly on the latter wing. Fore wing: basal area olivaceous green on the inner side of the discal band, as in the wet-season form, but the space between the outer two of the three dusky transverse lines crossing the cell ochraceous; the medial zigzag line and the series of diffuse spots traversing the discal band very ill-defined. Hind wing: basal area ochraceous, owing to the colour of the underside showing through by transparency; a very pale shading of olivaceous green at base of cell; terminal portion of the wing beyond the discal band bright ochraceous; the postdiscal ocelli and the inner and outer subterminal dark lines as in the wet-season form. *Underside*: ground-colour pale yellow; the basal area on both fore and hind wings suffused with cinnabar-red; the markings similar to those in the wet-season form, but very much fainter and paler. Antennæ ochraceous, palpi and a line behind the eyes cinnabar-red; head, thorax and abdomen olivaceous green, beneath bright ochraceous.

Exp. Wet-season form, ♂ ♀ 104–110 mm. (4·1–4·35″); dry-season form, ♂ ♀ 78–90 mm. (3·07–3·55″).

Hab. Sikhim; Assam; Burma; Tenasserim; Andamans.

It is with some doubt that I have united *Cynthia pallida*, Staudinger, from the Andamans, to this form. The males are always paler than the Continental form, and might constitute an insular race; one form of the ♀ also is generally paler, with the discal band less heavily marked with dusky black; but many specimens of the ♀ have been received from the Andamans which are absolutely indistinguishable from specimens from Assam and Burma.

Larva. "Full-fed 1½ inches in length. Pale olive-green, considerably darker between the segments; six short spines on each

segment, the two upper much the longest, all with yellow bases; spiracle marked as a black dot, pale whitish on either side; legs dark brown. Head dark brown with two upright horns, half an inch in length, curving backwards." (*Manders.*)

Pupa. "Colour varying shades of brown. A prominent ridge over thorax; two alæ, anteriorly narrowly pointed, on either side of outer margin of wing-cover, two smaller alæ on either side of the 12th segment; between the alæ and on either side of the dorsum two pairs of diamond-shaped spots pale green, one pair behind posterior alæ; two silver spots on either side of the thoracic ridge anteriorly, and three splashes of silver posteriorly; a dark line extends from the outer margin of wing-cover to tail. Fifteen days in pupa." (*Manders.*)

414. **Cynthia asela,** *Moore, P. Z. S.* 1872, p. 558; *id. Lep. Ceyl.* i, 1881, p. 53, pl. 26, figs. 1, 1 *a*–1 *c*, ♂ ♀, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 43; *Moore, Lep. Ind.* iv, 1899–1900, p. 192, pl. 358, figs. 1, 1 *a*, 1 *b*, larva & pupa, ♂ ♀.

Race saloma.

Cynthia saloma, *Swinhoe, in de N. Butt. Ind.* ii, 1886, p. 43; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 270, pl. B, figs. 2, 2 *a*, larva & pupa; *Moore, Lep. Ind.* iv, 1899–1900, p. 191, pl. 356, figs. 1, larva & pupa, 1 *a*, 1 *b*, ♂ ♀, & pl. 357, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ Absolutely indistinguishable from the wet-season form of *E. erota*; varying individually, like that form, in the slightly lighter or darker ground-colour on both upper and under sides, and in the distinctness of the markings.—♀ *Upperside* blue; basal area of both fore and hind wings slightly suffused with olivaceous green, the markings very similar to those in the wet-season form of *C. erota* ♀, but the discal white band very much narrower, so that the transverse medial zigzag dark brownish-black line traverses only the outer margin of the white band, and the transverse series of diffuse dark spots on the fore wing is placed posteriorly on a blue, anteriorly on a dark brown ground; only in interspaces 3, 4 and 5 of the fore wing is there a trace of white beyond the diffuse spots. On the hind wing the white discal band terminates at vein 6, the posterior three-fourths of the wing except the broad abdominal fold is blue; the postdiscal ocelli in interspaces 2 and 5 larger than in *C. erota*; in addition a well-formed but much smaller similar ocellus in interspaces 1 and 6 respectively; terminal margin more narrowly ochraceous brown than in *C. erota*, the inner and outer subterminal lines lunular and broader. *Underside* similar to that in *C. erota* but paler; the postdiscal ocelli on the hind wing much larger, of a pale green, with a white central spot and an outer ring of black. Antennæ dark ochraceous brown; head, thorax and abdomen pale blue; beneath, palpi, thorax and abdomen very pale ochraceous.

Exp. ♂ ♀ 102–114 mm. (4·04–4·5″)

Hab. Ceylon.

A ♀ specimen in the collection of the Hon. F. M. Mackwood has the ground-colour on the upperside of a most lovely lavender.

Larva. "Pale yellow, reddish-brown beneath; segments brown-streaked; spiracles black; head spinous, armed with two long, curved, thick spinous processes; segments armed with two lateral and two dorsal rows of long slightly-branched spines, the dorsal and upper lateral row rising from a red round tumid spot." (*Moore.*)

Pupa. "Pale reddish-brown, truncated at both ends; head-piece short and thick, with two short points; thorax conically pointed at top; anterior abdominal segments subdorsally produced on each side into a broad alary expanded appendage, which is pointed hindward into a short process; middle segments with a subdorsal tubercle, the two anal segments with longer basally-thickened processes." (*Moore.*)

Race **saloma**, Swinhoe.— ♂ very similar to the typical form on both the upper and under sides, but on the upperside the basal area up to the discal band on both fore and hind wings is very much darker, suffused with brown, as is also the terminal margin, very broadly, of the hind wing, and, more narrowly, of the fore wing; the markings are black and identical. On the underside the ground-colour is more uniform, the contrast between the basal area and the terminal half of the wings not so marked. In race *saloma* the basal area is not so strongly suffused with cinnabar-red.— ♀. *Upperside* differs from that of *asela* in the very dark olivaceous brown of the ground-colour, with no trace of blue, and in the more heavily defined black markings, which are otherwise similar to those in *asela*; the discal band stops short, as in that form, at vein 2 of the hind wing, and the terminal margin is suffused with ochraceous, only of a darker shade. *Underside* similar, but the ground-colour slightly darker.

Exp. ♂ ♀ 100–122 mm. (3·95–4·8″).

Hab. S. India, Canara, the Nilgiris, the Wynaad and Travancore.

"*Larva.* Cylindrical, head armed with two large curved spiny horns, the body with six rows of well-branched spines; colour pale yellow, lightly marbled with dark brown; head black with an inverted **V** of yellow; underparts black. *Pupa* very grotesque; two extraordinary expansions like bats' wings springing from the basal abdominal segment, a smaller pair on the penultimate segment, and a large angular dorsal prominence above the head; colour light or dark brown, with two rows of subdorsal silver spots on the thorax and three pairs of green spots on the abdominal segments . . . The larva is a night-feeder, retiring to some distance, often to another plant, during the day." (*Davidson & Aitken.*)

Food-plant said to be the wild passion-flower (*Modecca palmata*).

Genus **TERINOS.**

Terinos, *Boisduval, Spéc. Gén. Lép.* 1836, pl. 9, fig. 4; *de N. Butt. Ind.* ii, 1886, p. 37; *Moore, Lep. Ind.* iv, 1899–1900, p. 194.

Type, *T. clarissa*, Boisduval, from Java.

Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa strongly arched, apex much produced, broad and rounded; termen oblique, concave below apex, thence slightly sinuous; tornus obtuse; dorsum nearly straight; cell short, about one-third the length of the wing, its upper apex acute; upper discocellular nearly obsolete or very short, middle half length of lower, concave, lower also concave, both the latter sloping obliquely inwards; veins 3 and 4 stalked well beyond lower apex of cell, 8 and 9 out of 7, 10 from apex of cell, 11 free; 12 very short, terminating on the basal half of the costal margin. Hind wing ovate; costa slightly arched; apex rounded; termen strongly arched, produced and angulate at apex of vein 4; dorsum slightly convex; cell very short, very slenderly closed; veins 3 and 4 forked well beyond apex of cell; a perceptible transverse fold in the membrane between veins 4 and 5, vein 6 closer to 7 than to 5; precostal spur simple, curved. Antennæ slender, slightly less than half length of fore wing; club short, abrupt; palpi long, third joint very slender and acute. Male with secondary sex-marks consisting of a large conspicuous patch of specialized shining, densely-set scales, placed posteriorly on the fore and on apex of the hind wing.

415. **Terinos clarissa** (Plate X. fig. 77), *Boisduval, Spéc. Gén. Lép.* i, 1836, pl. 9, fig. 4; *de N. Butt. Ind.* ii, 1886, p. 39, pl. 23, fig. 101 ♂; *Moore, Lep. Ind.* iv, 1899–1900, p. 195, pl. 359, figs. 1, 1 *a*, ♂.

♂ *Upperside* dark brown, suffused with rich purple, except on the secondary sex-marks and on the terminal third of the hind wing; the sex-marks dark brown, at times lustrous, at times opaque, according to the angle at which the light falls; the terminal third of the hind wing rich yellow, bearing a postdiscal complete or incomplete series of broad purple lunular marks. *Underside* brown, with numerous transverse dull-coloured, narrow, very sinuous bands of ochraceous brown and lilacine white, these bands very dull and obscure on the apical portions of the fore wing; the broadest of the bands on the hind wing bears a postdiscal irregular transverse series of purplish-brown spots. Antennæ, head, thorax and abdomen purplish black; the antennæ beneath ochraceous, the palpi, thorax and abdomen dingy white.—♀ *Upperside* very similar to that of the ♂, but the purple suffusion confined to the base of the wings and to three irregular transverse bands. *Underside* similar to that of the ♂, the postdiscal series of spots large and well-defined.

Exp. ♂ ♀ 80–90 mm. (3·15–3·45″).

Hab. Recorded only within our limits from Tenasserim. Found in the Malayan Subregion down to Java.

Genus **ATELLA.**

Atella, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* i, 1848, p. 165; *Moore, Lep. Ceyl.* i, 1880, p. 61; *de N. Butt. Ind.* ii, 1886, p. 28; *Moore, Lep. Ind.* iv, 1899–1900, p. 196.

Type, *A. phalantha*, Drury, from India.

Range. Indo-Malayan Region.

♂ ♀ Fore wing triangular; costa regularly arched, apex rounded; termen oblique, sinuous; dorsum sinuous; cell short, not half length of fore wing; upper discocellular minute, middle and lower concave; vein 3 from just before lower apex of cell, 8, 9 and 10 out of 7, 11 from a little before apex of cell; 12 short, ending on basal half of costal margin. Hind wing subquadrate; costa slightly arched, apex rounded; termen slightly scalloped, rounded posteriorly; dorsum convex; cell short, closed by a very slight vein; vein 3 from before apex of cell, a transverse fold in membrane between veins 4 and 5 beyond apex of cell. Antennæ long, a little more than half length of fore wing; club abrupt, more or less spatulate; palpi moderately long, erect, third joint slender, acutely pointed; eyes naked.

Key to the forms of Atella.

a. Cell of fore wing with three transverse irregular black lines and a line along discocellulars	*A. phalantha*, p. 412.
b. Cell of fore wing with four transverse irregular black bars or lines and a line along discocellulars.	
a' Apex of fore wing, ♂ narrowly, ♀ broadly, black, with four spots of yellow ground-colour showing through	*A. alcippe*, race *alcippoides*, p. 413.
b' Apex of fore wing, both sexes, broadly black, without spots of yellow ground-colour showing through ..	Race *ceylonica*, p. 414.

416. **Atella phalantha**, *Drury* (Papilio), *Ill. Exot. Ent.* i, 1770, pl. 21, figs. 1, 2; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 269; *Moore, Lep. Ind.* iv, 1899–1900, p. 197, pl. 360, figs. 1, 1 *a*–1 *f*, larva & pupa, ♂ ♀.

Atella phalanta, *Doubleday, in Dblday., Westw. & Hew. Gen. Di. Lep.* 1848, p. 167; *Moore, Lep. Ceyl.* i, 1880, p. 62, pl. 31, figs. 1, 1 *a*, ♂, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 30, pl. 20, fig. 88 ♂.

♂ ♀ *Upperside* bright ochraceous yellow, spotted and marked with black. Fore wing: cell crossed by three short sinuous lines and one along the discocellulars, a series of spots beyond, bent inwards below interspace 4 and continued immediately below the median vein, followed by two transverse series of discal spots, a postdiscal series of continuous lunules, a subterminal slender line, and a terminal series of spots at the apices of the veins. Hind

wing: basal half with three or four transverse rows of obscure spots, better defined anteriorly, a discal series of four spots, a postdiscal series of slender lunules, a subterminal sinuous line, and a row of terminal spots as on the fore wing. *Underside* paler ochraceous, the markings much as on the upperside but fainter and paling to reddish brown; the terminal spots of the two discal rows on the fore wing large, conspicuous and black. Fore wing stained with pale purple between the transverse lines across the cell and beyond its apex, also broadly along the terminal margin in the middle of the wing. Hind wing: the outer half more or less suffused with pale purple. Antennæ, head, thorax and abdomen dark ochraceous; thorax and abdomen beneath whitish.

Fig. 75.
Atella phalantha. ♀.

Exp. ♂ ♀ 50–63 mm. (2–2·5″).

Hab. Nearly throughout Continental India; Ceylon; Assam; Burma; Tenasserim; extending to China, Japan and the Malayan Subregion.

Larva. "Cylindrical, moderately thick, very smooth bears six longitudinal rows of branched spines. The head is unarmed. The colour varies from dark brown to pale yellowish-green, with a white or yellowish spot at the base of each spine. It feeds on one or more species of *Flacourtia*." (*Davidson & Aitken.*)

Pupa. "A beautiful green with a subdorsal series of five acutely pointed tubercles, marked with red between each pair of very small blunt ones, the upper edge of the wing-covers and a spot on each side of the head also marked with red." (*de Nicéville.*)

"Colour very variable, some specimens being almost white and some bright green, the markings are usually silver-soled, or tipped with red." (*Davidson & Aitken.*)

417. **Atella alcippe,** *Cramer* (Papilio), *Pap. Exot.* iv, 1782, pl. 389, figs. G, H.

Race alcippoides.

Atella alcippe, *de N.* (*nec Cramer*) *Butt. Ind.* ii, 1886, p. 31.
Atella alcippoides, *Moore, Lep. Ind.* iv, 1900, p. 199, pl. 361, figs. 1, 1 *a*–1 *d*, ♂ ♀
Atella fraterna, *Moore, t. c.* 1900, p. 201, pl. 361, figs. 2, 2 *a*, 2 *b*, ♂ ♀

Race ceylonica.

Atella ceylonica, *Manders, Jour. Bomb. N. H. Soc.* xiv, 1903, p. 716.

***Race* alcippoides,** Moore.—♂ *Upperside* ochraceous yellow, not so bright as in *A. phalantha*. Fore wing: basal third slightly dusky; cell crossed by three sinuous irregular black lines and a bar, a black bar also along the discocellulars; this last, the bar in the cell and the middle one of the three transverse lines continued

obliquely but interruptedly to vein 1; beyond the cell an excurved short, broad, irregular band with a spot below it at base of interspace 3, followed by a short oblique subcostal bar, a transverse series of postdiscal spots, a subterminal broad highly sinuous line, and a comparatively broad terminal band, black. Hind wing: basal two-thirds crossed by a number of very slender, sinuous, transverse black lines, followed by a postdiscal series of spots in interspaces 2–5, a broad, curved, highly sinuous, conspicuous line, a subterminal straighter line, and a terminal narrow band, all black. *Underside* paler ochraceous, the spots and markings as on the upperside, but very obscure, the postdiscal markings and subterminal and terminal bands dark ochraceous. On the fore wing the posterior two or three spots of the postdiscal series are black, large and conspicuous. On the hind wing the postdiscal spots are placed on a slightly purplish band. Antennæ, head, thorax and abdomen dark ochraceous; thorax and abdomen beneath whitish.—♀ differs on the upperside in the markings being broader and heavier; the apex of the fore wing is black up to the short subcostal bar, and encloses four quadrate spots of the ochraceous ground-colour. On the underside the markings are also broader, but identical with those in the ♂

Exp. ♂ ♀ 54–59 mm. (2·14–2·34″).

Hab. Sikhim; Assam; Cachar; Arrakan; Burma; Tenasserim; extending to the Malay Peninsula.

The Indian forms of this insect are separable as a race from the true *alcippe* of Cramer, found in Batjan, Ceram and Amboina. This latter has on the underside "the outer discal and the two submarginal sinuous lines black and prominently white-bordered; the spots of the outer discal row on both wings are also prominently black." (*Moore.*)

A. fraterna, Moore, from the Nicobars, I am unable to separate from the Continental form, which varies considerably in the disposition of its markings, but a well-marked race has been described by Major Manders from Ceylon. A brief description of it is given below.

The wet- and dry-season forms of the Indian race (*alcippoides*, Moore) differ slightly, the ground-colour being paler and the markings more slender in the latter. Specimens taken in the wet-season in Burma and the Andamans are often beautifully glossed with iridescent purple.

Race **ceylonica**, Manders.—Differs from the Continental Indian race on the upperside chiefly in the broad, immaculate, black apex of the fore wing in both sexes, and in the greater breadth of the terminal band on both fore and hind wings. On the underside the difference is less marked.

Exp. ♂ ♀ 38–56 mm. (1·5–2·2″).

Hab. Ceylon.

Genus ISSORIA.

Issoria, *Hübner*, *Verz. bek. Schmett.* 1816, p. 31; *Moore*, *Lep. Ind.* iv, 1899–1900, p. 201.

Type, *I. egista*, Cramer, from the Moluccas.

Range. Indo-Malayan Region.

♂ ♀ Fore wing long, triangular; costa evenly arched, apex subacute; termen even, oblique, only slightly sinuous; tornus rounded; dorsum sinuous; cell not quite half the length of the wing; the neuration in both fore and hind wings is somewhat similar to that of *Atella*, but differs as follows: in the fore wing, vein 11 from well before, not from apex of cell; vein 12 terminates at or a little beyond the middle of the costa. In the hind wing veins 3 and 4 are shortly stalked. Hind wing irregularly oval, the posterior half abruptly produced from just above vein 4 and shortly caudate at apex of that vein; termen slightly scalloped. Antennæ a little more than half the length of the fore wing; club not so abrupt as in *Atella*, spatulate and concave on underside; palpi as in *Atella*, but the third joint proportionately shorter, more slender, not scaled.

A single form occurs within our limits.

418. **Issoria sinha**, *Kollar* (Terinos), *Hügel's Kaschmir*, iv, pt. 2, 1844, p. 438; *Butler* (Atella), *Trans. Linn. Soc.*, 2nd ser. *Zool.* i. 1879, p. 544; *de N.* (Atella) *Butt. Ind.* ii, 1886, p. 29, pl. 20, fig. 87 ♀; *Moore*, *Lep. Ind.* iv, 1899–1900, p. 202, pl. 359, figs. 2, 2*a*, 2*b*, ♂ ♀

♂ ♀ *Upperside* rich ochraceous yellow. Fore wing shaded with dusky brown towards the base and near the tornus; cell with three transverse black sinuous lines and a line along the discocellulars; the interspaces beyond apex of cell dark brown, the colour produced outwards in interspace 4 joins a broad oblique short band from the costa; the dusky-brown shading at bases of interspaces 1–3 darkening outwards; a transverse postdiscal series of dark brown spots, interrupted by large quadrate dark brown marks in interspace 4 and below costa; a subterminal lunular line and a comparatively broad terminal band dark brown or black. Hind wing shaded posteriorly and on its outer half with dusky brown; an obscure postdiscal row of dark brown spots, followed by a subterminal series of broad lunules and a broad terminal band dark brown or black. *Underside* fore wing: basal area purplish brown, posterior half ochraceous yellow; cell crossed by three sinuous dark brown lines, the innermost of the three bordered inwardly with purplish white, the space between the outer two also

Fig. 76.
Issoria sinha. ½.

pale purplish, the interspaces beyond the apex of the cell very pale ochraceous, followed by a transverse series of purple-white lunules, a row of dark brown spots, a subterminal inner series of dark ochraceous lunules and an outer dark ochraceous transverse line. Hind wing: the disc purplish brown, lightening to pale purple broadly along the dorsal and tornal areas; an obscure subbasal, dark brown, highly sinuous and irregular transverse line, followed by a sinuous transverse series of pale purple lunules, a discal series of dark ferruginous spots, obscure postdiscal and more clearly defined subterminal lines of dark lunules; the terminal margin narrowly brown. Antennæ, head, thorax and abdomen dark ochraceous, the thorax and abdomen beneath sullied white.

Exp. ♂ ♀ 64–70 mm. (2·55–2·75″).

Hab. The Himalayas, from Mussooree eastwards; Bengal; Assam; Cachar; Burma; Tenasserim; extending into the Malayan Subregion as far as the Philippines.

Genus **CUPHA.**

Cupha, *Bilberg, Enum. Ins.* 1820, p. 79 (teste *Scudder*); *Moore, Lep. Ceyl.* i, 1881, p. 204; *de N. Butt. Ind.* ii, 1886, p. 21; *Moore, Lep. Ind.* iv, 1899–1900, p. 204.

Type, *C. erymanthis*, Drury, from Northern India.

Range. The Indo-Malayan Region.

♂ ♀. Fore wing: costa arched; apex moderately acute but not produced; termen slightly convex; tornus rounded; dorsum slightly sinuous, cell slenderly closed; upper discocellular obsolete, middle very concave, lower erect, placed well beyond the middle discocellular and not in a line with it; veins 3 and 4 from lower apex of cell, 9 from a little beyond middle of 7, 10 from basal half of 7, 11 free. Hind wing broadly oval; costa slightly arched; apex and tornus broadly rounded; termen strongly arched, slightly scalloped, angular at apex of vein 4; cell open. Antennæ about half length of fore wing; club very slight, narrow; palpi comparatively broad in front, third joint very short and acute; eyes naked.

Key to the forms of Cupha.

a. Upperside fore wing: subapical yellow spots on black apical area prominent; spots posteriorly on discal band large, conspicuous; lowest spot much larger than the others.
  a′. Ground-colour, upperside, bright ochraceous brown ... ... — *C. erymanthis*, p. 417.
  b′ Ground-colour, upperside, very dark ochraceous brown ... ... — Race *andamanica*, p. 418.
b. Upperside fore wing; subapical yellow spots on black apical area absent or very faintly marked; spots posteriorly on discal band small, not conspicuous, subequal — *C. placida*, p. 418.

419. **Cupha erymanthis**, *Drury* (Papilio), *Ill. Ex. Ent.* i, 1770, pl. 15, figs. 3, 4, ♀ ; *de N. Butt. Ind.* ii, 1886, p. 22, pl. 23, fig. 105 ♂; *Moore, Lep. Ind.* iv, 1899-1900, p. 204, pl. 362, figs. 1, 1*a*–1*c*, ♂ ♀.
Messaras erymanthis, var. nicobarica, *Felder, Verh. zool.-bot Ges. Wien*, xii, 1862, p. 486.

Race andamanica.

Cupha andamanica, *Moore, Lep. Ind.* iv, 1899–1900, p. 208, pl. 363, fig. 2 ♂.

♂ ♀ *Upperside* ochraceous light brown. Fore wing: some loop-like, slender, dark cellular markings; a broad, somewhat curved, transverse yellow discal band from costa to vein 1, not reaching the termen, broadening posteriorly, the margins irregularly sinuous, the inner defined broadly with black, and produced outwards in interspaces 3 and 4, below this the margin is squarely indented inwards in interspace 2 and outwardly convex in interspace 1; a curved series of three black spots, the lowest the largest, in interspaces 1, 2 and 3; apical area beyond the band black, with a conspicuous yellow subapical spot in interspace 5, and a paler ill-defined similar spot above it in interspace 6; posteriorly the black area is produced narrowly to the tornus and encircles a yellow spot near apex of interspace 2. Hind wing: a transverse sinuous, very slender, black line, followed by a slender somewhat lunular line, a transverse discal series of five black spots in interspaces 2 to 6, a postdiscal medially disjointed series of broad black lunules, a subterminal series of similar but straighter lunules, and a narrow terminal black band. The outer subbasal transverse line broadens at the costa, and is outwardly margined by pale spots in the interspaces, these are anteriorly white, well defined, posteriorly obscure, often absent. *Underside* much paler; the discal band on the fore wing also much paler, the black on the apical area replaced by pale brownish ochraceous; some obscure marking in cells of both fore and hind wings. Fore wing: a discal, transverse, slender, chestnut-brown lunular line, bent inwards above vein 5, and bordered outwardly by a series of dark spots; the large black spot in interspace 1 as on the upperside, and an inner and an outer transverse subterminal series of small dentate spots. Hind wing: some indistinct cellular markings; the outer subbasal dark transverse line as on the upperside but more clearly defined, very sinuous; a transverse discal series of uneven lunules, paler than the ground-colour, followed by a series of dark spots, a postdiscal very obscure pale lunular band, and a subterminal series of dentate dark spots, often obscure or obsolescent. Antennæ, head, thorax and abdomen ochraceous brown; beneath, the palpi, thorax and abdomen very pale ochraceous white.

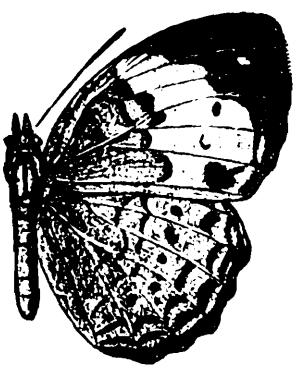

Fig. 77.
Cupha erymanthis, ♀. ½.

Exp. ♂ ♀ 58–74 mm. (2·3–2·92″).

Hab. Along the foot of the Himalayas and up to 5000 ft. from Mussooree to Sikhim; the hills of Assam; Burma; Tenasserim; the Nicobars; extending to China and the Malayan Subregion.

Var. *nicobarica*, Felder, generally but not always, has the interspace between the postdiscal and subterminal transverse series of lunules on the upperside of the hind wing paler than the ground-colour of the wings.

Race **andamanica**, Moore.— ♂ ♀. Upperside ground-colour very dark ochraceous brown, much darker than in *erymanthis* generally; markings on both upper and under sides similar, but on the upperside the spots on the discal band on the fore wing larger, especially the lowest spot; on the hind wing the upper three spots of the discal series conspicuously larger; on the underside the ground-colour is darker and the markings more clearly defined than in the typical form.

Exp. ♂ ♀ 64–72 mm. (2·53–2·82″).

Hab. The Andamans.

Tenasserim specimens of *C. erymanthis* are often as dark as any specimen of the Andaman race.

420. **Cupha placida**, *Moore, Lep. Ceyl.* i, 1881, p. 65, pl. 32, fig. 1; *de N. Butt. Ind.* ii, 1886, p. 23; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* x, 1896, p. 247, pl. 3, figs. 3, 3 *a*, larva & pupa; *Moore, Lep. Ind.* iv, 1899–1900, p. 207, pl. 363, figs. 1, 1 *a*, ♂ ♀

Cupha erymanthis maja, *Frühstorfer, Berl. ent. Zeit.* 1898, p. 198; *Moore, Lep. Ind.* iv, 1899–1900, p. 206, pl. 362, figs. 2, 2 *a*–2 *c*, larva & pupa, ♂ ♀.

Closely resembles *C. erymanthis*, but there are differences in the markings which are constant. I am doubtful, however, whether *C. placida* should not be considered merely a race of that insect.— ♂ ♀ *Upperside* differs as follows:—Fore wing: discal band distinctly darker yellow, with its inner and outer margins much less sinuous and irregular, the black line defining the inner margin more slender; the spots on the band in interspaces 1, 2 and 3 much smaller, especially the spot in interspace 1, which is no larger than the others and is diffuse and ill-defined; the subapical yellow spots on the black area entirely wanting or, if present, diffuse and indistinct. On the hind wing the outer subbasal line with its outer border of pale spots is generally more clearly defined than in *C. erymanthis*. Both fore and hind wings are shaded at the base with olivaceous brown. *Underside*: markings similar to those in *C. erymanthis* but more heavily defined.

Exp. ♂ ♀ 58–72 mm. (2·3–2·82″).

Hab. South India, Ceylon.

The Southern Indian form has been separated as *C. maja* by Frühstorfer, but the differences are very slight and not constant. With regard to the shape of the wing, many Ceylon specimens have the apex of the fore wing as acutely pointed and the termen of the

hind wing as distinctly angulated at apex of vein 4 as any of the Southern Indian specimens. The width of the discal band on the upperside of the fore wing, the distinctness or otherwise of the subbasal, postdiscal and subterminal transverse markings on the upperside of the hind wing are all characters that vary among the Southern Indian specimens themselves.

Larva. Brown, with a dorsal and a lateral series of darker brown markings; head with two slender branched spines, succeeding segments with on each side a lateral series of semitransparent similar brown spines. Food-plant, *Flacourtia* sp.?

Pupa. Green, studded with eight slender pink filaments and four small pink tubercles. (*Described from the figure in Messrs. Davidson and Aitken's paper quoted above.*)

Genus **CIRROCHROA**.

Cirrochroa, *Doubleday, in Dbldy., Westw. & Hew. Gen. Di. Lep.* i, 1848, p. 157; *Moore, Lep. Ceyl.* i, 1881, p. 62; *de N. Butt. Ind.* ii, 1886, p. 107; *Moore, Lep. Ind.* iv, 1899–1900, p. 211.
Ducapa, *Moore, Lep. Ind.* iv, 1899–1900, p. 209.

Type, *C. aoris*, Doubleday, from N.E. India.

Range. Indo-Malayan Region.

♂ ♀ Fore wing very broadly triangular; apex produced and truncated, making the termen angular at apex of vein 7; termen below slightly concave; tornus bluntly angular; dorsum straight; cell closed, short, not more than one-third the length of the wing; upper discocellular obsolete, middle concave, lower inwardly oblique; veins 3 and 4 stalked, well beyond lower apex of cell; 9 from apical half of 7; 10 and 11 free. Hind wing elongate, posteriorly produced, costa comparatively short, termen and dorsum long; costa very slightly arched, nearly straight; apex bluntly angular; termen anteriorly slightly arched, from below vein 4 suddenly rounded; tornus bluntly angular; dorsum nearly straight, emarginate just above tornus; cell open; a depression in the membrane between veins 4 and 5. Antennæ comparatively short, less than half length of fore wing; club long, narrow, gradual; palpi thick, rounded in front, studded with short slender porrect hairs, third joint attenuated, cylindrical; eyes naked.

Key to the forms of Cirrochroa.

A. Upperside: ground-colour dark brown or brownish ochraceous; males with sex-mark of specialized scales along veins 5 and 6 of fore wing.
  a. Upperside basal half of wings dark brown — *C. fasciata*, p. 420.
  b. Upperside basal half of wings brownish ochraceous — *C. flavo-brunnea*, p. 421.

B. Upperside ground-colour: ♂ some shade of tawny or fulvous tawny; ♀ similar, generally paler or ochraceous shaded with brown; ♂ without sex-mark of specialized scales on fore wing*.

a. Fore wing truncate at apex.

a'. Upperside fore wing: apex and termen a comparatively narrow edge of black; subterminal zigzag black line distinct . .. . .. *C. aoris*, p. 427.

b'. Upperside fore wing: apex and termen broadly edged with black; subterminal black line more or less coalescent, with black edging not distinct. Race *olivacea*, p. 428.

b. Fore wing rounded, not truncate at apex.

a'. Underside fore wing: discal band of nearly even width throughout, not narrowing posteriorly . ... .. *C. mithilâ*, p. 423.

b'. Underside fore wing: discal band not of even width, distinctly narrowing posteriorly.

a^2. Underside hind wing: subterminal lunular band distinct.

a^3. Upperside hind wing: spots in transverse discal series small; subterminal black band anteriorly more or less coalescent with black on terminal margin .. *C. bajadeta*, p. 424.

b^3. Upperside hind wing: spots in transverse discal series very large; subterminal black band anteriorly not coalescent with black on terminal margin, separate throughout . . .. *C. nicobarica*, p. 425.

b^2. Underside hind wing: subterminal lunular band very obscure.

a^3. Upperside ground-colour rich fulvous; ♂ with sex-marks of specialized scales on veins 5, 6 and 7 of fore wing; ♀ expanse over 70 mm. . .. .. *C. thais*, p. 421.

b^3. Upperside ground-colour pale tawny; ♂ without sex-marks; ♀ expanse under 65 mm. *C. surya*, p. 424.

421. **Cirrochroa fasciata**, *Felder* (Atella), *Wien. ent. Monats.* iv, 1860, p. 236; *de N. Butt. Ind.* ii, 1886, p. 119; *Moore* (Ducapa), *Lep. Ind.* iv, 1899–1900, p. 209, pl. 363, figs. 3, 3 *a*–3 *c*, ♂ ♀

♂ ♀ *Upperside* fuliginous brown. Fore and hind wings with a broad, inwardly oblique, pale ochraceous band extending from interspace 3 on the fore wing to interspace 1 on the hind wing; a

* One form (*C. thais*) is an exception. The males of this have sex-marks similar to those of *C. fasciata* ♂, but extending also along the apical portion of vein 7 on the upperside of the fore wing.

short similarly coloured streak above it in interspace 5 on the fore wing; a transverse postdiscal series of pale ochraceous spots in the interspaces below 5 on the fore wing, complete on the hind wing; on the latter wing these are closely contiguous and margined inwardly by a prominent series of black spots, extending on the fore wing only to interspace 1; an inner transverse subterminal series of pale ochraceous lunules, those on the fore wing transversely very short; finally, an obscure outer subterminal pale line. *Underside* very pale greyish ochraceous, the markings as on the upperside but faint and blurred, except the transverse series of black spots, which are as prominent as on the upperside. Antennæ, head, thorax and abdomen dark brown; beneath, the palpi, thorax and abdomen very pale ochraceous. Male sex-mark: veins 5 and 6 on the fore and veins 6 and 7 on the hind wing with a broad edging of pale specialized scales on each side, extending from close to the bases of those veins nearly up to the postdiscal series of ochraceous spots.

Exp. ♂ ♀ 49–53 mm. (1·93–2·1″).

Hab. Tenasserim; extending in the Malayan Subregion as far as the Philippines.

422. **Cirrochroa flavo-brunnea,** *Grose-Smith* (Paduca), *A. M. N. H.* (5) xx, 1887, p. 266; *Moore, Lep. Ind.* iv, 1899–1900, p. 211, pl. 363, fig. 4 ♂

♂. Closely resembles *C. fasciata*. *Upperside* differs as follows: ground-colour ochraceous, a very broad medial transverse area on both fore and hind wings much brighter ochraceous yellow, terminal margins of both wings dark brown. The darker basal area very sharply defined, on the fore wing angulated broadly outwards in interspace 4; the postdiscal transverse series of ochraceous spots so conspicuous in *C. fasciata* coalescing with the broad, bright ochraceous, transverse medial area noted above, but the transverse series of black spots and the subterminal markings as in *C. fasciata*. *Underside* similar to that in *C. fasciata* but much yellower and paler. Male sex-mark as in *C. fasciata*.

Exp. ♂ 45 mm. (1·8″).

Hab. Tenasserim.

This, as Moore remarks, is probably only the dry-season form of *C. fasciata*; but specimens seem to be very rare in collections, so that there is not enough material to judge from. The general appearance is strikingly different.

423. **Cirrochroa thais,** *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 64; *Moore, Lep. Ceyl.* i, 1881, p. 63, pl. 32, figs. 2, 2 *a*, ♀; *de N. Butt. Ind.* ii, 1886, p. 117; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 273, larva & pupa; *Moore, Lep. Ind.* iv, 1899–1900, p. 218, pl. 368, figs. 1, 1 *a*–1 *h*, ♂ ♀.

Cirrochroa lanka, *Moore, P. Z. S.* 1872, p. 557; *id. Lep. Ceyl.* i, 1881, p. 63, pl. 32, figs. 4, 4 *a*, ♂; *de N. Butt. Ind.* ii, 1886, p. 116;

Moore, Lep. Ind. iv, 1899–1900, p. 220, pl. 369, figs. 1, 1 *a*–1 *f*, larva & pupa, ♂ ♀.
Cirrochroa swinhoei, *Butler, P. Z. S.* 1881, p. 604 ♀ ; *de N. Butt. Ind.* ii, 1886, p. 118.
Cirrochroa cognata, *Moore, Lep. Ceyl.* i, 1881, p. 64, pl. 32, figs. 3, 3 *b*, ♂, larva & pupa ; *de N. Butt. Ind.* ii, 1886, p. 117.
Cirrochroa relata, *de N. Butt. Ind.* ii, 1886, p. 116, ♂ ♀

Wet-season form.— ♂. *Upperside* rich tawny with the following black markings :—Fore wing : a narrow band along the discocellulars ; three transverse spots in the interspaces beyond ; a spot at the base of interspace 3, short transverse slender lines in continuation of it in interspaces 1 and 2 ; the three spots beyond the apex of cell in échelon forward of the last-mentioned three markings ; a postdiscal transverse series of lunules inwardly diffuse in interspaces 5 and 6, obsolescent in interspace 1 ; the apex and termen broadly black, the latter coalescing with an obscure subterminal transverse lunular line and enclosing a series of detached obscure lunules of the tawny ground-colour. Hind wing : the markings dusky black, very similar to those in the hind wing of *C. mithila* ; the white subcostal patch on the outer margin of the discal line as in that form, but more prominent, the costal margin beyond it to apex broadly fuliginous grey. *Underside* dark ochraceous tawny suffused with purplish ; basal area with some short, transverse, slender dark lines, the discocellular transverse streak on the fore wing as on the upperside ; a prominent, transverse, white discal band across both fore and hind wings, very broad at costa of fore wing, narrowing to the dorsum ; similarly but not quite so broad at costa of hind wing and narrowing to the dorsum ; its inner margin sinuous, its outer margin straighter, both defined, but very obscurely, by dark lines ; faint lunular markings beyond on the terminal half of both wings as in all the forms of the genus ; the black spots in the transverse discal series on the hind wing very small. Antennæ brown ; head and abdomen more or less fulvous tawny, thorax with bright pale green pubescence ; beneath pale ochraceous. Sex-mark : the veins on the upperside of the disc of the fore wing black ; veins 5, 6 and apical portion of 7 with very narrow short bands of specialized scales on each side ; no such scales on the hind wing.— ♀ *Upperside* similar, the black edging to the apex and along the termen conspicuously broader, as are all the dark markings ; the special ♂ sex-marks of course absent. *Underside* similar ; ground-colour paler, more ochraceous, not suffused with purplish, the markings similar to those in the ♂, but the inner margin of the discal band more than sinuous, zigzag ; the band on the fore wing much attenuated at all the veins below vein 5, on the hind wing narrower than in the ♂. Antennæ, head, thorax and abdomen as in the ♂

Dry-season form.—Similar to the wet-season form, but on the upperside the ground-colour is a shade duller and paler, the markings very slightly more restricted and of a dusky black. On the underside the purplish suffusion is generally restricted to the

terminal half of the wings in the ♂; the discal transverse band in both sexes is slightly broader, in the ♀ sometimes margined outwardly with a very broad diffuse dusky-black shading in the interspaces.

Exp. ♂ ♀ 62–75 mm. (2·48–2·98″).

Hab. Southern India, Ceylon.

After carefully examining long series of specimens from Southern India and Ceylon, I am quite unable to find any constant characters that would serve to distinguish *C. lanka*, Moore, from *C. thais*, Fabr.

424. **Cirrochroa mithila**, *Moore, P. Z. S.* 1872, p. 558 ♂; *Anderson, Yunnan Exp.* 1878, p. 924; *de N. Butt. Ind.* ii, 1886, p. 114; *Moore, Lep. Ind.* iv, 1899–1900, p. 215, pl. 366, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Cirrochroa rotundata, *Butler, Trans. Linn. Soc.* ser. 2, *Zool.* i, 1877, p. 543 ♂; *de N. Butt. Ind.* ii, 1886, p. 114.

Cirrochroa anjira, *Moore, P. Z. S.* 1877, p. 584; *de N. Butt. Ind.* ii, 1886, p. 115; *Moore, Lep. Ind.* iv, 1899–1900, p. 216, pl. 367, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ Closely allied to *C. aoris*, but in both sexes the apex of the fore wing is rounded, not truncate, the termen straighter, more erect, the wing not apically produced.—♂. *Upperside* rich fulvous tawny, the basal area limited by the transverse discal black line, darker on both fore and hind wings than the discal and terminal portions of the wings. The black markings are similar to those in *C. aoris*, but differ as follows:—Fore wing: veins not black, concolorous with the ground-colour of the wing; discal transverse black line not so sinuous; subterminal black zigzag line heavily marked, complete from apex to vein 1, black at apex more diffuse; the terminal edging of black slightly more even in width. Hind wing: black markings absolutely identical with those on hind wing of *C. aoris*. *Underside*: ground-colour a darker, more uniform ochraceous than in *C. aoris*, slightly suffused with purple; the markings similar, but the transverse discal band of a much more even width on the fore wing; there is a distinct shade on the middle of the terminal half of both fore and hind wings, darker than the rest of the ground-colour; the subterminal markings are slightly more distinct, and the fore wing is without the white apical patch so conspicuous in *C. aoris*. Antennæ, head, thorax and abdomen as in *C. aoris*.

♀. Resembles the dry-season form of the ♀ *C. aoris*, but in addition to the difference in the shape of the fore wing mentioned above, the ground-colour and markings differ as follows:—*Upperside*: ground-colour a richer, brighter yellow. Fore wing: the black line defining the inner and outer margins of the broad bright yellow transverse discal band much less sinuous, less sharply defined; the subterminal lunular transverse line more clearly separated from the black edging to the terminal margin. Hind wing differs less, but the black line defining the inner margin of the discal band is less sinuous and less curved, terminating on

the dorsal margin closer to the tornus than it does in *C. aoris*; the terminal markings are heavily defined and very distinct. *Underside* as in *C. aoris*, but the ground-colour slightly darker, the transverse discal band broader and, as in the ♂, of more even width; all the markings more distinct.

Exp. ♂ ♀ 63–83 mm. (2·50–3·25″).

Hab. Sikhim; Behar; Assam; Burma; Tenasserim; the Andamans. Extends also through the Malayan Subregion to Java.

I am unable to separate the Andaman form (*C. anjira*, Moore) from Tenasserim specimens of this form. The next form (*C. surya*, Moore) is, I think, quite distinct though very closely allied to *C. mithila*; the difference in certain characters is constant, and its range is restricted, coinciding, however, in part with that of the far more widely spread *C. mithila*.

425. **Cirrochroa surya**, *Moore, P. Z. S.* 1878, p. 827; *de N. Butt. Ind.* ii, 1886, p. 112; *Moore, Lep. Ind.* iv, 1899–1900, p. 217, pl. 367, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Closely resembles *C. mithila*, but the sexes are more alike, are constantly smaller, and have the apex of the fore wing produced, the termen consequently conspicuously more oblique.—♂ *Upperside* a brighter fulvous tawny than in *C. mithila*. Fore wing: a short narrow dusky-black band along the discocellulars; discal markings reduced to some irregular black transverse short lines beyond the cell; the edging of black on the apex and termen of the fore wing broad, extending diffusely to the subterminal transverse line. Hind wing: markings similar to those in *C. mithila*, but the transverse dark discal line much interrupted, straight or slightly curved, not sinuous. *Underside*: ground-colour as in *C. mithila*, the transverse discal band on fore wing comparatively broader anteriorly, narrower posteriorly; the markings similar, but the tinge of purplish and the dark shading on the middle of the terminal area of both fore and hind wings entirely wanting. Antennæ brown; head, thorax and abdomen brownish fulvous; beneath, the palpi, thorax and abdomen pale ochraceous.—Female resembles the ♂, but on the *upperside* the ground-colour is slightly paler, the black edging to the apex and termen of the fore wing broader. *Underside*: discal band more prominent, margined outwardly by a purplish dark line, inwardly by a slightly sinuous line of an ochraceous shade darker than that of the ground-colour.

Exp. ♂ ♀ 49–63 mm. (1·95–2·5″).

Hab. Recorded only from Tenasserim.

426. **Cirrochroa bajadeta**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 150, pl. 3, figs. 3, 3 *a*, larva & pupa; *Distant, Rhop. Malay.* 1883, p. 179, pl. 19, figs. 1, 2, ♂ ♀.

Cirrochroa ravana, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 150.

♂ ♀ Fore wing: apex produced but rounded, termen slightly concave.— ♂. *Upperside* rich reddish fulvous; bases of wings lightly shaded with ochraceous brown; basal halves of both fore and hind wings a shade darker than the terminal halves, the outer margin of this colour defined by an obscure outwardly-curved dark line crossing both wings. Fore wing: the usual short transverse discocellular dark streak; apex and termen jet-black, the edging very broad on the costal margin, decreasing in width to the dorsum, the black area on the apex encircling a very short obliquely-placed streak of the ground-colour. Hind wing: the usual white patch in interspace 7; discal row of transverse black spots and postdiscal transverse lunular black line; terminal margin somewhat broad, coalescing with the subterminal black transverse lunular line anteriorly, more or less distinct from it posteriorly. *Underside* ochraceous; some transverse dark subbasal marks; fore and hind wings with an irregular transverse discal band, pale ochraceous on the fore, white on the hind wing; on the fore wing this band is broad on the costal margin, gradually narrows to the dorsum, and is defined on either side by dark diffuse ochraceous lines; on the hind wing it is attenuated below vein 6 to middle of interspace 4. Fore wing: a dusky fuliginous shade on apex and termen; a preapical oblique short white streak; subterminal and terminal dark ochraceous lunular bands, their margins clearly defined. Hind wing: the usual discal series of small black spots, followed by dark ochraceous subterminal and terminal bands as on the fore wing. Antennæ dark brown; head and abdomen fulvous; thorax with greenish pubescence; beneath, palpi, thorax and abdomen pale ochraceous.— ♀ *Upperside*: basal halves of both fore and hind wings ochraceous brown, the outer margin of the colour crenulate; terminal halves pale yellow. Fore wing with the usual discocellular transverse short dark streak and black edging to the apex and termen as in the ♂ Hind wing: the discal transverse series of black spots, postdiscal, subterminal and terminal markings as in the ♂, but less clearly defined and somewhat diffuse. *Underside*: ground-colour of basal and terminal halves of wings as on the upperside, but much paler, the markings similar to those in the ♂

Exp. ♂ ♀ 76–84 mm. (3·05–3·34″).

Hab. I have received two males from Victoria Point in the extreme south of Tenasserim within our limits. Found from the Malay Peninsula to Java.

427 **Cirrochroa nicobarica**, *W.-M. & de N. J. A. S. B.* 1881, p. 231; *de N. Butt. Ind.* ii, 1886, p. 112; *Moore, Lep. Ind.* iv, 1899–1900, p. 221, pl. 370, figs. 1, 1 *a*–1 *e*, ♂ ♀.

♂ ♀ Termen of fore slightly, of hind wing strongly scalloped, more strongly in the ♀ than in the ♂; apex of fore wing in both

sexes slightly produced, broadly rounded.— ♂. *Upperside*: a paler, somewhat duller tawny yellow than in *C. mithila*, the bases of the wings slightly shaded with dusky olivaceous. Fore wing: a short narrow dusky black band along the discocellulars; the costal margin narrowly, the apex and termen very broadly, from about the upper third of the costa in a curved line to near apex of vein 3, and thence in a straighter line to the dorsal margin, opaque black, enclosing in the lower two or three interspaces very obscure lunules of the ground-colour. Hind wing: a straight slender discal black line from middle of costa to near apex of vein 1; a transverse series of large oval black spots in interspaces 1 to 3 and 6 to 7; a very much smaller black spot in interspace 4; postdiscal, subterminal and terminal narrow dull black sinuous bands; a short, transverse, narrow subcostal white bar borders on the inner side the discal black spot in interspace 7; beyond the spot the space between it and the postdiscal band and between the latter and subterminal band is conspicuously whitish. *Underside* pale ochraceous. Fore wing: discocellular narrow band and an oblique dark discal line very obscure; the black on the apex and termen, on the upperside, showing through as a dark shade, traversed subterminally by a very obscure series of whitish lunules. Hind wing: the markings as on the upperside, but the discal transverse line, postdiscal and subterminal bands, white not black; the subterminal band very narrow, the postdiscal band very broad, the latter formed of a series of cone-shaped marks very narrowly bordered on the inner side with diffuse black; the terminal margin narrowly ochraceous.—Female similar. *Upperside*: ground-colour paler, the black on the apex and termen of the fore wing narrower, more restricted; the black markings on the hind wing narrower. *Underside*: ground-colour much paler than in the ♂, the basal area darker than the rest and sharply defined, its outer margin angulated outwards on vein 2 of the fore wing; markings almost identical with those in the ♂, but on the hind wing the spot of the discal series in interspace 3 sometimes absent; the cone-shaped white markings composing the postdiscal white band more confluent and continuous. Antennæ dusky black in the ♂; ochraceous in the ♀; head, thorax and abdomen fulvous; beneath, the palpi, thorax and abdomen pale ochraceous.

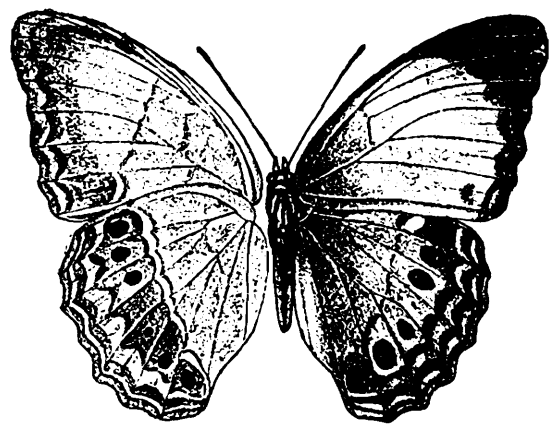

Fig. 78.—*Cirrochroa niccbarica*, ♂ ♀.

Exp. ♂ ♀ 48–70 mm. (1·9–2·75″).

Hab. The Nicobars.

428. **Cirrochroa aoris**, *Doubleday, in Dbldy., Westw. & Hew. Gen. Di. Lep.* i, 1848, p. 157, pl. 21, fig. 2 ♀ ; *de N. Butt. Ind.* ii, 1886, p. 109 ; *Moore Lep. Ind.* iv, 1899–1900, p. 212, pl. 364, figs. 1, 1 *a*–1 *e*, ♂ ♀.

Cirrochroa abnormis, *Moore, J. A. S. B.* 1884, p. 19 ; *de N. Butt. Ind.* ii, 1886, p. 110 ; *Moore, Lep. Ind.* iv, 1899–1900, p. 214, pl. 365, figs. 1, 1 *a*, ♂.

Cirrochroa jiraria, *Swinhoe, Trans. Ent. Soc.* 1883, p. 281.

Race olivacea.

Cirrochroa olivacea, *de N. Butt. Ind.* ii, 1886, p. 110, pl. 24, fig. 111 ♀ ; *Moore, Lep. Ind.* iv, 1899–1900, p. 214, pl. 365, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Wet-season form.— ♂. *Upperside* tawny, base of the wings shaded with olivaceous. Fore wing : a transverse, dusky, obscure, short narrow band along the discocellulars ; a transverse dusky black sinuous discal line, terminating in an oblique short black streak at base of interspace 7 ; a transverse series of very obscure diffuse dark spots ; apex broadly, termen narrowly black ; from the former is emitted downwards a subterminal slender zigzag black line. Hind wing : a transverse dark discal sinuous line and series of black spots in continuation of those on the fore wing, the spots much more clearly defined ; a postdiscal transverse series of slender lunular dark markings, followed by an inner and an outer dark subterminal line ; the inner line lunular, the outer straight. The discal transverse line and postdiscal series of lunules each bordered by a prominent white subcostal spot. *Underside* ochraceous. Fore and hind wings with a common pinkish-white conspicuous transverse discal fascia, its inner margin highly sinuous, its outer straight, followed by a transverse series of spots as on the upperside ; a common subterminal transverse lunular narrow band and a straight narrow border to the termen, the latter two of a darker ochraceous than the ground-colour. The basal area of both fore and hind wings with some dark ochraceous transverse sinuous short lines ; the apex of the fore wing white ; the subterminal lunular line on the hind wing bordered inwardly and outwardly by obscure broad pinkish-white lunules. Antennæ brown ; head, thorax and abdomen fulvous brown ; beneath, the palpi white, the thorax and abdomen ochraceous.— ♀ *Upperside* pale brown ; fore and hind wings crossed transversely by a very broad white discal band, its inner and outer margins irregularly zigzag, but sharply defined ; anteriorly the band widens on the

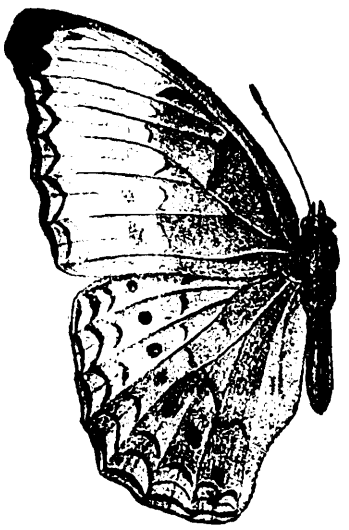

Fig. 79.
Cirrochroa aoris, ♂. ⅔.

costal margin of the fore wing and is medially traversed throughout its length by a narrower brown band bearing a transverse superposed row of spots similar to that in the ♂; the medial band and the spots well defined on the hind wing, somewhat diffuse on the fore wing; beyond the discal band is a transverse series of broad white lunular markings succeeded by a terminal brown band inwardly defined by a darker line. *Underside* a pale ochraceous drab; the discal band as in the ♂ but lilacine white, inwardly bordered by a highly sinuous pale brown narrow band; a transverse sinuous narrow subbasal pale brown band, and short transverse similar bands defining the apices of the cell-areas in both fore and hind wings; beyond the discal band the transverse series of spots and the subterminal and terminal markings similar to those in the ♂, but the latter very much paler. Antennæ ochraceous brown; head, thorax and abdomen brown, pale drab-white beneath.

Dry-season form.— ♂ *Upperside* differs from that in the wet-season form in the greater or less obsolescence of the transverse black markings on both fore and hind wings. On the fore wing the black apex and terminal margin and black subterminal zigzag line are the only markings clearly defined; on the hind wing the discal and subterminal transverse lines are more or less broken and ill-defined. *Underside*: ground-colour and markings similar to but paler than in the wet-season form.— ♀ *Upperside* tawny golden yellow; dark markings nearly as in the wet-season form, but the discal band and outer transverse lunular markings not white, of the same shade as the ground-colour of the wings. *Underside* very pale ochraceous, the markings of the upperside showing through by transparency; the markings on the basal area of the wings as in the wet-season form.

Exp. ♂ ♀ 88–94 mm. (3·47–3·72″).

Hab. Sikhim; Bhutan; Assam, the Khási and Nága Hills; Cachar.

C. abnormis, Moore, said to be from Darjiling, and of which the type, a male, is the only specimen on record, is, I think, a casual aberration of *C. aoris*. Like *C. aoris*, it has the fore wing truncated at apex; it differs, however, on the upperside in the very heavily-marked transverse discal and subterminal lines crossing both fore and hind wings; the apex and termen of the fore wing are dusky black, not jet-black, and on the hind wing the discal spots are much smaller, the postdiscal series of lunules absent, and the inner subterminal transverse line not lunular. On the underside the type-specimen is dull dark ochraceous, and all the markings are more or less obsolescent.

Race **olivacea**, de Nicéville.— ♂ *Upperside* differs from the typical form as follows:—Fore wing, apex and termen more broadly black, the black on the latter extending to and coalescing with the subterminal zigzag line except in interspace 1, where

the subterminal line is distinct. Hind wing much as in the dry-season specimens of *aoris*, with the discal and subterminal markings also obsolescent. *Underside* similar to that in *aoris*, but the inner margin of the pale discal band crossing both fore and hind wings is nearly straight, not highly sinuous, and the outer margin is very sharply defined by a dark line; the apex of the fore wing is white, as in *aoris*, but the black on the apex and on the termen on the upperside shows through as a dark, almost brownish terminal band.— ♀ *Upperside* differs from the typical form conspicuously in the broad white transverse discal band confined to the fore wing; on the hind wing the space between the transverse black line limiting the basal area and the postdiscal series of slender lunular black markings is of the same shade as the ground-colour of the wing, except that the discal black line is anteriorly bordered on the outer side by a small white patch. On the fore wing, the inner margin of the white discal band is bordered by a broad black line, and the apex and termen, beyond its outer margin, are broadly dusky black. *Underside* purplish white; the markings somewhat as in the ♂, but the white discal band on the upperside of the fore wing shows through by transparency, and the discal band on the hind wing is pale blue; the dark line defining the band on the hind wing crosses also the fore wing and is prominent on both wings; the markings beyond the discal band on the hind wing are suffused with pale blue.

Exp. ♂ ♀ 80–90 mm. (3·18–3·55″).

Hab. Burma; Tenasserim.

Genus **ARGYNNIS.**

Dryas, *Hübner, Tentamen*, 1806 (no desc.); *Moore, Lep. Ind.* iv, 1899-1900, p. 223.

Argynnis, *Fabr. Illig. Mag.* vi, 1807, p. 283; *de N. Butt. Ind.* ii, 1886, p. 128; *Moore, Lep. Ind.* iv, 1899–1900, p. 237.

Acidalia, *Hübner, Verz. bek. Schmett.* 1816, p. 31; *Moore, Lep. Ind.* iv, 1899-1900, p. 230.

Rathora et Boloria, *Moore, Lep. Ind.* iv, 1899–1900, pp. 241 & 243.

Type, *A. aglaia*, Linn., from Europe.

Range. Palæarctic, Indo-Malayan, and Nearctic Regions. Within Indian limits, the Himalayas; Hills of Central and Southern India; Ceylon; Assam; Burma. Found also in China; Japan; Java to Australia.

♂ ♀ Fore wing: costa widely arched; apex rounded; termen straight, in a few forms somewhat falcate, in others slightly convex; tornus obtuse; dorsum straight; cell closed, a little less than half length of wing; veins 6 and 7 from a point, upper discocellular therefore wanting, middle and lower respectively concave, inclined obliquely inwards; vein 3 from well before lower apex of cell, 4 from apex; 10 and 11 free, from well before upper apex of cell, or 10 not free, 11 free. Hind wing: costa

bluntly angular at base, thence almost straight to apex; apex rounded; termen broadly arched, more or less scalloped; tornus rounded; cell slenderly closed; lower discocellular oblique; veins 3 and 4 from lower apex of cell; vein 7 closer to 6 than to 8 at base. Antennæ about half length of fore wing; club short, broad, abrupt; palpi comparatively broad and thick, densely hairy, third joint attenuate, acute at apex; eyes naked.

In the 'Lepidoptera Indica,' the rather extensive group of the Fritillaries, as the forms of *Argynnis* are popularly called, are arranged under a number of genera, but as the coloration of the whole group is so distinctive, and the venation so little varied, for the Indian forms at any rate this division does not seem necessary. In this work *Argynnis* includes all the forms found within our limits.

Key to the forms of Argynnis.

A. Fore wing: vein 10 out of subcostal.
  a. Underside hind wing: basal two-thirds or more dark green or shining metallic green, continuous, not broken up into patches or spots.
    a' Underside hind wing with silvery markings close to base.
      a^2. Underside hind wing: silvery markings arranged in detached spots.
        a^3. Underside hind wing without a transverse postdiscal series of ferruginous spots . .. ... [p. 432. *A. aglaia*, race *vitatha*,
        b^3. Underside hind wing with a transverse postdiscal series of ferruginous spots . ... *A. jainadeva*, p. 433.
      b^2. Underside hind wing: silvery markings arranged in transverse bands.
        a^3. Upperside hind wing: terminal margin posteriorly not suffused with blue.
          a^4. Underside hind wing: basal area crossed by three short silvery bands .... *A. kamala*, p. 433.
          b^4. Underside hind wing: basal area crossed by one short silvery band . ... *A. maia*, p. 434.
        b^3. Upperside hind wing: terminal margin posteriorly broadly suffused with blue.
          a^4. Upperside ground-colour rich fulvous; blue suffusion on hind wing very broad .. .. . *A. childreni*, p. 435.
          b^4. Upperside ground-colour pale fulvous; blue suffusion on hind wing narrow ... . [p. 437. Race *sakontala*,
    b'. Underside hind wing without silvery markings close to base . *A. rudra*, p. 437.

b. Underside hind wing: basal half brownish olive-green broken up into patches or large spots.
a'. ♂. Upperside hind wing: subterminal line of lunules blue on posterior half of wing. ♀. Upperside fore wing with an oblique white conspicuous band .... *A. hyperbius*, p. 438.
b'. ♂. Upperside hind wing: subterminal line of lunules tawny yellow throughout. ♀. First form: upperside fore wing with an oblique white conspicuous band; second form: upperside fore wing without oblique white band; similar coloration to ♂ ... . .. Race *castetsi*, p. 440.
c. Underside hind wing without a trace of green.
a'. Hind wing: tornus angulate; underside silvery spots comparatively large . ... *A. lathonia*, race *issæa*, p. 441.
b' Hind wing: tornus rounded; underside silvery spots comparatively small *A. gemmata*, p. 442.

B. Fore wing: vein 10 out of 7.
a. Underside hind wing more or less strongly suffused with green.
a'. Underside hind wing: green not extending to terminal margin, latter narrowly ochraceous .. *A. clara*, p. 443.
b'. Underside hind wing: green extending up to terminal margin, no ochraceous edging ... . Race *manis*, p. 444.
b. Underside hind wing with no trace of green.
a' Underside hind wing: terminal series of white or silvery spots elongate, oval.
a^2. These spots very narrow, not placed on a red terminal edging. Expanse 34–36 mm. .. .. *A. altissima*, p. 445.
b^2. These spots shorter and broader, placed on a red terminal edging. Expanse 38–40 mm. .. . . Race *mackinnoni*, p. 446.
b' Underside hind wing: terminal series of white or silvery spots quadrate.
a^2. Hind wing apex rounded. . *A. jerdoni*, p. 446.
b^2. Hind wing apex angulated.
a^3. Upperside: ground-colour fulvous tawny, black markings comparatively large. Expanse 38–42 mm. *A. pales*, p. 447.
b^3. Upperside: ground-colour bright fulvous, black markings comparatively small. Expanse 49–51 mm. Race *generator*, p. 449.
c' Underside hind wing: terminal series of white or silvery spots conical or scutiform, pointed on the inner side. *A. hegemone*, p. 449.

429. **Argynnis aglaia**, *Linnæus* (Papilio), *Syst. Nat.* ed. x, 1758, p. 465.

Race vitatha.

Argynnis vitatha, *Moore, P. Z. S.* 1874, p. 568 ♂; *de N. Butt. Ind.* ii, 1886, p. 136; *Moore, Lep. Ind.* iv, 1899–1900, p. 239, pl. 374, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

Race **vitatha**, Moore.—♂ *Upperside* rich tawny yellow with the following black markings:—Fore wing: a medial, inwardly curved, broad, loop-like mark and a short transverse sinuous preapical broad line in cell, the latter not reaching the median vein; a line along the discocellulars and a broad short irregular line almost coalescent with it beyond; a zigzag discal series of spots twice angulated as in most forms of the genus; transverse postdiscal and subterminal series of spots, with a short subcostal patch in interspace 6 on the inner side of the former and a terminal narrow band. The subterminal spots inwardly pointed, hastate, the terminal band inwardly dentate. Hind wing: a broad line along the lower discocellular, a discal sinuous narrow outwardly angulated band, a series of five postdiscal spots; subterminal spots and terminal narrow bands as on the fore wing. *Underside* fore wing: ground-colour ochraceous tawny, fading to very pale yellow along the costal margin and on apex; black markings as on the upperside but less clearly defined, more or less obsolescent or turning to greenish on apex and along termen. Hind wing pale ochraceous yellow, the basal two-thirds suffused with pale green; the terminal margin also somewhat broadly pale green; the following silvery markings on the green area: two transverse detached basal and three transverse detached medial spots; the middle spot of the latter in apex of cell; a discal, somewhat macular, transverse band angulated outwards in interspace 4, and a transverse series of broad subterminal lunules; the silvery markings margined on one or both sides by slender black lines. Antennæ dark brown, annulated with white below the club; head, thorax and abdomen brownish fulvous; beneath, palpi and thorax pale greyish, abdomen ochraceous white.—♀. Similar, with similar markings. *Upperside*: ground-colour typically paler, the irroration of dusky-black scales at the bases of the wings more extended, on the hind wing in some specimens reaching the terminal margin at apex of veins 1 and 2. Fore and hind wings: the terminal black band broader than in the ♂, the subterminal series of dentate spots coalescing with it along the veins, the intervening prominent line of spots thus formed much paler than the ground-colour, almost white, but the tint on these is variable; abdominal fold paler than in the ♂ *Underside* as in the ♂, the markings slightly broader, the apical area marked with green, the subterminal spots anteriorly conspicuously silvery.

Exp. ♂ ♀ 56–78 mm. (2·2–3·1″).

Hab. N. Kashmir, Gurais, Skoro-la, 15,000 ft.; Chitral.

This form so closely resembles *A. aglaia* that in the 'Butterflies of India' de Nicéville considered it quite sufficient to give a description of typical *aglaia*. Though very slightly differentiated, Indian specimens can always be discriminated by the comparatively smaller size of the black markings on the wings in the ♂, and in the ♀ by the generally darker colouring. In both sexes also the subterminal series of spots on both fore and hind wings are as a rule inwardly more acutely pointed. Chitral specimens of

the ♀ seem to be always darker, and in my own and in the British Museum collections there are, from Chitral, a few very melanoid specimens of the ♀, unlike any I have seen from other localities. In these the ground-colour and markings on the upperside are as in the ordinary form, but very strongly suffused with a dark purplish-black bloom that extends all over the wings; on the fore wing the costal margin beyond the discal band bears a white spot; the upper two spots of the postdiscal series have a small white spot on either side, the subterminal series of inwardly pointed spots on both fore and hind wings are margined on the outer side by a series of white spots, and the cilia are prominently white.

430. **Argynnis jainadeva**, *Moore, Ent. Month. Mag.* i, 1864, p. 131; *id. Yarkand Miss., Lep.* 1879, p. 2; *de N. Butt. Ind.* ii, 1886, p. 135; *Moore, Lep. Ind.* iv, 1899–1900, p. 238, pl. 374, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ ♀ Closely resembles *A. aglaia* race *vitatha*, but the black markings on the upperside are broader as a rule than in that form. There is, however, considerable variation, probably seasonal or extremely local, and many specimens are much paler than typical forms, with the markings distinctly narrower and smaller. On the *upperside* both sexes can generally be distinguished from *vitatha* by the more rounded inner margins of the subterminal series of spots on both fore and hind wings; on the *underside* by the very prominent transverse series of silvery-centred dark ferruginous spots bordering the discal row of silvery spots on the hind wing. This is very distinctive, not a trace of such spots occurs in *vitatha*.

Exp. ♂ ♀ 60–68 mm. (2·35–2·68″).

Hab. The Himalayas; Chitral to Kumaun above 9000 ft.

The Chitral forms seem to run larger and darker.

431. **Argynnis kamala**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 156; *de N. Butt. Ind.* ii, 1886, p. 134; *Moore* (Dryas), *Lep. Ind.* iv, 1899–1900, p. 224, pl. 371, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ *Upperside* golden yellow with black spots and markings as below; basal area of the wings darkened by an irroration of olivaceous-brown scales. Fore wing: two short sinuous transverse lines across middle of cell, with an inverted **N**-shaped mark beyond; a somewhat zigzag series of large spots, angulated outwards in interspace 4 and inwards in interspace 2, followed by a short transverse subcostal streak in interspace 6, a transverse, slightly sinuous postdiscal and a straighter subterminal series of spots; a transverse narrow edging to the termen, the last traversed by a very slender interrupted line of the yellow ground-colour. Hind wing: base clothed with long soft yellow hair extending over the cell and along vein 1, a transverse short streak near apex of cell, another in the interspace below it;

a sinuous discal line of transverse spots in interspaces 4 to 6, followed by a postdiscal series of smaller spots, a subterminal complete series of transverse spots and a narrow band on the terminal margin, the last traversed by an interrupted line of the yellow ground-colour as on the fore wing, only broader and more distinct. *Underside* fore wing pale ochraceous yellow, apex and postdiscal short subcostal streak in interspace 6 green, the black markings as on the upperside, but the postdiscal transverse series of spots reduced to two, the spots in the subterminal series blurred, the upper two white, the terminal black edging replaced by an inner and an outer very slender greenish line. Hind wing metallic green with silvery transverse fasciæ and spots as follows: a basal fascia from below precostal nervure to base of interspace 1, a subbasal fascia from costa to lower apex of cell, a series of small irregular discal spots, a postdiscal macular fascia from costa to dorsum, continued obscurely up the dorsal margin to base, and a subterminal similar fascia from costa to tornus, these silvery fasciæ and spots margined on one or on both sides by slender black lines; the space between the postdiscal and subterminal fasciæ traversed by an obscure series of transverse dark spots outwardly bordered with yellow; the termen narrowly greenish yellow with an inner and an outer darker green slender transverse line parallel to the margin. Antennæ dark brown; head, thorax and abdomen fulvous, the head and thorax with a mixture of bright green pubescence; beneath, the palpi, thorax and abdomen ochraceous. Sex-mark: veins 1 and 2 on upperside of fore wing ridged and clothed with dark specialized scales.—♀ *Upperside* similar to that in the ♂, but the base and interspace 1 *a* on the fore wing shaded with greenish brown, the posterior three-fourths of the hind wing with a brighter green; the ground-colour of the rest of the fore wing and of the hind wing anteriorly ochraceous; markings on both fore and hind wings similar to those in the ♂ but much broader; on the fore wing the spots of the discal series very large, continuous, formed into a zigzag band, the anterior two spots of the subterminal series white. *Underside* similar, the markings much broader. Antennæ, head, thorax and abdomen as in the ♂

Exp. ♂ ♀ 64–68 mm. (2·53–2·7″).

Hab. Western Himalayas; Kashmir to Kumaun.

432. **Argynnis maia**, *Cramer* (Papilio), *Pap. Exot.* i, 1775, pl. 25, figs. B, C, ♀; *Moore* (Dryas), *Lep. Ind.* iv, 1899–1900, p. 227.
Papilio pandora, *Denis & Schiff. Wien. Verz.* 1776, p. 176; *de N.* (Argynnis) *Butt. Ind.* ii, 1886, p. 133.

♂ *Upperside* yellow suffused strongly with green over the base and posteriorly on the fore wing and over the whole of the hind wing; markings black. Fore wing: cell with two medial bands and a broader subapical short sinuous transverse one, the last impinging on a line along the inner side of the discocellulars; a

much broader sinuous short band beyond apex of cell, joined above to the discocellular line; a zigzag discal transverse band, attenuate posteriorly; an inner and an outer postdiscal transverse series of spots, the anterior spots in the latter decreasing markedly in size, and a slender transverse subterminal line continued along the margin of the dorsum and broadened at the crossing of the veins along the termen. Hind wing: an obscure, transverse, short narrow bar near base of interspace 4; a zigzag, somewhat interrupted, transverse discal band; an inner and an outer postdiscal transverse series of spots, not extending beyond interspace 6; an elongate streak above them in interspace 7, and a subterminal transverse line broadening at the veins as on the fore wing, but not continued along the dorsum. *Underside* fore wing: basal half pale terracotta-red, costal margin broadly from base and the apex pale ochraceous, the costal margin and the outer portion of the apex suffused with green; the black markings as on the upperside but smaller and ill-defined; the zigzag discal band macular, the anterior spots of the two postdiscal series obsolete, the subterminal line entirely absent. Hind wing pale metallic green, with the following pale ochraceous transverse markings: a broad line across interspace 6 near base, continued along on the outer side of the discocellulars to the lower apex of cell; a discal broken sinuous line from above tornus to vein 8; a postdiscal series of five very small spots, and an obscure, slender, subterminal, broken, sinuous line. Antennæ brown; head and thorax green, abdomen brownish fulvescent; beneath, the palpi, thorax and abdomen very pale ochraceous tinged with pale green. Sex-mark: a raised line of specialized scales from near base to middle, along veins 2 and 3 on the upperside of the fore wing.— ♀ very similar. *Upperside* heavily suffused with green, the black markings conspicuously broader. *Underside* fore wing: the ground-colour on basal half slightly darker, the black markings on the fore and the ochraceous-white markings on the hind wing like those in the ♂, but much broader; those on the latter wing tinged with silvery blue in certain lights.

Exp. ♂ ♀ 78–92 mm. (3·1–3·62″).

Hab. S.E. Germany; S. Europe; Western Asia. A single specimen from within our limits recorded as "probably taken near Gilgit."

433. **Argynnis childreni**, *Gray, Zool. Misc.* i, 1831, p. 33; *id. Lep. Ins. Nepal*, 1846, p. 11, pl. 11, fig. ♂; *de N. Butt. Ind.* ii, 1886, p. 132; *Moore* (Dryas), *Lep. Ind.* iv, 1899–1900, p. 228, pl. 372, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Race sakontala.

Argynnis sakontala, *Kollar, Hügel's Kaschmir*, iv, pt. 2, 1844, p. 439, pl. 12, ♂ ♀; *Moore* (Dryas), *Lep. Ind.* iv, 1899–1900, p. 229, pl. 372, figs. 2, 2 *a*, ♂ ♀

♂ *Upperside* rich fulvous, with the following jet-black

markings:—Fore wing: cell with three transverse short bands, the outermost the broadest, a spot at bases of interspaces 4 and 5 respectively, along the middle and lower discocellulars; a discal zigzag series of large spots, the upper three connate, forming a short oblique band from the middle of the costa, the series angulated outwards in interspace 4 and inwards in interspace 2; a postdiscal transverse sinuous series of rounded spots, a subterminal series of similar spots, and a transverse narrow terminal band broadening at the veins, traversed by a slender interrupted line of the fulvous ground-colour; cilia fulvous. Hind wing: a slight transverse black mark at apex of cell, a discal series of six transverse spots from costa to interspace 2, angulated outwards in interspace 4, a postdiscal transverse series of five rounded spots, a subterminal complete series of similar spots, the posterior three or four crescentic, and a terminal narrow band; the posterior portion of the terminal area below vein 5 broadly and for a short distance narrowly along the dorsum indigo-blue; the black on the terminal margin traversed by a very slender series of lunules, light blue up to interspace 4, dusky fulvous anteriorly; cilia prominently white, interrupted by black at the apices of the veins. *Underside*: fore wing a beautiful terracotta-red; black markings much as on the upperside; the costal margin above the subcostal vein pale yellow; the apex broadly to vein 4 pale green, the space between the upper portion of the discal series of black spots and the inner margin of the green area yellow; a preapical broad silvery loop superposed on the green apical area across interspaces 5 to 7; the spots of the postdiscal series above interspace 4 and of the subterminal series green, the black edging to the terminal margin replaced by an inner and an outer slender interrupted black line. Hind wing rich metallic green, with transverse silvery black-margined broad fasciæ and lines as follow: a fascia along vein 1 *a*, a basal fascia from costa to median vein, thence dividing and rejoining lower down, enclosing a small oval patch of the ground-colour, continued along vein 1, with short cross-streaks to vein 1 *a*, and lower to vein 2; a subbasal fascia from costa crossing the cell continued along vein 2; a slender line along the discocellulars crossing at the lower apex of cell to vein 2, a triangular spot at base of interspace 3; a median short fascia from costa to vein 5; a discal broader straight fascia from costa to above tornus, thence curving

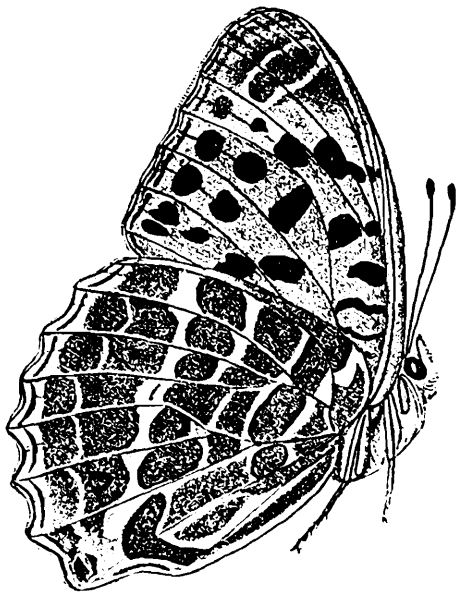

Fig. 80.
Argynnis childreni, ♂ $\frac{2}{3}$.

upwards and continued more narrowly along the dorsal margin; a postdiscal, transverse, slightly-curved lunular line; a narrow continuous subterminal and a lunular terminal similar band, the two divided and the latter outwardly margined by a slender black line; finally, a velvety-black spot at tornus, with a diffuse bluish spot above it. Antennæ brown; head, thorax and abdomen rich fulvous; beneath, the palpi, thorax and abdomen ochraceous tinged slightly with green.—♀ similar. *Upperside* ground-colour slightly paler, the spots as a whole more rounded, the indigo-blue terminal patch on hind wing extending up to vein 5. *Underside* similar to that of the ♂ Male sex-mark as in *A. kamala*.

Exp. ♂ ♀ 90–95 mm. (3·57–3·95″).

Hab. Sikhim; Nepal; the hills of Assam and Upper Burma; extending to Western and Central China.

Race **sakontala**, Kollar.—A slightly differentiated form from the western drier region of the Himalayas. Differs from *childreni* as follows:—♂ ♀ smaller. *Upperside* ground-colour slightly duller fulvous, in the ♀ paler than in *childreni* ♀, the indigo-blue terminal patch on the hind wing duller in both sexes, and not so broad as in the typical form. *Underside* similar, but the markings all narrower than in *childreni*. Antennæ, head, thorax and abdomen in both sexes, and the sex-mark in the ♂, as in *childreni*, but vein 1 also ridged with specialized scales.

Exp. ♂ ♀ 82–84 mm. (3·25–3·32″).

Hab. Western Himalayas from Kashmir to Kumaun.

434. **Argynnis rudra**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 157; *Anderson, Yunnan Exped.* 1878, p. 924; *de N. Butt. Ind.* ii, 1886, p. 132, pl. 18, fig. 75 ♂; *Moore* (Dryas), *Lep. Ind.* iv, 1899–1900, p. 226, pl. 371, figs. 2, 2 *a*, 2 *b*, ♂ ♀.

♂ *Upperside* rich ochraceous orange, with the following black spots and markings:—Fore wing: a broad loop and a short transverse band across cell, a broad line along the outer side of the discocellulars, a zigzag discal band of large spots, a postdiscal sinuous and a subterminal series of round spots, both anteriorly curved inwards, the spots in the subterminal series decreasing in size towards costal margin, the subcostal two spots elongate: finally, a narrow marginal line on the termen bordered inwardly by a row of spots on the veins. Hind wing: a transverse short streak along lower discocellular, a discal series of six spots from costa to interspace 2, the spots in interspaces 3 and 4 shifted outwards out of line; a postdiscal slightly curved series of larger spots in interspaces 2 to 6; a complete subterminal series of spots, and the terminal margin with its inner border of spots as in the fore wing, but broader. *Underside*: fore wing ochraceous, paler anteriorly, the apex broadly suffused with pale green, the markings, except the postdiscal and subterminal series of spots and terminal black

edging as on the upperside; of the postdiscal series the spots in interspaces 2 and 3 only present; of the subterminal series spots in interspaces 1, 2 and 3 present; the rest of the spots of both series obsolescent, showing through only by transparency from the upperside; the black edging to the termen absent, indicated only by an obscure slender dark line. Hind wing: basal area bright green, crossed by a comparatively broad basal ferruginous fascia from vein 1 to 8; followed by a short, very slender, sinuous ferruginous line from vein 5 to 8, a pale yellowish patch in interspace 6; a sinuous transverse silvery discal line, bordered irregularly by dusky diffuse ferruginous markings; postdiscal and subterminal transverse series of somewhat obscure green spots, the latter series superposed on a lilacine-white background, and a terminal broad edging of green with an outer dark line. Cilia on fore and hind wings brownish. Antennæ brown above, ochraceous red beneath; head, thorax and abdomen ochraceous tawny; beneath, the palpi, thorax and abdomen pale ochraceous tinged with green. Sex-marks as in *A. kamala*, but placed on veins 1 and 2 of the fore wing.— ♀ *Upper* and *under sides* as in the ♂, the basal area of the wings on the upperside broadly suffused with olivaceous brown.

Exp. ♂ ♀ 68–76 mm. (2·69–3″).

Hab. The hills of Assam and Upper Burma.

435. **Argynnis hyperbius** (Pl. V, fig. 36), *Johanssen* (Papilio), *Amœn. Acad.* vi, 1764, p. 408 ♀; *Moore* (Acidalia), *Lep. Ind.* iv, 1899–1900, p. 232, pl. 373, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Papilio niphe, *Linn. Syst. Nat.* ed. xii, 1767, i, pt. 1, p. 785 ♀; *Moore, Lep. Ceyl.* i, 1881, p. 60, pl. 31, figs. 2, 2 *a*, 2 *b*, ♂ ♀, larva. & pupa; *de N.* (Argynnis) *Butt. Ind.* ii, 1886, p. 131.

Acidalia taprobana, *Moore, Lep. Ind.* iv, 1899–1900, p. 237.

Race castetsi (Pl. VI, fig. 42).

Argynnis niphe, var. castetsi, *Oberthür, Bull. Soc. Ent. Fr.* 1889, p. 235.

Acidalia castetsi, *Moore, Lep. Ind.* iv, 1899–1900, p. 236, pl. 373, figs. 2, 2 *a*, ♂ ♀

♂ *Upperside*: fore wing rich orange-yellow, hind wing paler yellow, with the following black markings:—Fore wing: cell with a basal short transverse streak, a medial broad oval loop. its outer margin sinuous; a broad transverse streak beyond cell not reaching the median nervure; a broad streak along the disco-cellulars; a zigzag discal series of large spots, angulated outwardly in interspace 4, inwardly in interspace 2, a minute spot at base of interspace 1; a somewhat diffuse large postdiscal spot below the costa in interspace 6; a postdiscal sinuous series of round spots, those in interspaces 1 and 4 very small; an inner complete subterminal sinuous series of round spots; an outer subterminal line, widening on the veins, and a terminal slender

line. Hind wing: a basal, transverse, obscure narrow mark in cell, another above it in interspace 7, a transverse lunule across the middle of the cell; a small spot outwardly bordering the lower discocellular; a discal series of transverse spots from interspaces 1 to 7, sinuous posteriorly; a postdiscal series of five spots in interspaces 2 to 6; a subterminal series of somewhat lunular spots; finally, a narrow band on termen traversed posteriorly by a series of blue, anteriorly by a series of ochraceous lunules. *Underside* fore wing pale terracotta-red, shading into ochraceous towards the apex, the apex broadly suffused with that colour; markings as on the upperside, with the following exceptions:—subcostal spot in interspace 6, upper two spots of postdiscal series, upper four spots of the inner subterminal series, and the anterior portions of the outer subterminal and of the terminal line olivaceous brown; the upper two postdiscal spots centred with white, with a white spot on each side; the upper four spots of the subterminal series connate, forming a short curved band. Hind wing variegated with ochraceous, olivaceous-brown and silvery-white markings, the last for the most part narrowly margined on the outer side by short black lines; the veins prominently pale ochraceous; the medial silvery markings form a well-marked sinuous discal series, followed by a curved postdiscal series of five olivaceous round spots; each spot and the olivaceous-brown quadrate patch near base of cell with a minute white central spot; a slender black subterminal line widening at the veins, as on the fore wing, followed by an ochraceous narrow lunular band and an outer slender black anticiliary line; the subterminal black line margined on the inner side by a series of slender white lunules, bordered inwardly by a series of broad olivaceous-brown markings in the interspaces. Antennæ brown above, ochraceous red beneath; head, thorax and abdomen olivascent tawny; beneath, palpi, thorax and abdomen pale ochraceous. —♀. Similar. Differs from the ♂ as follows:—*Upperside*: apical half of fore wing from about the middle of the costa obliquely to just above the tornus black, inwardly suffused with purple, crossed by a broad white band from costa to the subterminal series of black spots; four preapical white spots, the upper three bordering on each side and above a very obscure ocellus scarcely visible on the black background, an inner and an outer subterminal transverse series of slender white lunules. *Underside*: fore wing markings similar to those on the upperside, but the apex of the wing beyond the white oblique band ochraceous green. Hind wing as in the ♂, but the markings slightly broader. Antennæ, head, thorax and abdomen as in the ♂, the abdomen paler beneath.

Exp. ♂ ♀ 80–98 mm. (3·25–3·85″).

Hab. The Himalayas, in the outer ranges from Campbellpur in the Punjab to Sikhim; Oudh; Agra; Manbhum in Bengal; Assam, the Khási Hills; Upper Burma; extending to China and Formosa; Sumatra; Java.

Larva. "Head and legs black; body black, this colour, however, obscured by orange-tawny markings. A broad orange-tawny dorsal stripe. Four straight horizontal simple black spines on head; spines on pectoral segments black; on abdominal segments pink tipped with black; on caudal segments pink faintly black-tipped."

Pupa. "Head and wing-cases pale Indian red; ten pale metallic spots on back; abdomen dark pink; spines faintly black-tipped." (*A. Graham, fide de Nicéville.*) Mr. de Nicéville adds: "The head ends in two well-separated blunt points; there are a pair of spines anteriorly, another in the middle, and a third smallest pair posteriorly on the thorax, the latter being hunched and keeled, on the abdominal segments there are eight pairs of spines, the third anterior pair the largest." (*Butt. Ind.* ii, p. 131.)

Var. *taprobana*, Moore, is a slightly darker race from Ceylon, with markings similar in both sexes to those of *hyperbius*. Moore, however, states that *taprobana* is "intermediate between the S. Indian form (*castetsi*) and typical *hyperbius*." All specimens from Ceylon that I have been able to examine do not differ from Upper India, Assam, and Burmese specimens, except in the very slightly darker ground-colour on the upperside.

Race **castetsi**, Oberthür.—The females of this remarkable form seem to be locally dimorphic. ♂ Closely resembles the ♂ of *hyperbius*, but differs as follows:—*Upperside*: ground-colour a richer brighter shade of orange-yellow; black markings similar but distinctly smaller, of a deeper black; subterminal transverse series of slender lunules traversing the terminal black margin on the hind wing of the same shade of orange-yellow as the ground-colour, not blue on the posterior half of the wing. *Underside*: the olivaceous brown at apex of fore and variegating the hind wing more of a greenish golden tint. A sex-mark of specialized raised scales along middle of vein 1 on the upperside of the fore wing very prominent.

♀ *Nilgiri form*: resembles the ♀ of typical *hyperbius*. Differs as follows:—*Upperside*: ground-colour pale golden yellow; basal half of both fore and hind wings shaded with metallic green in the fore wing; in some specimens this tint is slightly olivaceous; black markings and the white oblique band on the apical area of the fore wing as in *hyperbius*, but proportionately smaller, the purplish-blue shading along inner margin of the white band much less conspicuous, as is also the bluish tint on the white preapical spots and subterminal markings on the fore wing and on the posterior half of the subterminal line of lunules on the hind wing. *Underside* as in *hyperbius*; but the ground-colour on the fore wing a paler shade of terracotta-red; the olivaceous brown variegating the hind wing of a distinctly greener tint.

♀. Typical as described from Trichinopoly. Similar to the ♂. Differs as follows:—*Upperside*: ground-colour pale golden yellow;

basal half of the wings suffused with dark olivaceous green; black markings as in the ♂ but larger; on the fore wing the spots of the subterminal series very large, coalescent or nearly coalescent with one another and with the dentate spots on the veins in the inner terminal line; the upper two spots also of the postdiscal series very large and coalescent, the upper of the two joining on above and below to the inner postdiscal lunate spot in interspace 6, thus enclosing a prominent lunule of the ground-colour. *Underside* as in the ♂, but paler.

Exp. ♂ ♀ (*Nilgiri form*) 66–76 mm. (2·6–3·1″). ♂ ♀ (*Typical*) 70–74 mm. (2·75–2·92″).

Hab. Southern India.

436. **Argynnis lathonia,** *Linnæus* (Papilio), *Faun. Suec.* 1761, p. 282.

Race issæa.

Argynnis issæa, *Doubleday, in Gray's Lep. Ins. Nepal,* 1846, p. 11; *Moore* (Rathora), *Lep. Ind.* iv, 1899–1900, p. 241, pl. 375, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Argynnis lathonia, *Elwes* (*nec Linn.*), *P. Z. S.* 1882, p. 404; *de N.* (*nec Linn.*) *Butt. Ind.* ii, 1886, p. 137; *Elwes, Trans. Ent. Soc.* 1889, p. 349.

Race **issæa,** Doubleday.—♂. *Upperside* bright pale fulvous; base of both wings and upper dorsal area of hind wing suffused with olivaceous brown. Fore and hind wings with black markings as follow:—Fore wing: three transverse, short, slightly sinuous bands across cell; a transverse spot below, near base of interspace 1; a broad short band along the discocellulars, a zigzag discal series of large black spots, the upper three connate, forming a short oblique band from costa; a postdiscal transverse short patch below costa in interspace 6, followed by two transverse rows of spots, the spots in the inner row rounded, in the outer row somewhat lunular, the upper spots connate; beyond these are two parallel, slender, terminal transverse lines connected at the veins by dentate dots. Hind wing: a short transverse mark in cell, a broad line along the lower discocellular; a discal and a postdiscal series of spots, the spots in the former smaller than those in the latter; both series curved outwards at interspace 4, then inwards and again outwards in interspace 1; a subterminal series of lunular spots and two slender terminal lines as on the fore wing. *Underside* a paler yellow. Fore wing: an inwardly oblique short fascia from apex and the veins near the apex ferruginous red; the black markings on the basal two-thirds of the wing as on the upperside; the spot in interspace 6, the apical three spots of the postdiscal series, and the apical four of the subterminal series silvery. Hind wing with the following silvery markings:—a precostal spot, two small spots at base of cell, an elongate spot at base of interspace 1, two streaks on the abdominal fold; a discal series of three comparatively very large spots, the middle spot subacute at apex, extending from middle of

cell to middle of interspace 4, two small spots below it in interspaces 2 and 3; an outer discal transverse band attenuated and broken in the middle, broad anteriorly and posteriorly, followed by a transverse curved series of small dark spots with silvery centres, and a subterminal series of large cone-shaped spots with an outer very slender terminal red line. The silvery markings margined on one side or on both by very slender black lines, and bordered with somewhat diffuse ferruginous red. Antennæ ochraceous brown; head, thorax and abdomen fulvous, head and thorax with some bright greenish pubescence; beneath, palpi, thorax and abdomen pale ochraceous.—♀ Similar; the black markings on the upperside broader, the anterior spots of the subterminal series on the upperside of the fore wing coalescent with the inner terminal transverse line; the basal olivaceous-brown shading at the base of the wings on the upperside darker, more extended. On the underside the markings are similar to but larger than those in the ♂

Exp. ♂ ♀ 54–65 mm. (2·12–2·57″).

Hab. The Himalayas, from Chitral to Sikhim; the Chin Hills, Upper Burma; extending to W China.

Differs constantly (as pointed out by Mr. Elwes) from the European form, typical *lathonia*, in the posterior portion of the outer discal transverse band on the underside of the hind wing. This in *lathonia* is incomplete, the silvery marking not extending beyond vein 2; in race *issæa* it invariably extends to vein 4.

437. **Argynnis gemmata**, *Butler*, *A. M. N. H.* (5) vii, 1881, p. 32, pl. 4, figs. 1, 1 *a*, ♂; *de N. Butt. Ind.* ii, 1886, p. 138; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 249, pl. 377, figs. 1, 1 *a*, 1 *b*, ♂ ♀

♂ *Upperside* fulvous, varying from a yellowish to a rich reddish tint; base of fore wing up to the subbasal mark in the cell, hind wing up to the discal series of spots, deep brownish black, on the hind wing partially obscured by long recumbent fulvous hairs; the usual black spots and markings are present, but the subterminal series on the fore wing is more rounded, not inwardly acute; on the hind wing lunular; the black terminal margin on both fore and hind wings narrow, narrower on the fore than on the hind wing; cilia long, fulvous. *Underside* fore wing bright ochraceous in the reddish-tinted specimens, paler in the yellowish; the black markings as on the upperside, but not so clearly defined; a transverse cinnabar-red short preapical fascia inclined inwards, bordered on the inner side by one, on the outer side by four elongate silvery spots; the anterior two or three spots of the postdiscal series superposed on the red area and centred with silvery white. Hind wing cinnabar-red, the dorsal margin set narrowly with long fulvous recumbent hairs; the bases of the cell, and of interspaces 2, 5 and 6, the costal margin narrowly, a posterior postdiscal band, and the cilia, rich ochraceous; the costal

margin very narrowly at base, a spot at bases of interspaces 7 and 8, a spot below it in middle of cell, a short streak at base of interspace 1, a spot in middle of interspace 7, three short streaks in vertical order below it, an elongate mark beyond apex of cell, a discal transverse curved series of inwardly pointed spots interrupted in interspace 4, a postdiscal series of black silver-centred small spots, and a conspicuous row of large triangular terminal spots, rich silvery. Antennæ dark ochraceous brown; head, thorax and abdomen brown, covered with fulvous hairs; beneath, palpi, thorax and abdomen dark ochraceous.—♀ Differs from the ♂ as follows:—*Upperside* ground-colour darker. Fore wing: the dark shading at base irrorated with grey scales, extending up to the discal series of spots in interspaces 1 and 2, and up to the tornus in interspace 1 *a*; a small white subcostal spot on the inner side of the postdiscal series of spots, and transverse series of small white spots interposed between the subterminal and terminal black markings; these spots rounded anteriorly, transverse posteriorly. Hind wing with a similar series of transverse white spots. Cilia white, alternated with black. *Underside*: the terminal silvery-white spots on the fore wing larger and continued as a rule down to interspace 1; on the hind wing the rich ochraceous markings in the ♂ replaced by pale greenish yellow.

Exp. ♂ ♀ 38–52 mm. (1·5–2·02″).

Hab. The Himalayas at high elevations from Kumaun to the Chumbi Valley, east of Sikhim; Tibet.

438. **Argynnis clara**, *Blanchard, in Jacquemont, Voy. dans l'Inde*, iv, 1844, p. 20, *Ins.* pl. 2, figs. 2, 3, ♂; *de N. Butt. Ind.* ii, 1886, p. 136; *Moore* (Boloria), *Lep. Ind.* iv, 1889–1900, p. 253, pl. 378 figs. 1, 1 *a*–1 *e*, ♂ ♀.

Race manis (Pl. VII, fig. 47).

Argynnis clara manis, *Fruhstorfer*, *Iris*, xvi, 1903, p. 41.
Argynnis claudia, *Fawcett*, *Abstr. P. Z. S.* June 1904, p. 8; *id.* *P. Z. S.* 1904, p. 136, pl. 9, fig. 3.

♂ *Upperside* rich ochraceous; base of wings shaded with dusky greyish brown, more broadly on the hind than on the fore wing, the basal area of the hind wing also clothed with long recumbent hairs. Fore and hind wings with the usual black *Argynnis* markings and spots; the spots of the subterminal series hastate, acutely pointed on the inner side, followed by an inner slender black line and an outer anticiliary similar line with an interspace between them of the ochraceous ground-colour; cilia white. *Underside* ochraceous, paler than on the upperside. Fore wing: apex touched with pale green; black markings as on the upperside, but not so clearly defined; the anterior spots of the postdiscal series more or less diffusely fuscous green, bordered on the inner side by a short silvery streak with a silvery spot above and below it; the anterior subterminal hastate black marks centred

with silvery white. Hind wing, up to a neatly-marked narrow terminal band, suffused with pale green with the following bluish-silvery markings, margined on one or both sides very slenderly with black:—a minute spot at base of interspace 7, a transverse slender fascia beyond, continued along the discocellulars, a short transverse slender mark across middle of cell, three short streaks following one another in interspace 1, a curved discal series of almond-shaped spots, the anterior spots of the series bordered with ochraceous, and a subterminal conspicuous series of triangular spots. Between the discal and subterminal markings there is a series of ochraceous dots, and the band of the terminal margin is ochraceous, defined inwardly by a greenish line; dorsal margin very narrowly silvery. Antennæ dark brown; head, thorax and abdomen ochraceous; beneath, the palpi and thorax paler, dusky ochraceous, abdomen fuscous white.— ♀ *Upperside* ground-colour darker than in the ♂, overlaid entirely by dark green, or the base only of both fore and hind wings broadly green, the ground-colour beyond suffused with dark greyish brown; the hind wing posteriorly, from base to tornus, clothed with long recumbent hairs; in both fore and hind wings the black markings as in the ♂, but the fore wing generally with a pale broad yellow band across middle of cell, and the anterior spots of the discal series on the outer side, of the postdiscal series on both sides, bordered with pale markings. Hind wing: the discal series of spots, either entirely or the anterior spots only, fulvous, and the black spots of the postdiscal series bordered outwardly by pale spots; the subterminal black markings on both fore and hind wings triangular, with their centres white, the terminal margins brown with a black anticiliary line; the cilia white alternated with brown. *Underside*: fore wing ground-colour a darker ochraceous than in the ♂, apex more broadly suffused with greenish, otherwise as in the ♂. Hind wing as in the ♂, the green of a richer shade, the bluish-silvery spots proportionately larger, more clearly margined with black slender lines.

Exp. ♂ ♀ 54–58 mm. (2·13–2·3″).

Hab. N.W Himalayas.

Race **manis**, Fruhstorfer.—There appears to be a pale and a dark form of this, the eastern representative of *clara*. The dark variety has been figured under the name of *claudia* by Fawcett. This differs from *clara* as follows:—Sexes much more alike. ♂ *Upperside* dark ochraceous yellow. Fore wing: the black discal and postdiscal spots narrower, not so neatly defined as in *clara*, the subterminal hastate markings joined to the black along the termen, thus giving to the wing an appearance of having a broad black terminal border, traversed by a series of ochraceous spots. Hind wing: the postdiscal series of spots incomplete, the spot in interspace 4 wanting; the terminal margin as in the fore wing. *Underside* fore wing: the terminal margin as well as the apex suffused with greenish; hind wing: the suffusion of green spreading to the terminal margin, not neatly delimited as in *clara*.

Fore and hind wings: the silvery spots much narrower, the subterminal spots not triangular, elongate.— ♀ Very similar to the ♂ Differs from *clara* ♀ in the absence of any suffusion of green on the upperside, the bases of the wings are shaded with brown as in the ♂, and the disc of the wings is ochraceous not greyish brown. On the underside it is similar to its own ♂

The pale form may be seasonal, but no dated specimens are available for the determination of this point. On the upper and under sides the ground-colour is a much paler ochraceous; the anterior postdiscal spots on the fore wing are, in some specimens, more or less obsolescent on the upperside, and quite obsolete on the underside. On the hind wing the green colour is much more restricted, leaving a conspicuous broad, curved, postdiscal band of the pale ochraceous ground-colour across the wing. Antennæ dark brown, ringed with white below the club, apex ochraceous; head, thorax and abdomen dark brown with a thin covering of ochraceous hairs, apex of abdomen bright ochraceous; beneath, palpi, thorax and abdomen dark ochraceous brown, apex of abdomen bright ochraceous.

Exp. ♂ ♀ 46–50 mm. (1·7–1·96″).

Hab. Recorded only from the Chumbi Valley, east of Sikhim.

439. **Argynnis altissima,** *Elwes, P. Z. S.* 1882, p. 403, pl. 25, fig. 8 ♂; *de N. Butt. Ind.* ii, 1886, p. 139; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 250, pl. 377, figs. 2, 2 *a*, ♀.

Race mackinnoni.

Argynnis mackinnoni, *de Nicéville, Journ. Bomb. N. H. Soc.* vi, 1891, p. 346, pl. F, figs. 4, 5, ♂ ♀; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 252, pl. 377, figs. 3, 3 *a*, ♂ ♀

♂ *Upperside* from pale fulvous yellow to rich fulvous tawny; base of wings dark brown, this colour on the hind wing extends downwards on the posterior half, which is clothed with long recumbent hairs. Fore and hind wings with black markings disposed as in most of the Indian forms of *Argynnis,* but on both wings the spots of the subterminal series are bordered on the outer side by a series of small spots paler than the ground-colour of the wings; on the fore wing these spots are confined to the anterior half of the wing, on the hind wing they are continuous from costa to dorsum. *Underside* fore wing: ground-colour paler; a dark red, inwardly directed, short fascia from apex, inclined obliquely inwards and margined slenderly with black, on the inner side this is bordered by a conspicuous silvery-white spot, on the outer side by a series of very slender short silvery streaks decreasing in length and turning to yellowish posteriorly; the black markings as on the upperside, but less clearly defined; the terminal black edging to the wing obsolescent. Hind wing: ground-colour pale yellow; some cinnabar-red markings in interspace 7, in cell and along the terminal margin, interposed between the following silvery-white

spots and lines: a line on the dorsal margin, undivided streaks from base in interspaces 1 *a* and 1, a basal medial and apical spot in cell, a basal and two medial spots in interspace 7, a spot at base of costal margin, an inner and an outer series of obscure small discal spots, interrupted in interspace 4 by a broad elongate spot at the base in continuation of the apical cell-spot; a postdiscal transverse series of black spots irrorated with silver scales; and a terminal series of elongate narrow silvery spots; the silvery-white spots more or less margined on one or both sides by slender black lines. Antennæ black tipped with ochraceous; head, thorax and abdomen dark brown; beneath, the palpi and thorax ochraceous, abdomen whitish.—♀. *Upperside*: ground-colour and markings similar, the former slightly paler; the series of small whitish spots interposed between the subterminal and terminal markings very prominent, complete on both fore and hind wings. *Underside* similar to that of the ♂, the markings on both fore and hind wings slightly larger.

Exp. ♂ ♀ 34–36 mm. (1·33–1·42″).

Hab. Sikhim, the Chumbi Valley, 10,000–15,000 ft.; Bhutan.

Race **mackinnoni**, de Nicéville, very closely resembles *altissima* but differs as follows:—♂ ♀. *Upperside*: the series of small pale spots interposed between the subterminal and terminal black markings smaller and rounder, in the ♀ almost white and very prominent. *Underside*: the white subapical spots on fore wing smaller; the cinnabar-red markings on the hind wing more extensive, distributed as follows:—space between the silvery discal markings in interspaces 5, 6 and 7 reddish in addition to the other red basal marks, a curved band of red beyond apex of cell, and a terminal similar band with terminal silvery-white spots placed thereon. These spots comparatively shorter and more oval than in *altissima*.

Exp. ♂ ♀ 38–40 mm. (1·5–1·59″).

Hab. Western Himalayas, the Gonass Pass, 15,000 ft.

440. **Argynnis jerdoni**, *Lang, Ent. Month. Mag.* v, 1868, p. 34; *de N. Butt. Ind.* ii, 1886, p. 140; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 247, pl. 376, figs. 4, 4 *a*, 4 *b*, ♂ ♀.

Boloria chitralensis, *Moore, Lep. Ind.* iv, 1899–1900, p. 249, pl. 376, figs. 3, 3 *a*, ♂.

♂ *Upperside* rich fulvous; base of fore wing and along interspace 1 *a*, also basal half of hind wing, brownish black, on the latter wing this colour extends to and coalesces with the discal series of spots. Fore wing with the black markings disposed as in all forms of *Argynnis*, the spots comparatively large; the anterior spots of the postdiscal series much smaller than the spots of the same series in interspaces 1, 2 and 3; the subterminal series of spots very small, triangular. Hind wing: the postdiscal series of spots well-defined. Fore and hind wings: the termen with an anticiliary black line widening inwards at the veins; the ground-colour between the subterminal and terminal markings pale, forming a series of spots;

cilia alternately black and white. *Underside* fore wing ground-colour ochraceous, the costal margin, the apex and the termen anteriorly pale yellow; the black spots as on the upperside, the anterior spots of the postdiscal series centred with white; the spots of the subterminal series small, somewhat hastate, the yellowish terminal margin beyond crossed by the black veins. Hind wing: ground-colour pale yellow; two irregular basal well-defined and two postdiscal somewhat diffuse blotches cinnabar-red; of the basal blotches the upper much the smaller; the red of the post-discal blotches continued obscurely along the veins to the margin; also the following silvery-white markings: a streak in interspace 1 divided by a red and lower down by a yellowish spot, a costal spot followed by a larger quadrate mark indented on both sides, an elongate spot crossing from apex of cell into base of interspace 4; a postdiscal curved series of round and a terminal series of quadrate spots, the former encircled with black, the latter separated by dark chestnut-brown transverse spots and bordered inwardly by a series of short similarly-coloured lunules. Antennæ dark ochraceous; head, thorax and abdomen brown; beneath, the palpi, thorax and abdomen dusky ochraceous.—♀ differs from the ♂ as follows:—*Upperside* ground-colour paler, much paler along the apical third of the costa and at the apex of the fore wing; the pale spots between the subterminal and terminal markings more prominent than in the ♂

Exp. ♂ ♀ 42–50 mm. (1·65–2″).

Hab. Kashmir.

Var. *chitralensis*, Moore, is slightly smaller judging from the four or five specimens I have had an opportunity of examining. In three the blotchings of red on the underside of the hind wing are more extensive and spread over the greater portion of the wing; the yellow ground-colour limited to the middle of interspaces 3 and 4; also the silvery-white markings are comparatively smaller. If these differences are constant, *chitralensis* may form a definite local race of the Kashmir form.

Exp. ♂ 38–42 mm. (1·5–1·67″).

Hab. Chitral.

441. **Argynnis pales**, *Denis & Schiff.* (Papilio) *Wien. Verz.* 1776, p. 177.

Argynnis sipora, *Moore, P. Z. S.* 1874, p. 568, pl. 66, fig. 11 ♀; *de N. Butt. Ind.* ii, 1889, p. 139, pl. 18, fig. 72 ♂ ♀; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 244, pl. 375, figs. 2, 2 *a*, 2 *d*, ♂ ♀.

Argynnis baralacha, *Moore, P. Z. S.* 1882, p. 242, pl. xi, fig. 1, 1 *a*, ♂

Race generator.

Argynnis generator, *Staudinger* (pales, var. generator), *Stett. ent. Zeit.* 1886, p. 235; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 245, pl. 376, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

♂ ♀ Costal margin of hind wing slightly straighter than in the

other forms of *Argynnis*, apex distinctly but obtusely angulate, not rounded.— ♂ *Upperside* fulvous tawny, base of fore and base and posterior half of the hind wing brownish black, this colour not extending to the tornus. Fore wing with the usual black markings, the black edge to the termen narrowing posteriorly. Hind wing: an anterior zigzag discal line composed of slender transverse spots, angulated outwards in interspace 4, and coalescing below with the basal dark brown patch; postdiscal and subterminal transverse rows of spots, the latter triangular, followed by a terminal black line; cilia pale fulvous, alternated with brown. *Underside* fore wing reddish ochraceous; black markings generally obsolescent, far less clearly defined than in most of the other forms of the genus; apex and termen yellow, a short fascia from apex inclined obliquely inwards and the apices of the veins anteriorly cinnabar-red. Hind wing: ground-colour slightly paler than that of the fore wing; markings very variable; an irregular patch of dark cinnabar-red at base extending well into the cell, its outer margin sinuous, bordered outwardly by curved broad markings of silvery white; a discal, very sinuous, slender, similarly coloured band, bordered outwardly in interspaces 1 and 2 and in 6 and 7 by silvery-white lunules; postdiscal transverse series of dark red spots followed by a terminal series of silvery-white spots in the interspaces, set in a cinnabar-red background; the space between the silvery-white spots along the outer margin of the red basal patch, and the terminal row of silvery spots, suffused with paler cinnabar-red, the yellow ground-colour prominent only in interspace 1 near its apex, and in interspace 3 between the discal narrow band and the terminal series of silvery spots. Antennæ ochraceous brown; club black, tipped with ochraceous; head, thorax and abdomen black with some dark fulvous pubescence; beneath, palpi and thorax dark ochraceous, abdomen whitish. — ♀ Similar, the black markings broader. *Upperside*: the subterminal series of spots coalescing along the veins with the terminal black line on both fore and hind wing, enclosing between them a series of conspicuous pale spots; a large pale subcostal spot also on the inner side of the postdiscal row of black spots on the fore wing; cilia conspicuously white, alternated with black. *Underside* similar to that in the ♂, but on the fore wing the yellow on apex and termen much broader; on the hind wing the ground-colour pale yellow, concolorous with that on the apex of the fore wing. Markings similar to those in the ♂, but broader, the suffusion of pale cinnabar-red between the markings darker and more restricted, allowing more of the ground-colour to show through.

Fig. 81.
Argynnis pales, ♂. ½.

Exp. ♂ ♀ 38–42 mm. (1·5–1·65″).

Hab. The Himalayas; recorded from Kashmir, Kulu and the

Chumbi Valley, east of Native Sikhim. Beyond our limits this species is widely spread in the Palæarctic Region, being found from Lapland to Russia, also in Siberia, the Altai Mountains and N. Mongolia.

Spread over an immense range it is necessarily a variable form, but specimens from both the Western and Eastern Himalayas can be matched by others from Norway and Russia. Some of the Sikhim specimens have the underside of the hind wing more strongly suffused with the reddish colour than others, but similar specimens from Norway are in the Elwes Collection, now in the British Museum.

Race **generator**, Staudinger.—Closely resembles *pales*, but is distinctly larger in both sexes, the ground-colour on the upperside paler and brighter, the black markings much reduced in size. *Underside* similar to that in *pales* but paler, the ground-colour on the hind wing being very pale yellow, almost white in some specimens, the silvery-white markings are much less conspicuous and the reddish much paler. A series from the Hindu Kush range and from the Tian Shan and Transalia Mountains show little or no variation. Chitral specimens seem to run somewhat smaller.

Exp. ♂ ♀ 49–51 mm. (1·93–2·01″).

Hab. Within our limits the Hunza Valley; North Ladak; Chitral. Found in Turkestan and Afghanistan.

442. **Argynnis hegemone**, *Staudinger, Alpheraky, Hor. Soc. Ent. Ross.* xvi, 1881, p. 407, pl. 15, figs. 16 & 17; *Moore* (Boloria), *Lep. Ind.* iv, 1899–1900, p. 246, pl. 376, figs. 2, 2 *a*, ♂.

♂ *Upperside* tawny, markings black. Fore wing: base dusky brownish black; cell with a minute spot, sometimes 2, at base; a sinuous, short, medial transverse line, and another at apex along the discocellulars; a spot, sometimes a transverse line, below the the cell in interspace 1; the usual biangulated series of discal spots; a black, transverse, short mark at base of interspace 7, extending into 6, and a postdiscal series of round spots; the terminal margin and apex narrowly black, the former traversed by a series of small lunules of the ground-colour; cilia white, alternated with black. Hind wing: base and upper half of dorsal margin very broadly dusky brownish black; cell with a minute spot at base and a loop-like mark near apex; a zigzag discal series of spots; a postdiscal curved transverse series of round black dots; a series of triangular subterminal small spots and the terminal margin narrowly black; the subterminal spots often coalescing with the black margin along the veins. *Underside*: fore wing ground-colour paler tawny, apex pale; black markings as on the upperside, but the anterior two or three spots of the postdiscal series centred obscurely with white; the narrow black terminal margin reduced to a subterminal transverse series of very

slender lunules, followed by an intervening band of the ground-colour, anteriorly more or less whitish, and a very slender anticiliary black line. Hind wing: two or three transversely placed white spots at base, a medial curved transverse series of very irregularly shaped unequal-sized white spots, a postdiscal curved series of small black white-centred spots, and a conspicuous terminal band of much larger, somewhat scutiform, white spots; all the white spots silvery in certain lights, margined slenderly, on one or on both sides, by black lines; the interspaces between the series of white markings ochraceous red, with some intervening markings of pale yellow on the outer portions of the wing. Antennæ, head, thorax and abdomen dark brownish black; beneath dusky ochraceous.— ♀ *Upperside* similar: ground-colour paler, markings similar but proportionately larger. *Underside* also similar, the markings all proportionately broader, the white markings on the hind wing sometimes suffused with very pale blue.

Exp. ♂ ♀ 42–50 mm. (1·65–2″).

Hab. Turkestan; within our limits this species has been taken in North Ladak, the Hunza Valley, and Chitral.

Genus **MELITÆA.**

Melitæa, *Fabr. Illig. Mag.* vi, 1807, p. 284; *de N. Butt. Ind.* ii, 1886, p. 23; *Moore, Lep. Ind.* v, 1901–1903, p. 6.

Mellicta, *Bilberg, Enum. Ins.* 1820, p. 77 (fide *Scudder*); *Moore, Lep. Ind.* v, 1901–1903, p. 2.

Type, *M. didyma*, Esper, from Europe.

Range. Temperate zones of both hemispheres. Within our limits in the Himalayas at high elevations.

♂ ♀ Fore wing: costa slightly arched, nearly straight; apex rounded; termen convex, oblique; tornus rounded; dorsum straight; cell closed, slightly less than half length of wing; discocellulars oblique, upper very short, middle slightly concave, lower long, bent angularly inwards in middle, with a short inwardly directed spur; vein 3 from before lower apex of cell, 4 from apex, 9 and 10 out of 7, 11 free. Hind wing oval, costa and dorsum almost straight, termen strongly rounded and curved; cell open in the Indian, rarely closed in the European and American forms. Antennæ about half length of fore wing; club short, broad, abrupt, spatulate; palpi erect, set thickly with hairs, third joint slender, acute; eyes naked.

The forms in this genus are in an exceedingly plastic condition, varying enormously according to locality, so that it is often impossible to say where one form begins and the other ends. Adjoining localities often give forms distinguishable at a glance, while in other cases widely separated localities like Italy and the Chitral Valley have forms so similar, that it is difficult to separate them without close scrutiny and examination.

Key to the forms of Melitæa.

A. Upperside: veins of fore and hind wings distinctly black.
  a. ♂ ♀. Expanse under 40 mm.
    a' Upperside: subterminal black markings on fore and hind wings slender, more or less distinct from terminal black edging. — *M. sindura*, p. 451.
    b' Upperside: subterminal black markings on fore and hind wings broad, coalescing with terminal black edging — Race *sikhimensis*, [p. 452.
  b. ♂ ♀. Expanse well over 40 mm.. . — Race *balbita*, p. 452.
B. Upperside: veins of fore and hind wings not black.
  a. Upperside fore wing ground-colour in ♂ ♀ similar.
    a'. Upperside fore wing ground-colour in ♂ ♀ tawny fulvous. .. .. .. — *M. didyma*, race *persea*, p. 453.
    b'. Upperside fore wing ground-colour in ♂ ♀ much paler, a yellowish buff.. .. — Var. *robertsi*, p. 454.
  b. Upperside fore wing ground-colour in ♂ ♀ not similar; ♂ orange rufous, ♀ dull white. — Race *chitralensis*, [p. 454.

443. **Melitæa sindura**, *Moore, P. Z. S.* 1865, p. 496, pl. 30, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 25; *Moore* (Mellicta), *Lep. Ind.* v, 1901–1903, p. 4, pl. 380, figs. 3, 3 *a*, ♂
Melitæa amœnula, *Felder, Reise Nov., Lep.* ii, 1867, p. 392.

Race sikhimensis (Pl. VII, fig. 51).

Melitæa sindura, var., *Elwes, Trans. Ent. Soc.* 1888, p. 336, pl. x, figs. 5, 6 (recte 4, 5).
Mellicta sikhimensis, *Moore, Lep. Ind.* v, 1901–1903, p. 5, pl. 380, figs. 4, 4 *a*, ♂ ♀.

Race balbita.

Melitæa balbita, *Moore, P. Z. S.* 1874, p. 268, pl. 43, fig. 5 ♂; *de N. Butt. Ind.* ii, 1886, p. 26, pl. 18, fig. 71, ♂ ♀; *Moore* (Mellicta), *Lep. Ind.* v, 1901–1903, p. 3, pl. 380, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂. *Upperside* tawny ochraceous, with the following black markings:—Fore wing: an elongate spot near base of interspace 1, two slender short lines across the cell, a broader line along the discocellulars, three spots in vertical order below apex of cell, an upper discal very oblique short bar, a postdiscal curved series of spots, and a subterminal lunular narrow band extending along the veins up to a black edging on the termen, thus including a series of slender lunular spots of the ground-colour. Hind wing: some slender transverse lines in cell, an obscure very incomplete postdiscal series of spots, and a more slender less distinct subterminal line, series of lunular spots of the ground-colour and black terminal edging as on the fore wing. Base of fore and base and dorsal margin broadly of hind wing suffused with black; cilia white alternated with black. *Underside*: fore wing paler tawny ochraceous, the costa greenish ochraceous; no suffusion of dusky black at base; the other markings as on the upperside, but not clearly defined; the black edging to the termen of the upper-

side replaced by greenish ochraceous, bordered inwardly by a series of pale lunules defined by slender black lines, outwardly by a slender anticiliary black line. Hind wing: ground-colour very pale ochraceous, with the following dull silvery markings margined by slender black lines: a subbasal band of three spots, a spot at apex of cellular area, a postdiscal, curved, very irregular series of spots and a subterminal transverse lunular narrow band; the silvery spots on the basal area of the wing bordered on either side by dark tawny ochraceous. Antennæ black, ringed with white; head, thorax and abdomen dark brown with fulvous pubescence; beneath, palpi, thorax and abdomen dusky ochraceous. — ♀ very similar. *Upperside* ground-colour paler, the space between the median transverse lines and the discocellulars and anteriorly between the discal and postdiscal markings pale yellow. *Underside* similar to that in the ♂.

Exp. ♂ ♀ 35–40 mm. (1·39–1·58″).

Hab. The Himalayas, Kunawur to Sikhim; Tibet, over 10,000 feet.

Race **sikhimensis**, Moore.—Very dark, possibly wet-season, specimens from Chumbi in Native Sikhim have been so named and figured by Moore in the 'Lepidoptera Indica.' These differ from typical *sindura* from the North-west Himalayas as follows:— *Upperside* ground-colour fulvous; markings similar but very much broader, the dusky black at base of fore and at base and along dorsal margin of hind wing more extended. In many specimens only an upper discal patch of the ground-colour is apparent on the hind wing. *Underside* ground-colour and markings similar to those in *sindura*, but on the hind wing the space between the postdiscal and subterminal silvery markings rich ochraceous red.

Exp. ♂ ♀ as in the typical form.

Hab. Recorded only from the Chumbi Valley east of Native Sikhim and South-eastern Tibet.

Race **balbita**, Moore.—Closely resembles typical *sindura*, but is constantly larger, with the black markings on the upperside in the ♂ smaller, less prominent. In the ♀ on the upperside the ground-colour is darker, the base of both wings and the hind wing posteriorly more broadly irrorated with dusky black scales; the black terminal edging to the wings broader, the subterminal and terminal black markings coalescing. As a rule the row of lunules of the ground-colour enclosed between these latter series of markings is very prominent on the hind wing. *Underside* ♂ ♀ similar to the underside in typical *sindura*, but differs as follows:— Fore wing: the subterminal series of lunules much larger, distinctly pale yellow. Hind wing: the markings proportionately much larger, the basal, subbasal and postdiscal bands all ochraceous, the last centred in each interspace with darker ochraceous-red spots in both sexes, and very heavily margined with black in the ♀.

Exp. ♂ ♀ 44–50 mm. (1·73–1·89″).

Hab. Seems confined to high elevations in Kashmir.

A form of the race *sikhimensis* recorded from Tibet has been separated by Col. Fawcett as *M. tibetana*. It closely resembles *sikhimensis*, but differs on the upperside in the prominently pale ochraceous colour of the base and apex of the cell of the fore wing, and in a similarly coloured terminal row of lunular transverse marks on both fore and hind wings. On the underside it is generally paler than *sikhimensis*.

444. **Melitæa didyma**, *Esper* (Papilio), *Eur. Schmett.* i, 1780, t. 61, fig. 1.

Race persea.

Melitæa persea, *Kollar, Denksch. Akad. Wien, math.-nat. Cl.* i, 1850, p. 52; *de N. Butt. Ind.* ii, 1886, p. 27 footnote; *Moore, Lep. Ind.* v, 1901–1903, p. 7, pl. 379, figs. 1, 1 *a*–1 *g*, ♂ ♀.

Melitæa robertsi, *Butler, P. Z. S.* 1880, p. 406, pl. 39, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 27 footnote; *Moore, Lep. Ind.* v, 1901–1903, p. 8, pl. 379, figs. 2, 2 *a*–2 *c*, ♂ ♀.

Race chitralensis.

Melitæa chitralensis, *Moore, Lep. Ind.* v, 1901–1903, p. 9, pl. 380, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Race **persea**, Kollar.—♂ *Upperside* tawny fulvous, with the following markings:—Fore wing: costal margin narrowly black; cell with a minute black spot at base; a transverse larger black spot; a short sinuous black line across the middle and another along the inner side of the discocellulars; a similar line just beyond apex of cell; three coalescent black spots at base of interspace 1; a transverse discal, twice-angulated series of black spots, the upper four coalescent; a subcostal similar spot beyond followed by a sinuous subterminal lunular transverse series of spots and a narrow terminal black band. Hind wing: dorsal margin from base broadly suffused with black, a short subbasal transverse posterior black band not reaching beyond the cell; a discal ill-defined transverse series of black spots; a well-defined subterminal lunular series of spots and terminal black band as on the fore wing. *Underside*: fore wing ground-colour ochraceous; black markings as on the upperside, but the subterminal series of spots smaller; the apex of the wing yellowish, the terminal black edging replaced by a series of small black spots and an anticiliary slender black line. Hind wing ground-colour pale ochraceous white; a transverse short basal series of black spots; a broad subbasal ochraceous-red sinuous band, coalescent with a large spot of the same colour in the middle of the cell; a discal transverse sinuous line of small black spots, followed by a broad postdiscal outwardly-angulated ochraceous-red band; a series of subterminal

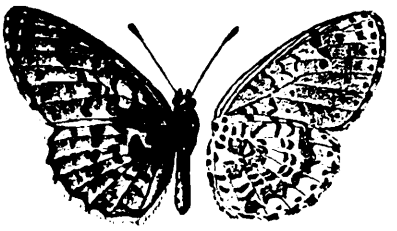

Fig. 82.—*Melitæa didyma*, race *persea*. ½.

black spots and a slender anticiliary black interrupted line. The subbasal and postdiscal ochraceous-red bands margined on both inner and outer sides by series of short lunular spots, those on the inner margin of the postdiscal band turned towards the base of the wing, on the outer margin turned outwards; cilia of fore and hind wings white alternated with black. Antennæ, head, thorax and abdomen black; abdomen on the sides fulvous spotted with black; palpi ochraceous; thorax and abdomen beneath whitish, spotted with black.— ♀ *Upperside* similar with similar black markings, but apparently the subterminal series of spots on both fore and hind wings are frequently obsolescent, and even, when present not so well-defined. *Underside* similar to that in the ♂, but the markings on the hind wing larger and the black spots not well-defined, the subbasal and postdiscal ochraceous-red bands more macular.

Exp. ♂ ♀ 36–48 mm. (1·42–1·9″).

Hab. N.W Frontier, Chaman; the Punjab, Campbellpur, Attock. Beyond our limits found in Afghanistan, Persia northwards and westwards, until it merges into the typical form *didyma*.

Var. *robertsi*, Butler, is a very pale, small form from an arid country. *Upperside* pale yellowish buff, the black markings similar to those in *persea* but smaller, less well-defined, some generally more or less obsolescent. *Underside*: fore wing ground-colour pale buff; hind wing white; markings as in *persea*, but on the fore wing posteriorly more or less obsolescent. This variety was originally described from Kandahar.

Race **chitralensis**, Moore, seems to have seasonal forms. Specimens procured in April are somewhat similar to the darker specimens of *robertsi* from the Punjab, but are always distinguishable by the dullness of the ground-colour and the heavy black markings on the upperside. On the underside the resemblance to *robertsi* is greater, the black markings on the fore wing slightly more clearly defined. Specimens taken in July are, however, larger and otherwise strikingly different in the ♀; approaching closer to the Southern European form of *didyma* than to either typical *persea* or its var. *robertsi*. *Upperside*, ♂: deep rich orange-rufous. Fore wing with the black markings as in *persea* but proportionately larger, the subterminal series of lunules slender, the terminal edging of black broader. Hind wing: the dark suffusion at the base and on the hind wing posteriorly jet-black not dusky black, the other markings similar; the subterminal series of lunules and the black terminal edging as on the fore wing. *Underside* similar to that in typical *persea*. Antennæ, head, thorax and abdomen black, the thorax anteriorly and the apex of the abdomen with fulvous-red pubescence; beneath, the palpi fulvous, thorax dusky black, abdomen marked with white, apex fulvous.— ♀ Fore wing: ground-colour dull white irrorated more or less with dusky black scales and with the following black markings :—

basal, cellular and discal markings as in *persea*, but much larger and somewhat diffuse; postdiscal and subterminal sinuous macular black bands much closer to base of wing and extended along the veins up to the very broad black terminal edging, giving a dull blackish shade to the termial third of the wing with the appearance of being traversed by two sinuous parallel rows of pale somewhat lunular spots. Hind wing: anterior half orange-red; posterior half dusky black, paling somewhat towards the dorsal margin; some black spots in cell and on lower portion of disc coalescing with the dusky black on the posterior half of the wing; these spots continued in the interspaces beyond and above the cell on the anterior half; a subterminal series of black lunules, the spots of the ground-colour included between the above series and the broad black terminal edging tinged with orange-red. Cilia of fore and hind wings conspicuously white alternated with black. *Underside* as in *persea* ♀, but the markings larger. Antennæ, head, thorax and abdomen as in the ♂

Exp. ♂ ♀ (*April form*) 38–46 mm. (1·5–1·81″); (*July form*) 48–55 mm. (1·5–2·13″).

Hab. Recorded from Chitral.

Genus **BYBLIA.**

Byblia, *Hübner, Verz. bek. Schmett.* 1816, p. 28; *Moore, Lep. Ceyl.* i, 1881, p. 45; *de N. Butt. Ind.* ii, 1886, p. 13; *Moore, Lep. Ind.* v, 1901–1903, p. 12.

Type, *B. ilithyia*, Drury, from India.

Range. Africa; Continental India; Ceylon.

♂ ♀ Fore wing broadly triangular; costa slightly arched; apex blunt; termen straight; tornus rounded; dorsum straight; cell closed, short, not half length of wing; upper discocellular short, middle concave oblique, lower long, slightly curved inwards; veins 3 and 4 from lower apex of cell; 10 and 11 free; vein 12 swollen at base. Hind wing pear-shaped; costa and dorsum evenly and somewhat slightly arched; apex and tornus rounded; termen slightly arched; cell very slenderly closed, short, not nearly half length of wing; veins 3 and 4 from lower apex of cell, 6 and 7 from a point closely approximate. Antennæ about half length of fore wing; club short, broad, abrupt and flattened; palpi long, broad in front, third joint long, somewhat blunt at apex; eyes naked.

445. **Byblia ilithyia** (Pl. VII, fig. 48), *Drury* (Papilio), *Ill. Ex. Ent.* ii, 1773, p. 29, pl. 17, figs. 1, 2, ♂; *Moore, Lep. Ceyl.* i, 1881, p. 45, pl. 23, figs. 3, 3 *a*, ♂; *de N. Butt. Ind.* ii, 1886, p. 14, pl. 18, fig. 68 ♂; *Moore Lep. Ind.* v, 1901–1903, p. 13, pl. 381, figs. 1, 1 *a*–1 *h*, larva & pupa, ♂ ♀.

Hypanis simplex, *Butler, P. Z. S.* 1883, p. 146, pl. 24, fig. 8 ♀; *de N.* (Byblia) *Butt. Ind.* ii, 1886, p. 115.

Wet-season form.— ♂. *Upperside* deep rich orange. Fore wing: costa broadly jet-black to within a short distance of the apex;

cell crossed by three narrow short black bands, the inner and the outer not reaching the median vein; a very irregular black discal blotch from dorsum to vein 4, continued very narrowly along that vein to meet an oblique irregular band from just beyond the middle of the costa; a postdiscal broad transverse black band from dorsum to vein 4, with the portions of the veins beyond it defined in black. The apex of the wing beyond the broad black edging to the costal border has its upper margin and the terminal portions of the veins defined in black; finally a narrow terminal band. Hind wing: an elongate black subcostal patch near base, continued posteriorly across the cell by an inner and an outer series of small transverse spots; a complete broad black postdiscal band with the portions of the veins beyond it lined with black, and a narrow black terminal band as on the fore wing. Cilia of fore and hind wings white, alternated with brown. *Underside* paler duller orange. Fore wing: black markings as on the upperside, but the cell and upper discal markings obscurely margined on the inner side by white; an oblique black line from costa to apex of postdiscal transverse band, followed by an oblique preapical series of diffuse white spots, the terminal black band as on the upperside but traversed by a broken white line. Hind wing: a subbasal and a discal broad, transverse white band, both bordered inwardly by a series of black spots, and outwardly by a broad black line; a somewhat narrower postdiscal transverse black band traversed by a series of paired white spots, followed by a row of cone-shaped markings of the ground-colour, the apices of the cones turned inwards and broadly white; finally, a black terminal band traversed by a series of white lunules. Antennæ black; head, thorax and abdomen dark dusky fulvous red; beneath, palpi white, head, thorax and abdomen dark ochraceous, variegated with some black and white lines and spots.—♀. Similar, with similar markings, but on the upperside the ground-colour is paler, the black markings narrower. Fore wing: the postdiscal black band nearly complete, interrupted only in interspaces 1 and 4; the terminal black band traversed by a broken white line. Hind wing: no subcostal black patch, instead three series of transverse spots; a postdiscal transverse broad black band bordered inwardly by a series of slender black loops, between these and the postdiscal band a series of spots of the ground-colour; the terminal black band traversed as on the fore wing by a whitish broken line. *Underside* similar to that in the ♂, but the ground-colour paler. On the fore wing the black markings comparatively narrower, less well-defined; on the hind wing the white on the bands and spots replaced by pale yellow.

Dry-season form.—♂ ♀. *Upperside* similar to that in the wet-season form, black markings on the whole not so sharply defined. *Underside*: ground-colour darker, on the hind wing a dark ochraceous; the transverse subbasal and discal bands in both sexes white.

Exp. ♂ ♀ 50–56 mm. (1·98–2·22″).

Hab. Central and Southern India; Ceylon.

Genus **LARINGA**.

Eurytela, pt., *Boisduval, Faun. Madag.* 1833, p. 54; *de N. Butt. Ind.* ii, 1886, p. 11.
Laringa, *Moore, Lep. Ind.* v, 1901–1903, p. 24.

Type, *L. horsfieldii*, Boisduval, from Java.
Range. Indo-Malayan Region.

♂ ♀ Fore wing: costa widely arched; apex obtuse; termen prominently angulated at interspace 5, slightly concave above, the angle more deeply concave below; tornus obtuse; dorsum sinuous; cell closed, less than half length of wing; veins 6 and 7 approximate, consequently upper discocellular obsolete; middle very short, concave; lower much longer, transverse; veins 3 and 4 from lower apex of cell, 10 and 11 free, 12 swollen at base. Hind wing very broadly pear-shaped; costa very slightly arched; apex and tornus rounded; termen arched, sinuous; dorsum slightly curved at base, then straight to tornus; cell short, slenderly closed; veins 3 and 4 from lower apex of cell; 6 and 7 closely approximate from upper apex of cell. Antennæ about half length of fore wing; club long, narrow and gradual; palpi subporrect, broad in front, third joint acute at apex; eyes naked; posterior tibiæ and tarsi without rows of spines.

Key to the forms of Laringa.

♂ ♂

a. Upperside deep ultramarine-blue, uniform, without any paler transverse band across wings	*L. castelnaui*, p. 458.
b. Upperside indigo-blue or dull plumbeous blue, with a paler blue transverse band across wings.	
a'. Upperside fore wing without a subterminal dark transverse band; ground-colour plumbeous or glaucous	*L. horsfieldi*, race *glaucescens*, p. 459.
b'. Upperside fore wing with a subterminal dark transverse band; ground-colour dark indigo-blue	*L. horsfieldi*, race *andamanensis*, p. 459.

♀ ♀

a. Upperside: ground-colour dull pale ochraceous	*L. castelnaui*, p. 458.
b. Upperside: ground-colour bright ochraceous yellow.	
a'. Upperside hind wing: discal transverse band not conspicuous, of the same shade as the ground-colour	*L. horsfieldi*, race *glaucescens*, p. 459.
b'. Upperside hind wing: discal transverse band conspicuous, yellowish white	*L. horsfieldi*, race *andamanensis*, p. 460.

446. **Laringa castelnaui,** *Felder* (Eurytela), *Wien. ent. Monats.* iv, 1860, p. 401; *Dist.* (Eurytela) *Rhop. Malay.* 1883–86, p. 136, pl. 15, fig. 10 ♂, & p. 441, pl. 43, fig. 10 ♀; *de N.* (Eurytela) *Butt. Ind.* ii, 1886, p. 13 footnote; *Moore, Lep. Ind.* v, 1901–1903, p. 26, pl. 385, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂. *Upperside* a beautiful deep ultramarine-blue. Fore and hind wings: costa broadly, termen more narrowly dull black; on the fore wing this colour broadens towards the apex; on the hind wing the dorsal margin is also broadly dull black; a black slender subterminal line crosses both wings. *Underside*: ground-colour pale lilacine white, obscured and almost entirely covered by slender transverse dark brown striæ. Fore and hind wings crossed by broad transverse subbasal, discal and postdiscal black lines, the last bordered on the outer side by a broad diffuse blackish shading and followed by a slender subterminal sinuous black line. Antennæ and head dull black, thorax and abdomen ultramarine-blue; beneath, the palpi, thorax and abdomen fuscous.— ♀ *Upperside* very pale dull ochraceous. Fore and hind wings irrorated more or less by minute, slender, transverse brown striæ. Fore wing crossed by subbasal, discal, postdiscal and subterminal sinuous broad brown lines; the basal half of the wing to the discal line entirely suffused with brown, which extends between veins 3 and 6 up to the postdiscal transverse line, leaving above and below, between the discal and postdiscal lines, conspicuous pale patches; terminal margin edged and shaded with brown. Hind wing: a subbasal brown, somewhat obscure transverse line; a broad discal diffuse brown transverse band, followed by a subterminal, somewhat lunular, clearly-defined dark line; the discal band traversed medially by a broad darker brown line. *Underside*: ground-colour very pale ochreous white, irrorated with slender transverse brown striæ. Fore and hind wings crossed by subbasal, discal and postdiscal very narrow dark brown bands and a subterminal slender dark zigzag line; the bands very irregular, the postdiscal band and subterminal line often more or less obsolescent on the fore wing. Antennæ, head, thorax and abdomen dark brown; beneath, the palpi, thorax, and abdomen pale ochraceous.

Exp. ♂ ♀ 51–58 mm. (2–2·3″).

Hab. The Malayan Subregion, extending into Tenasserim up to the latitude of Moulmein.

447. **Laringa horsfieldi,** *Boisduval* (Eurytela), *Faun. Ent. Mad.* 1833, p. 54.

Race glaucescens.

Eurytela glaucescens, *de Nicéville, Proc. A. S. B.* 1895, p. 110; *Moore* (Laringa), *Lep. Ind.* v, 1901–1903, p. 36, pl. 385, figs. 2, 2 *a*–2 *c*, ♂ ♀

Race andamanensis (Pl. X, fig. 79).

Eurytela andamanensis, *de Nicéville*, *Proc. A. S. B.* 1895, p. 110; *Moore* (Laringa), *Lep. Ind.* v, 1901–1903, p. 28, pl. 386, figs. 1, 1*a*–1*f*, ♂ ♀.

Race **glaucescens**, de Nicéville.—♂ *Upperside* plumbeous or glaucous. Fore and hind wings crossed by somewhat obscure and, in portions, more or less obsolescent subbasal, discal, postdiscal and subterminal sinuous dark brown lines, and a broad incomplete violaceous band between the discal and postdiscal transverse lines; this band on the fore wing is broadly interrupted between interspaces 3 and 5 by an intervening extension of the ground-colour joining the basal and terminal glaucous areas, and on the hind wing it is extended diffusely inwards across the discal dark line towards the base of the wing, the discal dark line crossing it more or less obliquely. *Underside*: ground-colour pale lilacine white, irrorated with minute slender brown striæ. Fore and hind wings crossed by subbasal, discal, postdiscal and subterminal lines, the last very slender, sinuous and more or less obsolescent. Antennæ, head, thorax and abdomen pale lilacine white.—♀ Resembles the ♀ of *L. castelnaui*, but differs as follows:—*Upperside*: ground-colour a paler brighter ochraceous, the irroration of brown striæ more sparse and the striæ more minute; the shading on the basal half of the fore wing extended between veins 3 and 6 to the postdiscal line as in *L. castelnaui*, but entirely of a pale tint of russet, not brown. On the hind wing there is a broad discal band, but not clearly defined, generally of the same shade of ochraceous as the rest of the wing. *Underside*: ground-colour pale yellow, very sparsely irrorated by minute transverse chestnut-brown striæ. Fore and hind wings crossed by slender subbasal, discal, postdiscal and subterminal chestnut-brown lines; the last, as in *L. castelnaui* ♀, very sinuous. Antennæ pale brown ringed with ochraceous; head, thorax and abdomen reddish brown; beneath, the palpi, thorax and abdomen pale ochraceous.

Exp. ♂ ♀ 49–55 mm. (1·95–2·19″).

Hab. Upper and Lower Burma and Tenasserim.

Race **andamanensis**, de Nicéville.—♂ ♀ Very similar to *L. glaucescens*, but differs as follows:—♂ *Upperside*: ground-colour deep indigo-blue, almost black between the subbasal and discal dark lines on the fore wing and between veins 3 and 5 in the extension of the dark colour to the postdiscal transverse line; the apex and a narrow sinuous subterminal band on the fore wing black; a discal broad band as in *L. glaucescens* but pale blue, not violaceous. Hind wing with a very broad subterminal velvety black band. Cilia conspicuously white. *Underside* purplish white, densely irrorated with transverse black striæ, and shaded with black; the usual subbasal, discal, postdiscal and subterminal slender sinuous transverse lines black. Antennæ, head, thorax

and abdomen dark brownish black; beneath, the palpi, thorax and abdomen fuscous.— ♀. *Upperside* differs from that of *L. glaucescens* ♀ as follows:—ground-colour bright yellow; colour of basal half of fore wing and its extension between veins 3 and 5 to the postdiscal transverse line dark ferruginous, a patch on the apex, another on the middle of the termen of the fore wing, and the terminal third of the hind wing also dark ferruginous red; the subterminal black line on the latter wing bordered with obscure reddish yellow; the costal margin broadly suffused with grey. *Underside* a duller darker ochraceous yellow than in *L. glaucescens*, more thickly irrorated with transverse minute dark striæ; the usual subbasal, discal, postdiscal and subterminal transverse dark sinuous lines, but the space between the discal and postdiscal lines of a paler yellow than the ground-colour, forming a well-marked transverse band across both wings; on the hind wing the minute transverse dark striæ on the outer side of the postdiscal line coalesce and form a distinct series of diffuse dark spots in the interspaces. Antennæ brown, head and thorax brown, abdomen reddish brown; beneath, the palpi, thorax and abdomen ochraceous.

Exp. ♂ ♀ 58–64 mm. (2·3–2·52″).

Hab. South Andamans.

The above is the description of the form usually found in the Andamans, but a certain number of specimens seem to represent a dry-season form of this insect; these are paler, and in fact resemble *L. glaucescens* much more than the usual form, which is only very slightly distinct from typical *horsfieldi*.

Genus **ERGOLIS.**

Ergolis, *Boisduval, Spéc. Gén. Lép.* i, 1836, *Expl. des Planches*, p. 2, pl. 4, fig. 4; *Moore, Lep. Ceyl.* i, 1881, p. 43; *de N. Butt. Ind.* ii, 1886, p. 7; *Moore, Lep. Ind.* v, 1901–1903, p. 15.

Type, *E. ariadne*, Johannsen, from India.

Range. Ethiopian and Indo-Malayan Regions.

♂ ♀. Fore wing: costa widely arched; apex subacute (typically truncate); termen more or less sinuous; tornus rounded; dorsum slightly sinuous, long; cell slenderly closed, short, not nearly half length of wing; upper discocellular oblique, very short; middle concave above, then nearly horizontal; lower erect and straight, between veins 4 and 5; veins 3 and 4 from lower apex of cell; 10 and 11 free, 12 swollen at base, these latter three veins short. Hind wing short, broad, pear-shaped; costa and dorsum very slightly arched, apex and tornus rounded; termen strongly curved, more or less scalloped; cell very short, slenderly closed; veins 3 and 4 from lower apex of cell, 7 much closer to 6 than to 8. Antennæ about half length of fore wing; club long and gradual, somewhat flattened; palpi long, porrect, third joint long, blunt at apex; eyes naked. Males with sex-marks of specialized scales.

Key to the forms of Ergolis.

a. Fore wing: termen between interspace 5 and apex of vein 3 deeply concave . .	*E. ariadne*, p. 461.
b. Fore wing: termen between interspace 5 and apex of vein 3 not concave, sinuous.	
a' ♂: underside hind wing without a central dark patch. ♀: upperside brownish ochraceous	*E. merione*, p. 462.
b' ♂: underside hind wing with a central dark patch. ♀: upperside dark ferruginous	Race *taprobana*, p. 463.

448. **Ergolis ariadne** (Pl. X, fig. 78), *Johanssen* (Papilio), *Amœn. Acad.* vi, 1764, p. 407; *Boisduval, Spéc. Gén. Lép.* i, 1836, pl. 4, fig. 4, larva & pupa; *de N. Butt. Ind.* ii, 1886, p. 10; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 269, pl. C, larva & pupa; *Moore, Lep. Ind.* v, 1901–1903, p. 17, pl. 382, figs. 1, 1 *a*–1 *g*, larva & pupa, ♂ ♀.

Ergolis minorata, *Moore, Lep. Ceyl.* i, 1881, p. 44, pl. 23, figs. 2, 2 *a*, ♂.

Ergolis indica, *Moore, J. A. S. B.* 1884, p. 20.

♂ ♀ Fore wing truncate at apex; termen angulated at interspace 5, and again at apex of vein 3, concave between; tornus obtusely angulate. Hind wing: termen more or less deeply scalloped. ♂ *Upperside* ochraceous rufous; a prominent white small subcostal spot before apex of fore wing; two or three dark brown marks in cell of both fore and hind wings, followed by subbasal, discal, two postdiscal, subterminal and terminal slender sinuous dark brown lines, crossing from costa of fore to vein 1 of hind wing; discocellular nervules of both wings defined by short dark brown lines; cilia white, alternated with brown. *Underside*: ground-colour similar, but with a tint of brown. Fore and hind wings: some dark chestnut-brown spots or loop-like marks at base, followed by subbasal, discal and postdiscal broad chestnut-brown sinuous bands, interrupted on the fore wing by the sex-mark of specialized scales described below; the postdiscal band on the hind wing traversed by a series of transverse dark spots in the interspaces. Lastly, both wings crossed by a subterminal zigzag, and a terminal, irregularly sinuous, dark brown line. Antennæ, head, thorax and abdomen ochraceous rufous. Sex-mark: the subcostal vein and veins 6 and 7 on the upperside of the hind wing prominently pale and shining and a large discal patch of specialized, very dark shining scales on the underside of the fore wing extending to the base of the wing, upwards into the cell and to vein 4.— ♀ Similar, slightly paler in colour, of course without the special sex-marks.

Exp. ♂ ♀ 52–56 mm. (2·05–2·21″).

Hab. Throughout continental India, but not, so far I know, recorded from further west than Mussoorie in the Himalayas or from the Punjab; Ceylon; Assam; Burma; Tenasserim; extending to China and the Malayan Subregion.

Larva. "Cylindrical, slender; two dorsal rows of sharp spines with three or four fine branch spines springing from a point in the middle of each; two rows of similar but shorter spines on each side; one pair of long, strong and straight spines on the head, irregularly set with small spines which cluster at the end; colour variable, sometimes green with longitudinal dark brown lines, or dark brown with an interrupted broad dorsal stripe of pure white, not extending to either end." (*Davidson & Aitken.*)

Pupa. "Slender, wing-cases somewhat dilated, a dorsal protuberance and two small cephalic points; colour variable; rigidly attached by the tail, so that if the surface is vertical, the pupa stands out horizontally." (*Davidson & Aitken.*)

Food-plants: *Tragia cannabina* and *T. involucrata.*

449. **Ergolis merione**, *Cramer* (Papilio), *Pap. Exot.* ii, 1777, p. 76, pl. 144, figs. G, H; *de N. Butt. Ind.* ii, 1886, p. 8; *Moore, Lep. Ind.* v, 1901–1903, p. 20, pl. 383, figs. 1, 1 *a*–1 *f*, ♂ ♀
Ergolis tapestrina, *Moore, J. A. S. B.* 1884, p. 19.

Race taprobana.

Ergolis taprobana, *Westwood, in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1851, p. 410, pl. 68, fig. 4; *Moore, Lep. Ceyl.* i, 1881, p. 44, pl. 23, figs. 1, 1 *a*, 1 *b*, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 9; *Moore, Lep. Ind.* v, 1901–1903, p. 22, pl. 384, figs. 1, 1 *a*–1 *f*, ♂ ♀.

Wet-season form.— ♂ *Upperside* brownish ochraceous. Fore and hind wings crossed by slender, somewhat obscure, very sinuous or zigzag dark basal, two subbasal and two discal lines disposed in pairs, followed by a single, sometimes double, postdiscal and a single subterminal slender line. All these lines more or less interrupted anteriorly on the hind wing, which has a smooth unmarked uniform appearance from costa to subcostal vein and vein 5. On the fore wing there is in addition a series of obscure spots between the postdiscal and subterminal markings, and a small white subcostal spot before the apex. *Underside* much as in *E. ariadne*, but the transverse chestnut bands broader, more diffuse. Antennæ, head, thorax and abdomen brownish ochraceous. Sex-mark on the underside of the fore wing as in *E. ariadne*; no sex-mark on upperside of hind wing.— ♀. Similar; but on the upperside the transverse lines broader, more diffuse, with a greater tendency to form bands; the postdiscal line always double, forming a band traversed by a series of dark ochraceous spots in the interspaces; these lines and bands continuous, not interrupted anteriorly on the hind wing as they are in the ♂ *Underside*, except for the sex-mark, as in the ♂.

Dry-season form.— ♂ ♀. *Upperside*: ground-colour much paler, the transverse lines more distinctly in pairs, forming bands, the ground-colour between each pair more dusky brown. *Underside* similar to that in the wet-season form, but the ground-colour paler, the bands more diffuse.

Exp. ♂ ♀ 52–62 mm. (2·05–2·43″).

Hab. The northern half of continental India, Simla to Sikhim in the Himalayas, and recorded from Rajputana and Bengal; Assam; Burma; Tenasserim; Malayan Subregion. The Tenasserim specimens are darker and often without the white subcostal spot in the fore wing, approximating thus to the Southern Indian and Ceylon race.

Larva. "Cylindrical, slender; segments armed with two dorsal and two lateral rows of short branched-spines; head with a pair of long, straight, branched-spines. Colour green with dorsal longitudinal dark brown lines." (*Moore.*)

Pupa. "Similar to that of *E. ariadne.*" (*Moore.*)

Race **taprobana**, Westwood.—Differs as follows:—

Wet-season-form.— ♂ *Upperside*: ground-colour dark ferruginous; white subcostal spot on fore wing rarely present; the transverse lines black, more clearly defined; the anterior half of the hind wing as in *merione* smooth, uniform, unmarked. *Underside*: ground-colour darker than in *merione*, the markings on the anterior half of the fore and in the centre of the hind wing obscured by a superposed very dark chestnut shading; on the fore wing this dark shading does not extend to the base, apex or termen, on the hind wing it does not extend quite to the costa. Sex-mark as in *merione*.— ♀ Similar to the ♀ of *merione*, but differs as follows:— *Upperside*: ground-colour dark ferruginous as in the ♂ of its own race; the transverse lines and markings very distinctly defined; the two postdiscal lines formed into more or less broad cordate marks in the interspaces. *Underside*: ground-colour darker than that in *merione* ♀, sometimes a sort of purplish brown; the chestnut transverse bands well-defined and continuous on fore and hind wings.

Dry-season form.— ♂ ♀. Similar to the wet-season form but the ground-colour paler.

Exp. ♂ ♀ 49–56 mm. (1·93–2·2″).

Hab. Southern India; Ceylon.

Genus **PSEUDERGOLIS.**

Pseudergolis, *Felder, Novara Reise, Lep.* iii, 1867, p. 404; *de N. Butt. Ind.* ii, 1886, p. 119; *Moore, Lep. Ind.* v, 1901–1903, p. 39.

Type, *P. avesta*, Felder, from the Celebes.

Range. Indo-Malayan Region; China.

♂ ♀ Fore wing: costa widely arched; apex obtuse; termen sinuous, angulate at interspace 5, concave in the middle, more or less scalloped; tornus obtuse; dorsum straight; cell slenderly closed, short, not half length of wing; veins 6 and 7 from a point, hence upper discocellular obsolete, middle discocellular deeply concave, lower slightly concave; veins 3 and 4 stalked, veins 10 and 11 free. Hind wing: broad, short, irregularly ovate; costa regularly arched, apex more or less rounded; termen arched, scalloped; tornus slightly produced, angulate; dorsum

curved; cell slenderly closed, short, not half length of wing; veins 3 and 4 from just beyond lower apex of cell, 6 and 7 very close at base. Antennæ about half length of fore wing; club gradual, narrow, cylindrical; palpi subporrect, broad in front; third joint stout; eyes naked. Fore leg of ♂ slender; tibia and tarsus subequal, hairy; of ♀ perfect, scaled.

Quite an aberrant form as to the structure of the fore leg in the ♀, but otherwise one of the *Nymphalinæ*. Only a single form is recorded from within our limits.

450. **Pseudergolis wedah** (Pl. VII, fig. 52), *Kollar* (Ariadne), *Hügel's Kaschmir*, iv, pt. 2, 1844, p. 437; *de N. Butt. Ind.* ii, 1886, p. 120, pl. 23, fig. 109; *Mackinnon, Jour. Bomb. N.H. Soc.* xi, 1898, p. 371, pl. U, figs. 9 *a*–9 *f*, larva & pupa; *Moore, Lep. Ind.* v, 1901–1903, p. 41, pl. 389, figs. 1, 1 *a*-1 *d*, larva & pupa, ♂ ♀.

♂ ♀. *Upperside* golden brown. Fore and hind wings with the following transverse black lines and series of spots:—Three slender short lines across the discoidal cell and one beyond its apex; a broad discal line on fore wing from just above vein 7 to vein 1, on hind wing from costa to vein 1; postdiscal and subterminal similar lines, both diffusely spreading towards the costal margin on the fore wing, the subterminal line highly sinuous on the hind wing; apex of fore wing dusky black; termen of both wings narrowly edged with black; a series of small spots between the postdiscal and subterminal lines; cilia conspicuously white, alternated with black. *Underside* brown, slightly suffused with a greyish tint; transverse lines, bands, and the series of small spots as on the upperside, but rich chestnut-brown, not black; on the fore wing the spaces between the two short lines across the middle of the cell, and between the two short lines at and beyond apex of cell, a brighter brown than the ground-colour; on both fore and hind wings, discal and postdiscal bands broader than on the upperside and somewhat diffuse; subterminal line lunular and bordered on both sides by obscure pale lilac, that broadens near the apex of the fore wing into a small lilac patch; termen broadly edged with chestnut. Antennæ, head, thorax and abdomen golden brown; beneath, the palpi, thorax and abdomen greyish brown.

Exp. ♂ ♀ 56–65 mm. (2·2–2·5″).

Hab. The Himalayas, from Kashmir to Sikhim; Assam; the Hills of Burma and Tenasserim. Recorded from Western and Central China.

Larva. "Length one and three-eighths inches; bright dark green; all the segments except the head minutely spotted with white, these spots or tubercles arranged in transverse rows, each segment having two rows; a dorsal protuberance on the fifth segment; two sharp black spines on the eleventh segment, the base of the spines pale greenish blue; two divergent horns on the head, five-sixteenths of an inch long, yellowish green, with

six black lines on each horn, tips of horns shining black; the line dividing the dorsal from the ventral aspect of the body creamy-white." (*Mackinnon.*)

Food-plant, *Debregeasia bicolor*, Wedd.

Pupa. Head with two short conical points; dorsum keeled from a rounded anterior knob, anal end curved upwards; thorax broad, angular in the middle. Colour green, with brown cross markings. (Described from plate in Jour. Bomb. N. H. Soc.)

Genus **CALINAGA.**

Calinaga, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 162; *de N. Butt. Ind.* ii, 1886, p. 142: *Moore, Lep. Ind.* v, 1901–1903, p. 44.

Type, *C. buddha*, Moore, from the Western Himalayas.

Range. The Himalayas; Tibet; Manipur; Upper Burma; Siam; China.

♂ ♀. Fore wing elongate; costa widely arched, apex produced but broadly rounded; termen oblique, convex anteriorly, then slightly concave, sinuous; tornus rounded; dorsum straight; cell long, over half length of wing; upper discocellular minute, middle concave, lower concave, oblique posteriorly; vein 3 from well before lower apex of cell, 4 from apex, 10 and 11 free. Hind wing elongate, irregularly quadrate; costa very long, nearly straight; apex rounded; termen straight from below apex to vein 4, then distinctly but very obtusely angulated inwards to the tornus, which is very broadly rounded; dorsum long, nearly straight; cell closed, a little longer than half length of wing, discocellulars very oblique; vein 3 from just before lower apex of cell, 4 from apex, 7 very much closer to 6 than to 8. Antennæ gradually clavate, imbricate, club fusiform; palpi slender, cylindrical, short; third joint oval; eyes densely hairy; fore leg of ♂ shortened, one-jointed; of ♀ functionally perfect.

This genus is remarkably aberrant, and as the larva has not yet been discovered it is difficult to classify. Jordan places it in a subfamily (*Calinaginæ*) by itself. In general appearance and habits, the two or three recorded forms in the genus resemble *Pareba*, one of the two genera of the *Acræinæ* found within our limits.

Key to the forms of Calinaga.

a. Upperside: crimson pubescence covering only the pronotum and mesonotum anteriorly.
  a'. Underside hind wing: ground-colour dull ochraceous .. .. .. *C. buddha*, p. 466.
b' Underside hind wing: ground-colour brownish Race *gautama*, p. 466.

b. Upperside: crimson pubescence covering the whole of the thorax.
  a' Upperside hind wing: tornal area not ochraceous yellow ..... Race *brahma*, p. 467.
  b'. Upperside hind wing: tornal area bright ochraceous yellow *C. sudassana*, p. 467.

451. **Calinaga buddha**, *Moore, Cat. Lep. Mus. E. I. C.* i, 1857, p. 163, pl. 3 *a*, fig. 5 ♂; *de N. Butt. Ind.* ii, 1886, p. 143, pt.; *Moore, Lep. Ind.* v, 1901–1903, p. 45, pl. 390, figs. 1, 1 *a*, 1 *b*, ♂ ♀.

Race gautama.

Calinaga gautama, *Moore, Lep. Ind.* v, 1901–1903, p. 46, pl. 390, figs. 2, 2 *a*, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 143, pt., front plate fig. 122 ♂

Race brahma.

Calinaga brahma, *Butler, A. M. N. H.* (5) xvi, 1885, p. 309; *Moore, Lep. Ind.* v, 1901–1903, p. 47, pl. 391, figs. 1, 1 *a*, ♂ ♀

♂ ♀. *Upperside* fuliginous black; the veins prominently black. Fore and hind wings with the following white markings, sometimes slightly tinged with cream-colour:—Fore wing: basal half of cell; a transverse spot at its apex; basal two-thirds of interspace 1 a small diffuse spot at bases of interspaces 4 and 5; a discal transverse series of elongate spots from interspace 2 to costa, becoming slender streaks in interspaces 9 and 10; and a postdiscal series of more rounded spots, minute in interspaces 7 and 8. The elongate white mark in interspace 1 traversed by a slender black streak. Hind wing with the following similar white markings:—The dorsal margin broadly up to vein 1; the basal half of interspace 1; nearly the whole of the discoidal cell; spots at base of interspaces 4, 5, 6 and 7; an upper discal transverse series of four elongate spots, and a postdiscal similar series of more rounded smaller spots. *Underside*: fore wing pale fuliginous black; white markings as on the upperside, but larger, more diffuse. Hind wing: ground-colour ochraceous; white markings as on the upperside, but interspaces 1 *a* and 1 strongly tinged with ochraceous; discal and postdiscal series of six, not four, spots each; veins chestnut-brown. Antennæ, head, thorax posteriorly and abdomen black; pronotum and mesonotum anteriorly and on the sides with crimson pubescence; beneath, antennæ, head, thorax and abdomen black.

Exp. ♂ ♀ 88–100 mm. (3·47–3·95″).

Hab. N.W. Himalayas, Dalhousie, Kulu.

Race **gautama**, Moore.—The Eastern race differs from *buddha* in the white markings being, as a rule, smaller and more restricted, but prominently by the brown not ochraceous ground-colour on the underside of the hind wing. These differences seem constant.

Exp. ♂ ♀ slightly greater than in the Western form.

Hab. Sikhim.

Race **brahma**, Butler, is the still darker form found in the high hills further east. It differs from *buddha* as follows:—*Upperside*: fore and hind wings, the white markings very much smaller and not pure white or cream-coloured, but irrorated slightly with fuliginous scales. Thorax entirely clothed with crimson pubescence. *Underside*: ground-colour of hind wing purplish or a sort of sepia-brown.

Exp. ♂ ♀ 94–110 mm. (3·67–4·35″).

Hab. Recorded from the high hills between Manipur and Assam.

452. **Calinaga sudassana**, *Melvill, Trans. Ent. Soc.* 1893, p. 121, pl. 7, figs. 1, 2, ♂; *Watson, Mem. Manch. L. & P. Soc.* 1889, pl. 4, figs. 2, 2*a*, ♂; *Moore, Lep. Ind.* v, 1901–1903, p. 48, pl. 391, figs. 2, 2*a*, ♂.

♂ *Upperside* resembles *C. buddha*, but the ground-colour is darker, the white markings more diffuse, those in the cell and interspace 1 of the fore wing thickly irrorated with fuliginous scales, the spots at bases of the interspaces beyond the apex of the cell in both fore and hind wings are diffusely produced up to the discal spots in those interspaces; the discal and postdiscal series of spots are much as in *C. buddha*, but there are on the fore wing indications also of a terminal series of whitish spots. On the hind wing the disposition of the white markings is similar to that in *C. buddha*, but the posterior half of the dorsal margin and the tornus are suffused with bright ochraceous yellow. *Underside* fore wing: the white markings and spots as on the upperside, but more clearly defined and tinged with blue, the apex of the wing very broadly and the terminal margin dull ochraceous purple. Hind wing entirely suffused with ochraceous purple, the white markings of the upperside faintly indicated except the upper discal series of four elongate spots and the postdiscal series of six rounded spots, which are tolerably distinct; the ochraceous yellow on the tornal area showing through by transparency. Antennæ, head and abdomen black, thorax entirely covered with crimson pubescence; beneath, the palpi, thorax and abdomen dull black, the sides of the thorax with crimson pubescence.

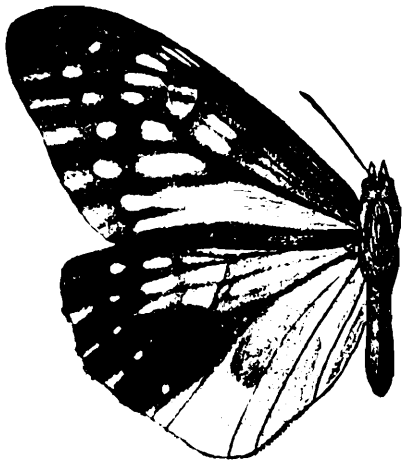

Fig. 83.
Calinaga sudassana, ♂ $\frac{5}{6}$.

Exp. ♂ 94–108 mm. (3·67–4·25″).

Hab. Recorded from Siam, and the hills of Upper and Lower Burma.

Subfamily ACRÆINÆ.

Egg. Said by Mr. Doherty to be similar to that of the *Danainæ*.

Larva. Cylindrical, armed with branched spines, in the Indian orms in a series of six longitudinal rows; generally conspicuously coloured and of a disagreeable odour.

Pupa. "Suspended perpendicularly; long, slender, smooth; two lateral angles on the thorax; head quadrate." (*Davidson & Aitken.*) Conspicuously coloured.

Imago. Wing elongate, somewhat sparsely covered with scales (Indian forms) or more or less diaphanous (some African and Malayan forms); terminal margins always entire, never dentate, scalloped or caudate. Hind wing not channeled to receive the abdomen. Venation in the two Indian genera variable within certain limits, especially with regard to the origin of the branches of the subcostal nervure in both fore and hind wings; vein 1 not forked, none of the veins swollen at base. Antennæ proportionately rather short, with two grooves on the underside; in the Indian forms more or less scaled dorsally but not on the ventral surface. "On the not-scaled ventral area of each joint there are two deep impressions which become shallow towards the middle carina, so that the two more impressed portions are rather widely apart." * Palpi cylindrical, more or less tumid and sparsely covered with hairs; third joint short. Eyes never hairy. Fore tarsi in ♂ with one to four joints, but always functionally imperfect; in ♀ perfect.

This subfamily is chiefly African, and represented within our limits by only two genera with one form in each genus. The forms seem to be protected from insectivorous enemies in all stages. In the imago the slightest pressure causes the exudation of a yellow, disagreeable smelling, somewhat acrid fluid.

Key to the Genera of the Acræinæ.

a. Antennæ with a gradually formed club; hind wing, veins 6 and 7 stalked well beyond upper apex of cell .. .. PAREBA, p. 468.

b. Antennæ with a short abrupt club; hind wing, veins 6 and 7 not stalked, vein 7 given off before upper apex of cell TELCHINIA, p. 470.

Genus **PAREBA**.

Acrea (sect. 5. Pareba), *Doubleday, in Dblday., Westw. & Hewitson, Gen. Di. Lep.* i, 1848, p. 142; *M. & de N. Butt. Ind.* i, 1883, p. 318; *Moore, Lep. Ind.* v, 1901-1903, p. 30.

Type, *P. vesta*, Fabr., from China.

Range. The Lower Himalayas; Assam; Burma; extending to China and the Malayan Subregion.

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* Jordan, Nov. Zool. v, 1898, p. 387.

♂ ♀ Fore wing elongate; costa straight, slightly arched along its apical third; apex rounded; termen very oblique; tornus rounded; dorsum straight; cell elongate, somewhat more than half the length of the wing; upper discocellular obsolete or very short, middle deeply concave, lower inclined very obliquely outwards; vein 3 from well before lower apex of cell, 4 from apex; origin of veins 6, 10 and 11 variable, 6 sometimes from upper apex of cell, sometimes a little below it, 10 always out of 7 but at varying distance from upper apex of cell, 11 free or from upper apex of cell, 12 long, terminating on apical third of the costal margin. Hind wing elongate: costa sharply straight; apex rounded; termen strongly curved; tornus rounded; dorsum straight, slightly convex towards base; cell long; vein 3 from before lower apex of cell, 4 from apex; 6 and 7 stalked, more or less well beyond upper apex of cell; 8 very long, straight, running parallel to costal margin, terminating at apex. Antennæ a little less than half length of wing; club gradual, rounded at apex, slightly flattened; palpi short, cylindrical, sparsely hairy; eyes naked.— ♀ Last segment of abdomen, after impregnation, with a corneous appendage or pouch somewhat like that of *Parnassius*.

453. **Pareba vesta**, *Fabr.* (Papilio) *Mant. Ins.* ii, 1787, p. 14; *M. & de N. Butt. Ind.* i, 1883, p. 318; *Moore, Lep. Ind.* v, 1901–1903, p. 31, pl. 387, figs. 1, 1 *a*–1 *f*, larva & pupa, ♂ ♀.

♂. *Upperside* yellow. Fore wing: veins along the costal margin broadly and apical half of those along the terminal margin narrowly black; a broad curved mark along the discocellulars, the apex and terminal margin more or less broadly also black, the last traversed by a series of spots of the ground-colour. Hind wing: apical half of the veins from 1 *a* to 8, subterminal zigzag and

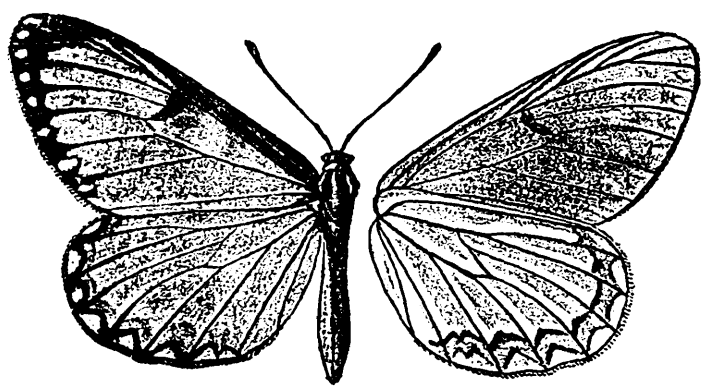

Fig. 84.—*Pareba vesta*. ½.

terminal slender lines, black, the subterminal line coalescing with the terminal along the veins. *Underside*: fore wing ground-colour yellow, getting paler towards apex, the veins conspicuously darker, the black discocellular mark showing through by transparency. Hind wing: ground-colour a delicate pinkish white, the veins conspicuously black; a broad subterminal ochraceous lunular band margined

on both inner and outer sides by black lines, and a terminal, slender black line continued along the dorsum. Antennæ, head, thorax and abdomen black, the thorax with a little ochraceous yellow pubescence anteriorly; thorax and abdomen beneath black sparingly marked and spotted with very pale ochraceous.—♀ *Upperside*: ground-colour a paler duller ochraceous yellow than in the ♂, with similar but broader black markings. *Underside*: ground-colour duller than in the ♂, the black markings showing through by transparency.

Exp. ♂ ♀ 64–74 mm. (2·54–2·9″).

Hab. The Himalayas, at 3000 or 4000 ft.; the hills of Assam; Burma, Tenasserim; extending to China.

A variable insect both in the shades of ground-colour and in the markings. The above description is of the palest form. Other specimens have the ground-colour fulvous, with on the upperside additional black marks, such as a band along the costa at base of the fore wing, the apex and termen very broadly black, a black transverse mark across the cell, another oblique mark from costa beyond the apex of cell and black transverse marks on the disc; on the hind wing the black subterminal and terminal lines are sometimes very broad, and the ochraceous-red subterminal band of the underside shows through by transparency. Some female specimens have the ground-colour of the fore wing on the upperside fuliginous, a broad streak at base of cell, a quadrate spot at its apex, a discal irregular series of elongate marks and a subterminal series of spots pale ochraceous. Hind wing: ground-colour pale ochraceous, with the usual subterminal and terminal markings rendered blurred and diffuse by a shading of fuliginous black over the terminal third of the wing.

Larva. "Elongated; head unarmed; segments armed with a subdorsal and a sublateral row of long, sharp-pointed, branched spines and a lateral row of shorter naked spines. Head reddish ochraceous, black-spotted, front with a white stripe; segments dark purplish violet, with longitudinal rows of short transverse white bars; spines ochreous with black tips; legs ochreous with black bands." (*Moore.*)

Pupa. "Suspended. Elongated narrow; head with two short frontal points; thorax convex and uneven; abdominal segments with a dorsal and two lateral rows of short tubercular points. Colour white, tubercles and streaks on wing-cases ochreous." (*Moore.*)

Genus **TELCHINIA.**

Telchinia, *Hübner, Verz. bek. Schmett.* 1816, p. 27; *Moore, Lep. Ceyl.* i, 1881, p. 65; *M. & de N. Butt. Ind.* i, 1883, p. 319; *Moore, Lep. Ind.* v, 1901–1903, p. 35.

Type, *T. violæ*, Fabr., from India.

Range. Throughout peninsular India in the regions of heavy rainfall; Ceylon.

Closely allied to and resembling *Pareba*, but differs as follows:—Wings not quite so elongate; fore wing: termen more convex;

venation similar and as variable. Hind wing: vein 7 not stalked, upper discocellular therefore present. Antennæ with the club short, broad and abrupt; palpi cylindrical, gradually incrassate to apex of second joint, third joint minute, very sparsely clothed; eyes naked.

454. **Telchinia violæ**, *Fabr.* (Papilio) *Syst. Ent.* 1775, p. 460; *Moore, Lep. Ceyl.* i, 1881, p. 66, pl. 33, figs. 1, 1 *a*–1 *b*, ♂ ♀, larva & pupa; *M. & de N. Butt. Ind.* i, 1883, p. 320, fig. ♂; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 268; *Moore, Lep. Ind.* v, 1901–1903, p. 36, pl. 388, figs. 1, 1 *a*–1 *g*, larva & pupa, ♂ ♀.

♂ *Upperside* tawny. Fore wing: a transverse black spot in cell, and another irregular, oblique and broader at the discocellulars; a discal series of spots in interspaces 1, 3, 4, 5, 6 and 10, and the apex and termen black. The upper four spots of the discal series inclined obliquely outwards, the lower two obliquely inwards; the black edging to apex and termen narrowing posteriorly, but with slender linear projections inwards in the interspaces. Hind wing: a basal series of four or five black spots with a similar spot beyond in middle of cell and a subcostal black spot above it, followed by a discal series of obscure blackish spots and a minute postdiscal black dot in interspaces 4 and 6 respectively; finally, a broad black terminal band medially traversed by a series of small spots of the ground-colour. Most of the macular black markings are obscure, being only the spots on the underside seen by the transparency of the wing-membrane; the inner edge of the black terminal band crenulate. *Underside*: ground-colour ochraceous yellow or a paler tawny yellow. Fore wing paling to whitish on the apex, with the black markings as on the upperside but somewhat blurred and diffuse. Hind wing: the black spots and black terminal band as on the upperside, but the spots more clearly defined, none obscure; the series of spots traversing the black terminal margin very much larger and white, not tawny; the base of the wing black, separated from the basal transverse series of black spots by two or three large whitish spots. Antennæ black, head and thorax black spotted with ochraceous and white; abdomen anteriorly black, posteriorly ochraceous yellow with narrow transverse black lines; beneath, the palpi, thorax and abdomen ochraceous, the thorax spotted with ochraceous, the abdomen with a longitudinal line of black at base.—♀ Similar. *Upperside*: ground-colour duller; the black spots on fore and hind wings larger, the upper discal spots often coalescing and forming an irregular oblique short band; the black edging to apex and termen on the fore wing and the black terminal band on the hind wing proportionately broader, the spots traversing the latter larger and whitish. *Underside*: ground-colour much paler and duller, markings as on the upperside and, as in the ♂,

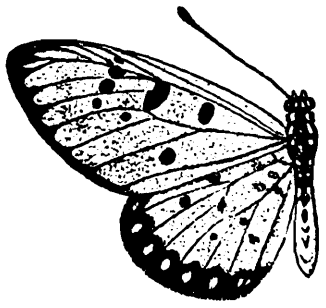

Fig. 85.
Telchinia violæ, ♂ ½.

the spots on the hind wing better defined than on the upperside. Antennæ, head, thorax and abdomen as in the ♂.

Exp. ♂ ♀ 53–64 mm. (2·1–2·53″).

Hab. Peninsular India, in regions of heavy rainfall; Ceylon.

Larva. "Cylindrical, slender, with six longitudinal rows of fine branched spines; colour reddish brown with an oily gloss, much paler on the head, second and last segment; an unwholesome looking insect, doubtless protected like the butterfly." (*Davidson & Aitken.*)

Pupa. "Perpendicularly hung, long, slender, smooth; two lateral angles on the thorax; head quadrate; colour creamy white, with broad longitudinal bars of purplish-black spotted with orange." (*Davidson & Aitken.*)

Food-plant, the wild Passion-flower (*Modecca palmata*).

Subfamily LIBYTHEINÆ.

Egg. "Ampulliform, shaped like a soda-water bottle, twice as high as wide, forming a short neck or stalk close to the apex, radiate with strong anastomosing ribs." (*Doherty.*)

Larva. In general appearance strongly resembling the larvæ of some of the *Pieridæ*; cylindrical, smooth or with minute bristles, head small.

Pupa. Suspended perpendicularly. Short, smooth, not angulated; head square, broad.

Imago. Wings short and broad, termen angular and emarginate in fore wing. Venation similar to some of the *Nymphalinæ*; vein 1 of fore wing with a slender fork at base; cell closed in both fore and hind wings. Antennæ short, thick, club gradual, scaling restricted to the dorsal surface; palpi very long, thick, porrect, the two closely approximate, forming a remarkable beak-like projection in front of the head. Eyes naked; fore tarsi in ♂ abbreviated brush-like, of ♀ functionally perfect.

Contains only a single genus.

Genus **LIBYTHEA.**

Libythea, *Fabr. Illig. Mag.* vi, 1807, p. 284; *Moore, Lep. Ceyl.* i, 1881, p. 67; *de N. Butt. Ind.* ii, 1886, p. 300; *Moore, Lep. Ind.* v, 1901–1903, p. 50.

Type, *L. celtis*, Fuessly, from S. Europe.

Range. Europe; Africa; India; Malay Archipelago; N. and S. America. Mauritius.

♂ ♀. Fore wing: costa widely arched; apex somewhat produced; termen slightly concave below apex, angulated at apex of vein 5; below emarginate to tornal angle; tornus rounded; dorsum straight; cell broad, not quite half length of wing, slenderly closed; upper discocellular minute, middle and lower concave, not oblique; vein 3 from well before lower apex of cell, 4 from apex, 10 an 11 free. Hind wing: costa sinuous; termen

slightly oblique and sinuous to apex of vein 6, then erect and scalloped to tornus; tornus angulate; dorsum slightly curved; cell not quite half length of wing, slenderly closed; vein 3 from a little before lower apex of cell, 4 from apex, 5, 6 and 7 well separated at base. Antennæ short, not half length of fore wing; club well marked, short but gradual; palpi remarkably long, closely appressed; eyes naked.

Key to the forms of Libythea.

A. Upperside: no trace of violaceous; ground-colour dark brown, markings orange-yellow or white.
  a. Upperside fore wing with a cellular streak.
    a'. Upperside fore wing with a small orange-yellow spot in interspace 1 . — *L. celtis*, p. 473.
    b'. Upperside fore wing with no spot in interspace 1.
      a^2. Upperside fore wing: orange-yellow spot beyond lower apex of cell quadrate.
        a^3. Upperside fore wing: orange-yellow streak in cell not divided, continuous .. — Race *lepita*, p. 474.
        b^3. Upperside fore wing: orange-yellow streak in cell divided preapically . .. — Race *lepitoides*, p. 474.
      b^2. Upperside fore wing: orange-yellow spot beyond lower apex of cell elongate oval . ... — *L. myrrha*, p. 475.
  b. Upperside fore wing without a distinct cellular streak .... — *L. rohini*, p. 476.
B. Upperside: bases of wings violaceous; ground-colour pale brown.
  a. ♂ ♀. Upperside fore wing with preapical white spots; violaceous area at base of wings small .. .. — [*alompra*, p. 477. *L. geoffroyi*, race
  b. ♂. Upperside fore wing with no preapical white spots except those seen by transparency from underside. ♀ unknown — *L. hauxwelli*, p. 478.

455. **Libythea celtis**, *Fuessly* (Papilio), *Arch. Ins.* 1782, pl. 8, figs. 1–3; *Lang, Butt. Eur.* 1884, p. 152, pl. 32, fig. 2.
Libythea lepita, *Leslie & Evans* (*nec Moore*), *Jour. Bomb. N. H. Soc.* xiv, 1903, p. 671.

Race lepita.

Libythea lepita, *Moore, Cat. Mus. E. I. C.* i, 1857, p. 240; *de N. Butt. Ind.* ii, 1886, p. 303; *Moore, Lep. Ind.* v, 1901–1903, p. 56, pl. 393, figs. 2, 2 *a*–2 *e*, ♂ ♀.

Race lepitoides.

Libythea lepita, *Hampson* (*nec Moore*), *J. A. S. B.* 1888, p. 355.
Libythea lepitoides, *Moore, Lep. Ind.* v, 1901–1903, p. 57, pl. 394, figs. 1, 1 *a*–*c*, ♂

♂ ♀ *Upperside* rich silky brown. Fore wing: cell filled with a broad orange-yellow streak subapically deeply indented above; a small discal orange-yellow spot in interspace 1; a very much larger, similarly coloured discal spot between veins 2 and 4, on the inner side impinging on the cell between veins 3 and 4; a subcostal white preapical spot and a quadrate double spot in interspaces 4 and 5, placed obliquely forward to the subcostal spot; this spot whitish above, orange below. Hind wing uniform, with an irregular curved, transverse, upper postdiscal orange patch extending from just below vein 3 to interspace 6, the portion in interspace 6 often detached. *Underside* ground-colour: fore wing brown, apex pale purplish irrorated with minute dark transverse striæ and dots, orange markings as on the upperside but paler; hind wing uniform pale purplish irrorated with minute dark dots and transverse striæ. Antennæ, head, thorax and abdomen dark brown; beneath, palpi, thorax and abdomen concolorous with the tint of the underside of the hind wing.

Exp. ♂ ♀ 46–54 mm. (1·81–2·13″).

Hab. Southern Europe; Asia Minor. Within our limits recorded only from Chitral.

Race **lepita**, Moore.—Differs from *celtis* as follows:— ♂ ♀ *Upperside* ground-colour a slightly darker brown. Fore wing: orange-yellow streak in cell much narrower for two-thirds of its length from base, then abruptly expanded anteriorly so as to fill the apex of the cell, the inner margin of the apical portion and the anterior margin of the basal portion forming a clearly defined right angle; lower discal spot absent, upper larger discal spot somewhat diamond-shaped; subcostal spot and preapical spot placed obliquely outwards from it more distinctly double, the lower portion of the subapical spot orange-yellow, the upper portion and the subcostal spot white. Hind wing: the upper postdiscal orange patch narrower, forming a short band which is not curved but placed obliquely transverse, reaching from vein 2 to vein 6, sometimes but rarely with a detached orange spot above it in interspace 6. *Underside*: ground-colour variable, generally vinous-brown, paler along the costal and dorsal margins of the fore wing; sometimes dark brown on the fore wing, dark greyish on the hind wing, with the costal margin broadly of the fore and the whole of the hind wing irrorated with minute dark striæ and spots. Orange and white markings on the fore wing as on the upperside, but the preapical double spot entirely white. The hind wing is more variable; in some specimens it is uniform without any markings, in others it is shaded transversely light and dark, and in a few specimens the wing is longitudinally divided by a dark-brown diffuse band from base along the median vein to apex of vein 5. Antennæ, head, thorax and abdomen as in *L. celtis*.

Exp. ♂ ♀ 50–58 mm. (1·97–2·28″).

Hab. The Himalayas, from below Simla to Sikhim; Assam; Upper Burma; extending to China and Japan.

Race **lepitoides**, Moore.—Differs from *lepita* as follows:—

♂ ♀ Hind wing: tornus narrowly produced, dentate or even, subcaudate. *Upperside*: ground-colour darker brown. Fore wing: the orange-yellow streak in cell divided from the spot in the apex of the cell, the large discal spot smaller, the subcostal and subapical spots more distinctly double, the latter pure white. Hind wing: the transverse short band narrower and more horizontal; a diffuse quadrate pale spot in the middle of interspace 7, larger in the ♀ than in the ♂ *Underside* fore wing: ground-colour dark brown, the apex, the termen narrowly and slightly, and the dorsal margin somewhat broadly touched with grey, irrorated with minute dark dots and transverse striæ; the orange-yellow and white markings as on the upperside, the former broader and fuller, the cellular streak not interrupted. Hind wing pale grey, shaded broadly at base, on the disc and posteriorly, with brown, the pale grey ground-colour prominently replacing the transverse orange streak and pale subcostal spot of the upperside. In some specimens there is a very dark brown shading from base of the wing along the median vein. The entire surface of the wing is irrorated with minute dots and transverse short striæ. Antennæ, head, thorax and abdomen as in *celtis*.

Exp. ♂ ♀ 58–61 mm. (2·28–2·41″).

Hab. Southern India; Ceylon.

456. **Libythea myrrha**, *Godart, Encycl. Méth.* ix, 1819, p. 171; *de N. Butt. Ind.* ii, 1886, p. 302.

Libythea rama, *Moore, P. Z. S.* 1872, p. 556; *id. Lep. Ceyl.* i, 1881, p. 68, pl. 33, figs. 2, 2 *a*; *de N. Butt. Ind.* ii, 1886, p. 302; *Moore, Lep. Ind.* v, 1901–1903, p. 53, pl. 393, figs. 1, 1 *a*, 1 *b*, ♂ ♀

Libythea myrrha, var. sanguinalis, *Fruhstorfer, Berl. ent. Zeits.* xliii, 1898, p. 169.

Libythea sanguinalis, *Moore, Lep. Ind.* v, 1901–1903, p. 51, pl. 392, figs. 1, 1 *a*–1 *g*, ♂ ♀.

A variable insect in the extent and breadth of the orange-yellow markings and in the mottling and ground-colour of the underside. Typically ♂ ♀ have the ground-colour on the upperside dark brown, with the following orange-yellow markings:— Fore wing: a streak from base along the median vein extending narrowly on each side of it and continued beyond as a comparatively large oval spot in base of interspace 2; two preapical double spots placed obliquely to the costa. Hind wing uniform, with a slightly oblique narrow medial band extending from vein 1 to vein 5. *Underside* fore wing: ground-colour brown; orange-yellow markings as on the upperside, but broader, more diffuse; apex and dorsal margin broadly shaded with pale grey irrorated with minute dark spots and transverse short striæ. Hind wing greyish brown irrorated with minute

Fig. 86.
Libythea myrrha, ♂ ½.

dark spots and short transverse striæ, and shaded in the cell, on the middle of the costal margin, and on the middle of the termen with diffuse brown. Antennæ, head, thorax and abdomen dark brown; beneath, palpi, thorax and abdomen greyish brown.

Exp. ♂ ♀ 46–58 mm. (1·81–2·28″).

Hab. The Himalayas, from Kulu to Sikhim; Western India, recorded from Bombay; Southern India; Ceylon; Assam; Burma; Tenasserim; the Malayan Subregion; China.

The larger varieties, with very broad orange markings on both fore and hind wings, have been separated as *sanguinalis*. This is chiefly a Himalayan and Eastern form. Var. *rama*, Moore, is the smaller Southern and Ceylon form, with the orange markings much narrower and restricted and the preapical double spots entirely white, or white slightly suffused with yellow. Every gradation between the two forms, however, can be found. Many specimens are identical with typical forms from Java.

Larva. "Colour dark green, sometimes with a brownish tinge, with a thin dorsal light yellow line from segments 4 to 12 and a narrow yellow supra-spiracular band from the head to the anal end." (*de Nicéville.*)

Pupa. "The front of the pupa seen from above is absolutely square, the head ending in a broad straight edge;' ... thorax somewhat convex and highly carinated along the dorsal line .; wings slightly thickened at and behind the shoulder; colour light green with the tops of all the carinations yellow, with a black speck on the abdominal peak; the surface of the pupa smooth, somewhat shiny." (*de Nicéville.*)

"Food-plant, *Celtis tetranda*, Roxb. (*Urticaceæ*)." (*de Nicéville.*)

457. **Libythea rohini**, *Marshall, J. A. S. B.* 1880, p. 248 ♀; *de N. Butt. Ind.* ii, 1886, p. 303, pl. 24, fig. 114 ♀; *Moore, Lep. Ind.* v. 1901–1903, p. 59, pl. 394, figs. 3, 3 *a*, ♀.

Libythea libera, *de Nicéville, Jour. Bomb. N. H. Soc.* v, 1890, p. 207, pl. D, fig. 6; *Moore, Lep. Ind.* v, 1901–1903, p. 58, pl. 394, figs. 2, 2 *a*, ♂.

♂ ♀ *Upperside* very dark glossy brown, bases of the wings slightly paler. Fore wing with the following white spots: a transverse spot filling the apex of the cell, a large discal subquadrate spot, and three smaller spots in a curve preapically. Hind wing: a white subcostal spot and a horizontal medial short narrow white band, generally macular. *Underside* fore wing: ground-colour brown, the costal margin, the apex, and the dorsal margin more or less greyish white with minute transverse short dark striæ; a pale clavate cellular streak above the median vein, not reaching the white transverse spot at apex of cell; all the white spots as on the upperside, but larger and somewhat diffuse at the edges; the lower two of the preapical spots generally touching. Hind wing: ground-colour pale lilacine-white closely irrorated with transverse dark striæ; the white spot on the costal

margin and the medial white band as on the upperside, but the latter not clearly defined, broader not macular; the posterior half of wing at base, the disc below the medial band, the costal margin near apex, and the posterior two-thirds of the terminal margin shaded with dark brown.

Exp. ♂ ♀ 56–60 mm. (2·19–2·38″).

Hab. The hills of Assam; Burma; Tenasserim; extending to the Malay Peninsula and Sumatra.

Var. *libera*, de Nicéville, is probably a race or a dimorph of *rohini*; it differs chiefly in the "spot in the cell and the one below it in the first median interspace (interspace 2) of the fore wing not being 'pure white' but outwardly defined with ochreous the discal band ochreous instead of pure white." It occurs with *rohini* in Assam, but seems to be the common form in Burma.

The next two forms are possibly dimorphs or seasonal forms of one insect, but, so far as I know, only the males of the smaller form have been procured, and I have not access to a sufficient series to more than hazard this conjecture.

458. **Libythea geoffroyi**, *Godart, Encycl. Méth.* ix, 1823, p. 813.

Race alompra.

Libythea alompra, *Moore, Lep. Ind.* v, 1901–1903, p. 59, pl. 394, figs. 4, 4 *a*, ♂.

Libythea geoffroyi, *de Nicéville (nec Godart), Jour. Bomb. N. H. Soc.* v, 1890, p. 205, pl. D, fig. 5 ♂

Race **alompra**, Moore.— ♂. *Upperside* pale brown. Fore wing: the cell, basal two-thirds of interspaces 1 *a*, 1, 2 and 3, and the extreme base of interspace 4 suffused with a beautiful pale violescent blue; a curved series of three subquadrate preapical white spots. Hind wing: cell suffused with violescent blue extending faintly into interspaces 4, 5 and 6; a faintly-marked dull orange band below the lower apex of cell. *Underside* pale brown. Fore wing: apex grey, irrorated with minute dark spots; cell with a broad dull orange streak from base, followed by a violescent transverse spot in apex of cell; a large discal dull violescent spot in interspace 2 spreading slightly into interspace 3, the curved series of three preapical spots as on the upperside but faintly dull violescent. Hind wing greyish brown, irrorated with dark spots and transverse dark striæ and shaded with darker brown; the medial dull orange band replaced by a similar pale well-marked band. Antennæ, head and abdomen pale brown; thorax darker brown with a little greenish pubescence posteriorly; beneath, the palpi, thorax and abdomen pale greyish brown.— ♀ "*Upperside*: fore wing with the violet area duller and confined to the immediate base of the wing; a quadrate white spot at the end of the discoidal cell; a tripartite subcostal spot; another elongated spot from the third median to the upper discoidal nervule, placed outwardly below it; a large quadrate discal spot, completely

filling the interspace between the first and third median nervules. Hind wing with no violet gloss at the base, otherwise as in the male. *Underside*: fore wing with the cell orange but outwardly terminated by a large white spot; the other spots as on the upperside. Hind wing as in the male, but all the markings more obscure." (*de Nicéville.*)

Exp. ♂ ♀ 61 mm. (2·4″).

Hab. Tenasserim.

459. **Libythea hauxwelli,** *Moore, Lep. Ind.* v, 1901–1903, p. 61, pl. 394, figs. 5, 5 *a*, ♂.

♂ *Upperside*: fore wing a beautiful iridescent pale violet, the costal margin, apex, and terminal margin pale brown, the dull white discal and preapical spots of the underside showing faintly through by transparency. Hind wing pale brown, the cell and bases of interspaces 4, 5 and 6 pale iridescent violet; beyond the violet there is a very obscure series of pale discal marks, only indicating the usual horizontal band. *Underside* as in *L. alompra* but much paler; the spot in cell, the discal and preapical spots dull white, obscure. Antennæ, head, thorax and abdomen dull brown; beneath, the palpi, thorax and abdomen greyish brown.

Exp. ♂ 49 mm. (1·9″).

Hab. Tenasserim.

Family NEMEOBIDÆ.

Egg. "Not so high as wide, smooth, granulate or prickly, neither reticulate nor radiate, in the few genera examined by me." (*Doherty.*)

Larva. According to Sharp, "neither the larvæ nor the pupæ present any well-marked characteristic feature, but exhibit considerable variety." So far as the Indian forms of this family are concerned, the larvæ and pupæ of only two of the forms have been described and figured. The former is onisciform, broadest in the middle, attenuated at each end, covered with short erect hairs.

Pupa. Short, either slightly or not angulated or fusiform, flattened anteriorly; head bifid, or truncately rounded in front; recumbent, attached to a leaf by the tail and a median girdle (teste *Moore, Davidson & Aitken*).

Imago. Mostly of small size. Wings variable in shape. Fore wing generally short and broad; cell broad, closed; veins 1–12 present, point of origin of vein 10 variable, from upper apex of cell or free. Hind wing in some of the Indian forms produced at the tornus, lobed, and in a few with a filamentous short tail as in many of the *Lycænidæ*. In some others dentate or tailed at apex of vein 4, the termen more or less emarginate above the produced portion; cell closed; veins 1 *a*–8 present, veins 6 and 7 very often

stalked, precostal nervure always present. Antennæ generally long, over half length of fore wing; club broad, abrupt, spatulate, or long and gradual, but always distinct and grooved or hollow on the ventral surface in the Indian forms; palpi short, generally porrect, with the third joint comparatively long in one genus, short or even minute in others; eyes hairy or naked. Fore legs of ♂ imperfect, brush-like, tarsus one-jointed, without claws; fore legs of ♀ functionally perfect but smaller than the intermediate and posterior pair.

The best known name *Erycinidæ*, Swainson, 1827, for this family cannot be used as Lamarck employed the same term in 1804, for a family of the Mollusca; nor is *Lemoniidæ*, Kirby 1871, admissible, as the type of Hübner's genus *Lemonias* is closely allied to *Melitæa*. Moore adopts Grote's name *Riodinidæ* for the family, but *Riodina* is American; and as the whole of the Indian forms are classed under the subfamily *Nemeobinæ*, Bates, and Grote in his paper separates the forms in this subfamily as *Nemeobidæ* from the *Riodinidæ*, I have adopted the former name for the family.

Key to the Genera of the Nemeobidæ.

A. Eyes hairy.
  a. Hind wing: tornus produced and lobed. . — Dodona, p. 479.
  b. Hind wing: tornus not produced or lobed.
    a'. Hind wing: termen angulate or produced at apex of vein 4 .. . — Abisara, p. 489.
    b'. Hind wing: termen not angulate or produced, rounded .. — Stiboges, p. 500.
B. Eyes naked.
  a. Hind wing: vein 3 from before lower apex of cell, 4 from apex . ... — Taxila, p. 495.
  b. Hind wing: veins 3 and 4 from lower apex of cell. .. — Zemeros, p. 498.

Genus **DODONA**.

Dodona, *Hewitson, Exot. Butt.* ii, 1861, *Erycinidæ, Sospita–Dodona*; *de N. Butt. Ind.* ii, 1886, p. 309; *Moore, Lep. Ind.* v, 1901–1903, p. 63.
Balonca, *Moore, Lep. Ind.* v, 1901–1903, p. 73.

Type, *D. durga*, Kollar, from the Western Himalayas.
Range. The hills of the Indo-Malayan Region.

♂ ♀ Fore wing broad, short, triangular; costa very slightly arched; apex subacute; termen slightly convex; tornus angulate; dorsum straight; cell comparatively broad, about half length of wing; veins 6 and 7 from upper apex of cell, therefore upper discocellular obsolete, middle and lower subequal, concave; vein 3 from a little before lower apex of cell, 4 from apex, 8 and 9 out of 7, 10 from upper apex of cell, 11 free, 12 very short, terminating opposite origin of 11. Hind wing: costa arched; apex broadly rounded; termen below apex straight to vein 4, then slightly

bent inwards and slightly concave to tornus; tornus produced and lobed, in some forms with a slender tail in addition; dorsum slightly arched, nearly straight; cell about half length of wing; discocellulars oblique; vein 3 from just before lower apex of cell, 4 from apex; costa at base angular. Antennæ over half length of fore wing; club short, broad, abrupt and flattened, long, narrow, gradual in a few forms; palpi porrect, third joint acute at apex; eyes hairy: fore leg of ♂ abbreviated, clothed with soft hairs; tarsus one-jointed; of ♀ scaled, functionally perfect.

Key to the forms of Dodona.

A. Hind wing: tornal lobe without a filamentous short tail.
  a. Upperside hind wing: outer half with three transverse series of spots; the outer two transversely linear, more or less continuous.
    a'. Upperside fore wing: discocellulars defined by a short yellow line . *D. durga*, p. 481.
    b'. Upperside fore wing: discocellulars not defined by a yellow line. .. .. *D. dipæa*, p. 482.
  b. Upperside hind wing: outer half with four somewhat obscure macular bands ... *D. dracon*, p. 483.

B. Hind wing: tornal lobe furnished with a short filamentous tail.
  a. Upperside markings more or less black or ochreous brown and yellow, if white then confined to the fore wing.
    a'. Upperside fore wing: discal transverse markings macular.
      a^2. These markings small, not or very obscurely continued on to the hind wing; ground-colour brown .. *D. eugenes*, p. 484.
      b^2. These markings large, continued as an unbroken broad band on the hind wing; ground-colour black, suffused with ochraceous at base.. *D. egeon*, p. 484.
    b' Upperside fore wing: discal transverse markings not macular, continuous, forming a band.
      a^2. Underside ground-colour ochraceous red, hind wing without distinct transverse bands; ♀ with a broad white discal band on fore wing ... *D. ouida*, p. 485.
      b^2. Underside ground-colour bright ochraceous yellow; hind wing with clearly defined jet-black transverse bands.... .. .. *D. adonira*, p. 486.
  b. Upperside markings black and white.
    a'. White transverse medial area on both fore and hind wings occupying only medial third or less of dorsal margin of fore wing.
      a^2. White transverse medial area extending from costal margin of fore wing to just above tornal area on hind wing *D. deodata*, p. 487.

b^2. White transverse medial area extending from subcostal vein of fore wing to vein 2 on hind wing .. .. *D. longicaudata*, p. 488.

b'. White transverse medial area on both fore and hind wings occupying more than medial half of dorsal margin of fore wing.

a^2. This white medial area not extending to tornal angle of fore wing .. *D. binghami*, p. 488.

b^2. This white medial area extending to tornal angle of fore wing . *D. angela*, p. 489.

460. **Dodona durga**, *Kollar* (Melitæa), *Hügel's Kaschmir*, iv, pt. 2, 1844, p. 441, pl. 13, figs. 3, 4; *de N. Butt. Ind.* ii, 1886, p. 310; *Moore, Lep. Ind.* v, 1901–1903, p. 64, pl. 395, figs. 1, 1*a*-1*c*, ♂ ♀

♂ *Upperside* vandyke-brown, spotted and marked with ochraceous and black as follows:—Fore wing: a transverse band crossing the middle of the cell, continued to vein 1; a similar band at apex of cell continued below as a round spot in interspace 2 and a transverse spot in interspace 1; a macular similar band beyond apex of cell; three upper discal spots in interspaces 3, 6 and 8, followed by a sinuous transverse inner subterminal series of small spots and an outer subterminal series of transversely linear spots. Hind wing: a small spot in interspace 7, two spots beyond apex of cell continued towards the tornus in a series of more obscure smaller spots, and an inner and an outer transversely linear series of spots, the inner and outer spots in interspaces 5 and 6 with an intervening prominent black spot, a similar black spot also in interspace 1 and another on the lobe of the tornus. *Underside*: veins on the basal halves of wings pale ochraceous white; ground-colour ochraceous brown, with pale ochraceous-white markings as follow:—Fore wing: a streak along basal half of costal margin, a patch at base of cell centred with a small triangle of the ground-colour, a broad oblique band across middle of cell continued below towards the dorsum, similar bands at apex and just beyond apex of cell, with a spot below them near base of interspace 2, a transverse discal series of spots in interspaces 1, 3, 6 and 8; a transverse uneven postdiscal series and a subterminal transverse linear row of spots, the last extending from interspaces 1 to 5; the lower spots of the postdiscal and subterminal series bright ochraceous, with some obscure blackish spots on the inner side of the former and at the tornus. Hind wing: a narrow streak along the dorsal margin, another across interspaces 1*a* and 1, with a forked similar streak along

Fig. 87.
Dodona durga, ♂. ½.

vein 1; none of these reaching the tornus; a patch at base of wing enclosing a large spot of the ground-colour; an oblique band from costa crossing the middle of the cell, an interrupted similar band crossing the apex of the cell, very slender along the discocellulars; two upper discal short streaks in échelon; subterminal black spots in interspaces 1 *a*, 1, 4 and 5, the former two bordered internally with ochraceous, the latter two encircled with white; a transverse line of white between the lower two and upper two black spots, and another short terminal similar line between vein 1 and vein 3; cilia of both wings white alternated with brown. Antennæ, head, thorax and abdomen brown; beneath, the palpi, thorax and abdomen whitish, the palpi tipped with black.—Female similar, larger; ground-colour slightly paler; markings whiter and broader.

Exp. ♂ ♀ 30–42 mm. (1·19–1·65″).

Hab. The Himalayas, Kashmir to Nepal.

461. **Dodona dipæa**, *Hewitson, Ex. Butt.* iii, 1866, Dodona, pl. 1, fig. 3 *de N. Butt. Ind.* ii, 1886, p. 311, pl. 24, fig. 116 ♂; *Moore, Lep. Ind.* v, 1901–1903, p. 66, pl. 395, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂ ♀ *Upperside* dark brown, with the following pale ochraceous markings:—Fore wing: a narrow band across middle of cell continued below in interspace 1, a slightly oblique, macular, short, narrow band beyond apex of cell with a transverse spot below in interspace 2; a transverse discal series of spots, two in interspace 1, one each in interspaces 3, 6 and 8, followed by a postdiscal transverse series of spots, of which the spots in interspaces 4 and 5 are shifted inwards out of line, and a very obscure subterminal row of transversely linear spots somewhat as in *D. durga*. Hind wing also with the markings somewhat as in *D. durga* but pale dull brown rather than ochraceous, the black spots at apex and on the lobe as in *D. durga*. *Underside* ochraceous brown. Fore wing: a spot at base of costal margin, basal, subbasal and discal oblique transverse bands, the last macular and interrupted in interspace 3, and a transverse subterminal sinuous series of spots. Between the discal and subterminal markings is a short subcostal transverse band and a transverse spot in interspace 3; succeeding the subterminal series of spots is an obscure pale line. All the markings are white, bordered on the inner side by dusky dark-brown shadings, their terminations along the costal margin silvery. Hind wing: an ochraceous-white streak along the dorsum not reaching the tornus, similar, very slender streaks along veins 1 *a* and 1, a slightly broader silvery subbasal streak from costa across middle of cell, a similar streak beyond at apex of cell very slender almost interrupted along the discocellulars, a short upper discal similar streak between veins 3 and 6, followed by a slender zigzag black line margined with white from above the tornal lobe to vein 3; two black subapical white-margined spots, a large black

reniform spot on the lobe and a subterminal dark reddish-brown band with pale outer and inner margins. Antennæ, head, thorax and abdomen dark brown; beneath, the antennæ annulated with white, the palpi, thorax and abdomen dark grey.

Exp. ♂ ♀ 43–52 mm. (1·7–2·07″).

Hab. The Himalayas from Kulu to Sikhim; Bhutan; Assam, the Nága Hills.

462. **Dodona dracon**, *de Nicéville, J. A. S. B.* 1897, p. 555, pl. 2, fig. 14 ♂; *Moore, Lep. Ind.* v, 1901–1903, p. 67, pl. 395, fig. 3 ♂.

" ♂ *Upperside.* Both wings glossy hair-brown. Fore wing bears on the disc numerous pale ferruginous spots, those towards the costa being whitish. Hind wing bears on the outer half four somewhat obscure pale ferruginous bands; anal lobe is black, bisected longitudinally by an ochreous line, which line is continued along the submedian nervure almost to the base of the wing. *Underside.* Both wings clear brownish-ochreous, with pure white markings; two subcostal decreasing white bands commencing broadly on the fore wing at the costa, ending on the submedian nervure (vein 1), commencing again on the hind wing at the costa, near the anal angle approaching each other and becoming very narrow, recurved to the abdominal margin. Fore wing with two short parallel white lines at the end of the discoidal cell; placed anteriorly midway between these two lines is a trifid white spot which reaches the costa, and posteriorly are two other spots also placed midway between the cell-lines, the anterior one in the first median interspace, the posterior one placed a little outwardly as regards the spot anterior to it in the submedian interspace; beyond these two last-named spots are three other spots, the uppermost is white and is in the second median interspace, the other two are black and placed posterior to it; a trifid subapical spot from the costa to the upper discoidal nervule, a submarginal series of small white spots, and a fine white marginal line. Hind wing with a short narrow white line on the middle of the disc from the second subcostal to the second median nervule; two fine submarginal white lines; the anal lobe black, bisected as above by an ochreous line, the lobe anteriorly defined by a white line, anterior to this again is a fine black zigzag line extending from the abdominal margin to the second median nervule; the abdominal margin bears three fine parallel white lines, the innermost on the extreme margin. Cilia whitish. Thorax and abdomen above black, beneath whitish; antennæ black.

" *Exp.* ♂ 1·5 inch " (38 mm.).

" *Hab.* North Shan States." (*de Nicéville.*)

Unknown to me. " Described from a single example."

463. **Dodona eugenes**, *Bates, Jour. Linn. Soc., Zool.* ix, 1867, p. 371; *de N. Butt. Ind.* ii, 1886, p. 315; *Mackinnon, Jour. Bomb. N. H. Soc.* xi, 1898, p. 378, pl. 8, fig. 12 *a–d*, larva & pupa; *Moore, Lep. Ind.* v, 1901–1903, p. 68, pl. 396, figs. 1, 1 *a*–1 *d*, ♂ ♀, larva & pupa.

♂ *Upperside*: closely resembles *D. dipœa* in the ground-colour and markings, but on the hind wing the markings are broader and more diffuse, and the lobe has a short filamentous black white-edged tail. *Underside* a brighter brown than in *D. dipœa*; the markings very similar, but twice as broad.

Exp. ♂ ♀ 38–49 mm. (1·5–1·93″).

Hab. The Himalayas from Murree to Bhutan; Assam, the Khási and Jaintea Hills.

Larva. More or less onisciform, "pale emerald-green with two dorsal blue lines," somewhat sparingly covered with short hairs. "Feeds on grasses and hill-bamboo."

Pupa pale green, with cross check of darker green lines. Head bifid, flat in front and angulated below.

464. **Dodona egeon**, *Doubleday* (Taxila), *in Dblday., Westw. & Hew. Gen. Di. Lep.* ii, 1851, p. 422, pl. 69, fig. 2; *de N. Butt. Ind.* ii, 1886, p. 314; *Moore, Lep. Ind.* v, 1901–1903, p. 69, pl. 396, figs. 2, 2 *a*–2 *c*, ♂ ♀.

♂ *Upperside*. Fore wing black, the basal area to the middle of the cell dark ochraceous red; a short, broad, oblique yellow subbasal band from subcostal vein to vein 1; discal yellow spots beyond in interspaces 1, 2, 4 and 5, the upper two and lower two spots respectively separated by the veins only, the latter two spots joined to the subbasal band by an elongate reddish-yellow spot in interspace 1 *a*; a postdiscal series of a yellow crescentic mark surmounted by a yellow spot in interspaces 2 and 3, and three upper postdiscal whitish smaller spots in interspaces 4, 5, 6 shifted somewhat further towards the termen; lastly, two preapical white dots. Hind wing ochraceous yellow, the dorsal margin broadly shaded with brown, a medial straight fascia and an upper shorter discal fascia dark brown; a postdiscal macular, subterminal and terminal more continuous dark brown bands, all three coalescing at the apex; tornal lobe and slender tail black. *Underside* chestnut-red, with the following more or less silvery markings:—Fore wing: a short streak at base of costal margin, transverse basal, medial and discal broad bands, a postdiscal irregular series of transverse spots and a very slender and delicate transverse series of short subterminal lines; between the discal and postdiscal markings there are two silvery subcostal and a transverse similar spot in interspace 3; the other markings are silvery anteriorly, ochraceous posteriorly. Hind wing: a short transverse silvery streak at base, a narrow similar streak along vein 1 not reaching the tornus, a silvery streak along the dorsal margin turning upwards and joining an interrupted discal silvery transverse fascia from the costa, a broader straight transverse medial fascia between

the discal fascia and base of wing, a very broad elongate triangular upper postdiscal silvery patch, followed by a series of transverse slender black markings terminating at the apex in two black spots set in a quadrate silvery patch; lobe and slender tail jet-black, margined on the inner side by a white line and surmounted by a grey tornal patch. Antennæ, head, thorax and abdomen blackish brown; beneath, palpi, thorax and abdomen greyish white.— ♀. *Upperside* brownish black, much paler than in the ♂; markings similar but very much larger and paler, especially the upper postdiscal spots on the fore wing. *Underside* similar to that of the ♂; ground-colour paler, silvery markings much broader.

Exp. ♂ ♀ 44–50 mm. (1·75–1·99″).

Hab. The Himalayas, Kashmir to Bhutan; Assam, Khási and Nága Hills.

465. **Dodona ouida**, *Moore, P. Z. S.* 1865, p. 771; *de N. Butt. Ind.* ii, 1886, p. 311; *Moore, Lep. Ind.* v, 1901–1903, p. 70, pl. 397, figs. 1, 1 *a*–1 *c*, ♂ ♀

♂ *Upperside* ochraceous brown. Fore wing with a yellow oblique band from subcostal vein crossing cell to vein 1, followed by a broader similar dark brown band, then a yellow oblique band, broadest in the middle, extending from costal margin to above tornus; a dark brown oblique band broadest anteriorly from costal margin to tornus; an erect, somewhat irregular, subterminal yellow band; and the apex and termen dark brown, the apex with two minute white dots. Hind wing: postdiscal and inner and outer subterminal obscure incomplete yellow bands, all three bordered on the inner side with blackish brown; the outer subterminal band with two superposed black spots near apex; tornal lobe dark chestnut-red, margined on the inner and outer sides by short slender white lines. *Underside* dark ochraceous red, the yellow bands as on the upperside, but not clearly defined, the inmost band more or less whitish, the medial band terminating in a comparatively large white spot on the costa, the subterminal band very obscure, terminating in two white spots on the costa, the minute white preapical spots as on the upperside. Hind wing: ground-colour darker than on the fore wing: obscure subbasal, discal, inner and outer subterminal pale purplish macular fasciæ; the subbasal and discal fasciæ angulated upwards on vein 1 towards the dorsum, the subterminal two fasciæ terminating on the margin of a grey tornal patch placed above the lobe; this last black with white linear margins on inner and outer sides; the subbasal fascia terminating on the costal margin in a white spot, the discal fascia in a black spot outwardly margined by a prominent white dot; the subapical two spots encircled with white. Antennæ, head, thorax and abdomen ochraceous brown; beneath, the palpi, thorax and legs bright ochraceous red; abdomen whitish. — ♀ *Upperside* brown, the apical half of the fore wing of a darker shade than the basal half. Fore wing with a broad oblique white

band from middle of costa to near the tornus; a subterminal pale lunular line bent inwards towards the costa and terminating in two white spots, and two subapical white dots. Hind wing: an obscure pale sinuous short discal fascia, a subterminal similarly pale broad band traversed by a narrow dark brown band terminating in two subapical black spots, and a terminal very slender dark line; tornal lobe rusty red, margined slenderly on inner and outer sides by white. *Underside*: ground-colour similar to that of the ♂ but more brown. Fore wing: the white oblique band and preapical dots as on the upperside, very obscure subbasal and subterminal transverse fasciæ, the latter terminating on the costal margin in two white spots as in the ♂ Hind wing with the obscure pale purplish fasciæ and other markings as in the ♂ Antennæ dark ochraceous, club black tipped with ochraceous; head, thorax and abdomen brown; beneath, the palpi, thorax and abdomen as in the ♂

Exp. ♂ ♀ 46-48 mm. (1·8–1·9″).

Hab. The Himalayas from Mussoorie to Bhutan; the hills of Assam, Upper Burma and Western China.

466. **Dodona adonira**, *Hewitson, Ex. Butt.* iii, 1866, Dodona, pl. 1, figs. 1, 2, ♂; *de N. Butt. Ind.* ii, 1886, p. 312; *Moore, Lep. Ind.* v, 1901–1903, p. 72, pl. 397, figs. 2, 2*a*–2*c*, ♂ ♀

♂ ♀. *Upperside* dark brownish black. Fore wing with the base suffused slightly with ochraceous; subbasal, discal and postdiscal transverse orange bands, the subbasal straight, the other two slightly curved, sinuous and somewhat macular, the subbasal and discal bands joined posteriorly in interspace 1 *a*: ♀ with or without three or four transversely-placed upper subterminal orange-yellow spots. Hind wing: a pale yellow fascia parallel to the dorsal margin; oblique subbasal, discal, postdiscal and inner and outer subterminal orange-yellow fasciæ, all, except the postdiscal, converging from the costa and meeting above the tornal lobe; the postdiscal fascia broad at costal margin, narrowing to a point and terminating on vein 3; bilobed, the lobes margined outwardly by a very slender continuous white line, beyond which the cilia are black; the rest of the cilia on both fore and hind wings ochraceous white in ♀, black in ♂ *Underside* ochraceous, suffused with a darker ochraceous on the tornal area of the hind wing. Fore and hind wings transversely crossed by the following jet-black narrow bands:—fore wing with basal, subbasal, inner and outer discal, postdiscal, subterminal and terminal bands; the inner discal band terminating on vein 1, the outer discal on vein 3; the postdiscal interrupted posteriorly on vein 2; the postdiscal and subterminal widened on the costa. Hind wing with a band along vein 1; basal and subbasal bands in continuation of those on the fore wing, the latter turning upwards above tornus and continued to the base of the wing parallel to the dorsal margin; a discal band from costa to vein 3, a very slender postdiscal band from costa to

dorsum, and closely approximate subterminal and terminal bands; the postdiscal slender band or line twice interrupted across the tornal area; lobes black, narrowly edged with white on the outer side. Antennæ dark brown annulated with white; head, thorax and abdomen dark brown; beneath, palpi, thorax and abdomen ochraceous white.

Exp. ♂ ♀ 43–47 mm. (1·7–1·85″).

Hab. Nepal; Sikhim over 5000 ft.; Assam, the Khási and Nága Hills; Upper Burma.

467. **Dodona deodata**, *Hewitson, Ent. Month. Mag.* xiii, 1876, p. 151; *de N. Butt. Ind.* ii, 1886, p. 312; *Elwes, P. Z. S.* 1891, p. 288, pl. 27, fig. 8; *Moore* (Balonca), *Lep. Ind.* v, 1901–1903, p. 74, pl. 398, figs. 1, 1 *a*, ♂

♂ ♀ *Upperside*: basal third of both fore and hind wings fuliginous black, followed by a very broad white discal band, that is broadest in the middle and extends from the costa of fore to just above the tornal area of the hind wing; on the latter wing it tapers posteriorly to a point with both inner and outer margins straight; on the fore wing it broadens from costa to dorsum and has its inner margin straight, its outer margin curved outwards. Beyond this white medial area both wings are black from apex broadly along the termen; the fore wing with a curved row of white spots and some preapical white dots; the hind wing with an inner and an outer narrower subterminal series of short white transverse lines in the interspaces; tornal lobe and filamentous tail of hind wing fuliginous black, slenderly margined with white; dorsum broadly sullied white, with two fuliginous black stripes parallel to the margin and some curved black marks above the tornal lobe. *Underside* white, with the following chestnut-red transverse bands and markings: a basal and subbasal even band from costa of fore to just above tornal area of hind wing, there angulated and continued upwards along the dorsal margin to the base of the wing; an inner and an outer postdiscal similar band, coalescing below vein 4 on the fore wing and continued as a single band to just above the tornal area of the hind wing; the upper portion of this band on the hind wing and the lower portion of it on the fore wing traversed medially by very slender white broken lines; posteriorly on the hind wing this band has two yellow spots below it, with two black spots on its outer margin; finally, a similar chestnut-red terminal band medially traversed on the fore wing by a broken white line, irregular and incomplete on the hind wing; this band at the apex of the fore wing is widened inwardly and bears two round white spots; lobe of hind wing and filamentous tail black, with some bluish marks above on the tornal area. Antennæ dark brown; head, thorax and abdomen dark greyish brown; beneath, the palpi, thorax and abdomen white.

Exp. ♂ ♀ 48–52 mm. (1·9–2·03″).

Hab. Recorded only so far from Lower Burma.

Of the three forms next described, one, *D. longicaudata*, may be a local race of *D. deodata*; the other two, possibly distinct, more probably dry-season forms of *D. deodata*, but so few specimens are available for examination that I have described the forms separately.

468. **Dodona longicaudata**, *de Nicéville*, *Proc. A. S. B.* 1881, p. 121; *id. Butt. Ind.* ii, 1886, p. 313, pl. 24, fig. 117 ♂; *Moore* (Balonca), *Lep. Ind.* v, 1901–1903, p. 75, pl. 398, figs. 2, 2 *a*, ♂.

♂ Closely resembles *D. deodata*. Differs as follows:—*Upperside*: the medial white transverse band crossing fore and hind wings not one-half the width it is in *D. deodata*, and shorter, extending from the subcostal vein (not the costal margin) of the fore wing to vein 3 on the hind wing; other white spots and markings more or less obsolescent, especially on the hind wing; on the fore wing the curved row of white spots on the black apical area much as in *D. deodata*, but the spot in interspace 3 small and a second larger spot nearer the base; hind wing: the filamentous tail on the upperside of the lobe distinctly longer. *Underside*: the white ground-colour more restricted, the chestnut-red bands broader. On the fore wing the terminal half beyond the discal band chestnut-red, traversed by an inner broken postdiscal series of more or less transversely white linear markings, an outer transverse series of large white spots, and a subterminal series of white markings as in *D. deodata*. On the hind wing the postdiscal, subterminal and terminal bands are coalescent, traversed by transverse broken white lines. Antennæ, head, thorax and abdomen as in *D. deodata*.— ♀ unknown.

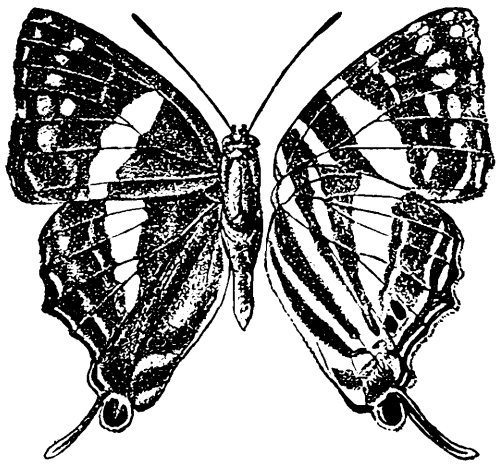

Fig. 88.
Dodona longicaudata, ♂. ½.

Exp. ♂ 50 mm. (nearly 2″).

Hab. Recorded only from the Khási Hills in Assam. I have two males of this form kindly given me by Col. E. R. Johnson, I.M.S. Mr. Moore records a specimen in Mr. Godman's collection. The types are in the Indian Museum at Calcutta.

469. **Dodona binghami**, *Moore* (Balonca), *Lep. Ind.* v, 1901–1903, p. 75, pl. 398, fig. 4 ♂.

♂. Resembles *D. deodata*. Differs as follows:—*Upperside*: basal fuliginous-black area reduced to two broad bands, with a third band parallel to the dorsal margin of the hind wing; terminal black area on the fore wing much restricted, bearing a

curved transverse white line in interspaces 1 *a* and 1, a small white spot in interspace 2, a larger white spot in interspace 3, a short white transverse band from costa to base of interspace 4, and a preapical white dot; terminal black area on the hind wing traversed by a broad uneven white band and an outer subterminal slender line. *Underside* very similar to that in *D. deodata*, the chestnut-red band very much narrower and paler. Antennæ, head, thorax and abdomen as in *D. deodata*.

Exp. ♂ 45 mm. (1·78″).

Hab. Burma.

470. **Dodona angela**, *Grose-Smith, Rhop. Ex.* iii, 1901, p. 9, pl. Dicallaneura 2, fig. 10; *Moore* (Balonca), *Lep. Ind.* v, 1901–1903, p. 76, pl. 398, figs. 3, 3 *a*–3 *c*, ♂ ♀.

♂ ♀ Closely resembles *D. deodata*, and still more closely *D. binghami*. *Upperside* black, much more restricted on the fore wing, confined to a broad posteriorly narrowing terminal edging, connected along the costa to a postdiscal broad Y-shaped black mark extending from costa to vein 2, its lower portion faintly fuliginous in ♂, somewhat blacker in the ♀; the basal fuliginous transverse bands narrow and very faintly marked; on the hind wing the black colour forms irregular postdiscal and terminal transverse bands with a very broad intervening band of white. *Underside*: ground-colour white, markings as on the upperside but more clearly defined and chestnut-brown in colour; the markings on the lobe and tornal area similar to but smaller than those in *D. deodata*. Antennæ, head, thorax and abdomen as in *D. deodata*.

Exp. ♂ ♀ 46–51 mm. (1·8-2″).

Hab. Recorded only, so far, from the hills north of Taungoo in Lower Burma.

Genus **ABISARA**.

Abisara, *Felder, Wien. ent. Monats.* iv, 1860, p. 397; *Moore, Lep. Ceyl.* i, 1881, p. 68; *de N. Butt. Ind.* ii, 1886, p. 319; *Moore, Lep. Ind.* v, 1901–1903, p. 82.

Sospita, *Hewitson, Ex. Butt.* ii, 1861, Erycinidæ.

Type, *A. echerius*, Stoll, from China.

Range. Ethiopian and Indo-Malayan Regions.

♂ ♀ Fore wing broadly triangular; costa slightly arched; apex obtuse; termen more or less convex; tornus somewhat rounded; dorsum straight; cell short, not half length of wing, slenderly closed; veins 6 and 7 closely approximate from upper apex of cell, upper discocellular therefore obsolete, middle and lower subequal, concave; vein 3 from before lower apex of cell, 4 from apex, 10 and 11 free. Hind wing variable in shape, angulate, broadly produced or narrowly tailed at apex of vein 4; in the latter two cases the portion of the termen just above vein 4 concave or emarginate; costa very slightly arched, nearly straight; apex broadly rounded; termen slightly scalloped; tornus rounded; dorsum nearly straight; cell short, slenderly closed; vein 3 from

before lower apex of cell, 4 from apex, 6 and 7 stalked. Antennæ slender, slightly over half length of fore wing; club fusiform, narrow; palpi very short, porrect, third joint short; eyes hairy.

Key to the forms of Abisara.

a. Hind wing terminal margin not concave or emarginate above vein 4.	*A. fylla*, p. 490.
b. Hind wing terminal margin concave or emarginate above vein 4.	
a' Upperside: ground-colour dull hair-brown.	
a^2. Fore wing: discal oblique white fascia distinctly narrowing posteriorly, extended to vein 1	*A. neophron*, p. 491.
b^2. Fore wing: discal oblique white fascia not or very slightly narrowed posteriorly, not extended to vein 1..	*A. chela*, p. 492.
b' Upperside: ground-colour purplish or maroon-brown.	
a^2. Upperside fore wing without any white markings, or if present restricted to anterior portion of discal fascia	*A. echerius*, p. 492.
b^2. Upperside fore wing with more or less conspicuous white markings.	
a^3. Upperside fore wing with a preapical diffuse white patch	Race *kausambi*, p. 494.
b^3. Upperside fore wing with discal and postdiscal fasciæ white anteriorly.	Race *bifasciata*, p. 494.

471. **Abisara fylla**, *Doubleday* (Taxila), *List Lep. Brit. Mus.* pt. 2, 1847, p. 2; *de N. Butt. Ind.* ii, 1886, p. 321; *Moore* (Sospita), *Lep. Ind.* v, 1901–1903, p. 78, pl. 399, figs. 1, 1 *a*–1 *c*, ♂ ♀.

♂ *Upperside* rich dark brown. Fore wing with a cream-coloured even band from middle of costa to tornus, bent slightly inwards at each end; a subterminal transverse, very obscure, pale fascia ending anteriorly in a white dot and two subapical white dots. Hind wing: postdiscal and subterminal very obscure pale transverse fasciæ; the latter with a superposed series of seven oval black spots, each with a white dot on the outer margin and inwardly pale-edged; the preapical two and posterior two of these spots only clearly defined, the others obsolescent, the preapical two the larger. *Underside* duller brown; the markings as on the upperside; the hind wing with indications of a subbasal pale fascia in addition to the others. Antennæ, head, thorax and abdomen dark brown; beneath, the palpi, thorax and abdomen paler; antennæ with a white dot at apex.— ♀. Similar; the termen of the hind wing more distinctly but very broadly

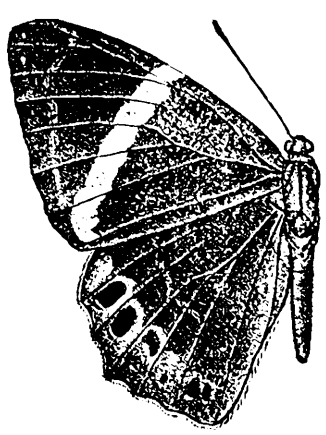

Fig. 89.
Abisara fylla, ♂. ½.

angulated outwards in the middle. *Upperside*: the ground-colour paler duller brown, the oblique band on the fore wing pure white, not cream-coloured; six (not seven) black spots in the subterminal series on the hind wing, the spots larger and more clearly defined than in the ♂ *Underside*: ground-colour paler than on the upperside: markings similar; no trace of a subbasal band on the hind wing, the middle two spots of the subterminal series more or less obsolescent. Antennæ, head, thorax and abdomen concolorous with the ground-colour of the wings, a white spot at apex of the antennæ; beneath, the palpi, thorax and abdomen paler, marked with white.

Exp. ♂ ♀ 52–62 mm. (2·07–2·43″).

Hab. The Himalayas, Mussoorie to Sikhim; the hills of Assam; Burma and Tenasserim.

472. **Abisara neophron**, *Hewitson* (Sospita), *Ex. Butt.* ii, 1861, Sospita, pl. 1, fig. 3; *de N. Butt. Ind.* ii, 1886, p. 321; *Moore* (Sospita), *Lep. Ind.* v, 1901–1903, p. 79, pl. 400, figs. 1, 1 *a*–1 *d*, ♂ ♀

♂ ♀ Termen of hind wing with a long tail at apex of vein 4, the portion above it prominently emarginate. *Upperside* brown varying in tint, but generally paler in the ♀ than in the ♂ Fore wing with a comparatively broad oblique white band from middle of costa to near apex of vein 1 above the tornal angle, narrowed posteriorly; beyond this an ill-defined narrow, somewhat more erect, pale dusky-white fascia from costa to dorsal margin, curving slightly round the tornal termination of the inner broader band; an inner and an outer slender abbreviated subterminal line extending in the ♀ from vein 1 to vein 4, shorter in the ♂ Hind wing: a postdiscal sinuous, ill-defined, broad transverse fascia, paler than the ground-colour, bordered on the inner and outer sides by very obscure lunular dull whitish lines, followed by two slender pure white subterminal broken lines that in interspaces 4 and 5 are bordered inwardly by large jet-black spots; these spots divided by a conspicuous ferruginous line along vein 5; the cilia and apex of tail, and in some specimens the apex of wing and the costal margin, narrowly snow-white. *Underside* similar, with similar markings, but the ground-colour much paler, especially on the basal halves of the wings, the markings more clearly defined and broader; on the hind wing the white lines bordering the postdiscal broad fascia have a purplish tinge, and in interspace 1 there are two inner obscure subterminal triangular black spots. Antennæ brown, ringed with white; head, thorax and abdomen pale brown; beneath, the palpi, thorax and abdomen more or less whitish.

Fig. 90.
Abisara neophron, ♂ ♀.

Exp. ♂ ♀ 50–58 mm. (1·97–2·29″).

Hab. Nepal; Sikhim; Bhutan; the Hills of Assam, Burma and Tenasserim; extending to the Malay Peninsula.

The next form so closely resembles *neophron* as to be easily confounded with it. It is found over the same ground, but has so far been recorded from a more restricted area.

473. **Abisara chela,** *de Nicéville, J. A. S. B.* 1886, p. 252, pl. 11, fig. 7 ♂; *id. Butt. Ind.* ii, 1886, p. 322; *Moore* (Sospita), *Lep. Ind.* v, 1901-1903, p. 80, pl. 399, figs. 2, 2 *a*–2 *c*, ♂ ♀

♂ ♀ Closely resembles *A. neophron*, but is smaller in both sexes and differs as follows:—*Upperside*: fore wing, discal white band comparatively broader and shorter, not extending to vein 1, of more even width, not so conspicuously narrowed posteriorly; postdiscal white fascia more clearly defined and ending anteriorly in a prominent subcostal white spot. Hind wing differs in the subterminal broken white lines being bordered inwardly in interspaces 1 to 3 by much darker brown spots than in *A. neophron*; the conspicuous oval black spots near apices of interspaces 5 and 6 much as in *A. neophron*, but the outer of the two subterminal short lines beyond them ochraceous, not white; tail at apex of vein 4 as in *A. neophron*, but proportionately shorter. *Underside* as in *A. neophron*, but the postdiscal fascia on the fore wing comparatively broader and more clearly defined; the postdiscal area broadly lilacine.

Exp. ♂ ♀ 44–47 mm. (1·73–1·85″).

Hab. Sikhim; the hills of Assam.

474. **Abisara echerius,** *Stoll* (Papilio), *Cramer, Pap. Exot.* v, 1790, pl. 31, figs. 1, 1 *a*, 1 *b*.

Abisara angulata, *Moore, P. Z. S.* 1878, p. 833; *de N. Butt. Ind.* ii, 1886, p. 323; *Moore, Lep. Ind.* v, 1901–1903, p. 84, pl. 401, figs. 2, 2 *a*–2 *e*, ♂ ♀.

Abisara prunosa, *Moore, P. Z. S.* 1879, p. 137; *id. Lep. Ceyl.* i, 1881, p. 69, pl. 33, figs. 3, 3 *a*, 3 *b*, ♂ ♀; *de N. Butt. Ind.* ii, 1886, p. 325; *Moore, Lep. Ind.* v, 1901–1903, p. 85, pl. 402, figs. 1, 1 *a*–1 *h*, larva & pupa, ♂ ♀

Abisara suffusa, *Moore, P. Z. S.* 1882, p. 244; *de N. Butt. Ind.* ii, 1886, p. 325.

Abisara abnormis, *Moore, P. Z. S.* 1883, p. 532, pl. 49, fig. 3 ♂; *de N. Butt. Ind.* ii, 1886, p. 324; *Moore, Lep. Ind.* v, 1901–1903, p. 89, pl. 403, figs. 2, 2 *a*–2 *f*, ♂ ♀.

Abisara fraterna, *Moore, P. Z. S.* 1883, p. 532; *de N. Butt. Ind.* ii, 1886, p. 325; *Davidson & Aitken, Jour. Bomb. N. H. Soc.* v, 1890, p. 352.

Race kausambi.

Abisara kausambi, *Felder, Wien. ent. Monats.* iv, 1860, p. 397; *Distant, Rhop. Malay.* 1883, p. 189, pl. 18, fig. 11 ♀; *de N. Butt. Ind.* ii, 1886, p. 323, footnote; *Moore, Lep. Ind.* v, 1901–1903, p. 83, pl. 401, figs. 1, 1 *a*–1 *c*, ♂ ♀.

Race bifasciata.

Abisara bifasciata, *Moore, P. Z. S.* 1877, p. 587, pl. 58, fig. 1 ♀;

de N. Butt. Ind. ii. 1886, p. 323, pl. 24, fig. 118 ♂ ; *Moore, Lep. Ind.* v, 1901–1903, p. 88, pl. 403, figs. 1, 1 *a*–1 *c*, ♂ ♀.

A very variable form. Termen of hind wing more or less broadly angulate or produced at apex of interspace 3, but not narrow or tailed as in *A. neophron*. *Wet-season form.*— ♂ *Upperside* rich purple-brown or maroon-brown with a blue gloss. Fore wing with discal and postdiscal transverse fasciæ very obscure and only slightly paler than the ground-colour. Hind wing uniform ; two inwardly conical small black spots near apex of interspace 1, and single similar but larger black spots near apices of interspaces 5 and 6 ; all these spots bordered slenderly and somewhat obscurely on the outer side with white. *Underside* dull maroon-brown. Fore wing with a broad, slightly curved discal, narrower postdiscal and subterminal transverse pale fasciæ ; the discal fascia broadening anteriorly. Hind wing : a slightly curved narrow discal pale fascia ; the black spots as on the upperside, but bordered on the inner and on the outer sides by an obscure pale lunular line. Antennæ black with scattered pale specks ; head, thorax and abdomen maroon-brown ; beneath, the palpi, thorax and abdomen paler brown.— ♀ *Upperside* hazel-brown, the terminal halves of the wings paler. Fore wing : discal and postdiscal broad, obscure, pale transverse fasciæ, followed by similarly obscure, somewhat broken, inner and outer subterminal pale transverse lines. Hind wing with a transverse series of obscure postdiscal pale lunular spots ; the black white-margined spots as in the ♂ but smaller, the anterior two superposed on the pale spots ; terminal margin below vein 4 with inner and outer, and above vein 4 with single subterminal transversely linear markings. *Underside* : ground-colour similar but paler on the basal, very much paler on the terminal halves of the wings ; the markings as on the upperside, but the fasciæ on the fore and hind wings broader, more diffuse ; the black subterminal spots in interspaces 1, 5 and 6 of the hind wing smaller. Antennæ, head, thorax and abdomen as in the ♂ but paler.

Dry-season form.— ♂ *Upperside* dull maroon-brown not glossed with purple ; the transverse fasciæ on the fore and the black markings on the hind wing much as in the wet-season form, but the former more obscure, more diffuse, the latter smaller. *Underside* as in the wet-season form but paler.— ♀ *Upper* and *under sides* similar to those of the wet-season form but conspicuously paler, the contrast between the dark basal and pale terminal halves more prominent, the discal fascia on the underside of the fore wing very broad, diffuse and pale, often nearly white. Antennæ, head, thorax and abdomen in both sexes as in the wet-season form but paler.

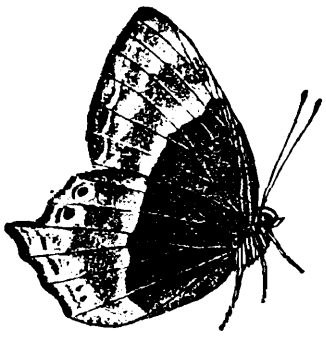

Fig. 91.
Abisara echerius, ♂. ½.
Dry-season form.

Exp. ♂ ♀ 41–52 mm. (1·62–2·03″).

Hab. The Himalayas, Chumba to Kumaon, Nepal and Bhutan; Umballa; Fyzabad; Malda; Calcutta; Ganjam; Southern India from below Poona and Bombay; Ceylon; Burma; Tenasserim; China.

Larva. "Flat, very broad in the middle, tapering to both ends, clothed sparsely with short hairs; head small, not enclosed in the 2nd segment; colour light green." (*Davidson & Aitken.*)

Pupa. "Also clothed with hairs, and altogether so like the larva that it is difficult to note exactly when the change takes place. It is closely attached to a leaf by the tail and a girdle." (*Davidson & Aitken.*)

Var. *angulata*, Moore, and var. *abnormis*, Moore, have been described from Burma and Tenasserim. Typically, these differ slightly from *echerius* as follows:—Upperside with no purple gloss; the discal and postdiscal transverse bands more clearly defined, the former sometimes white anteriorly on the upperside, generally white or whitish on the underside and extending across both fore and hind wings; underside of hind wing with an extra subterminal black spot. The white markings and the extra black spot are variable characters, and specimens intermediate between typical *echerius* and typical *angulata* or *abnormis* are not uncommon.

Race **kausambi**, Felder.—♂. *Upperside*: differs from *echerius* Stoll (=*prunosa*, Moore) as follows:—Ground-colour dark maroon-brown, without any purple gloss; fore wing, the discal and postdiscal transverse pale bands merging anteriorly into a large diffuse preapical pale or whitish patch; hind wing very dark, the black subterminal spots as in *echerius* but smaller, less prominent. *Underside*: ground-colour similar to that on the upperside, markings more clearly defined; the discal and postdiscal transverse bands on the fore wing dull white, diffuse and merging into a preapical white patch anteriorly as on the upperside, inner and outer subterminal incomplete white lines from tornal angle to vein 6. Hind wing: a discal angulated white diffuse line, followed by a subterminal series of seven spots narrowly encircled with white, the spots in interspaces 3 and 4 of the same tint as the ground-colour, the rest black. Antennæ maroon-brown spotted with white; head, thorax and abdomen maroon-brown; beneath somewhat paler.—♀ Similar to the ♂, but the ground-colour brighter and paler, the markings similar but very much broader both on the upper and under sides.

Exp. ♂ ♀ 46–51 mm. (1·72–2·01″).

Hab. Within our limits, recorded from Mergui; spread over the Malay Peninsula, Sumatra and Borneo.

Race **bifasciata**, Moore.—Differs from *echerius* as follows:—♂ *Upperside* uniform dark maroon-brown, not so dark as in the wet-season forms of *echerius*, the transverse pale bands on both wings broad and diffuse. *Underside*: ground-colour and markings

as on the upperside, the latter more clearly defined; the transverse pale bands on both wings very broad and slightly sinuous.—♀. *Upperside*: ground-colour paler than in the ♂ Fore wing: a broad discal outwardly angulated fascia, anteriorly white, posteriorly shaded with maroon; its inner margin anteriorly oblique and sharply defined, posteriorly sinuous, diffuse; a postdiscal similar but straighter and narrower fascia; followed by less clearly defined inner and outer subterminal whitish lines; the anterior portions of the discal and postdiscal bands, more or less coalescing along the veins, form a conspicuous white patch. Hind wing as in the ♂, but the transverse pale bands more clearly defined. *Underside* similar to the upperside, but all the markings broader and more clearly defined. Antennæ, head, thorax and abdomen in both sexes as in *echerius*.

Exp. ♂ ♀ 52–56 mm. (2·04–2·2″).

Hab. The Andamans.

Genus **TAXILA**.

Taxila, *Doubleday, List Lep. Brit. Mus.* pt. 2, 1847, p. 2; *de N. Butt. Ind.* ii, 1886, p. 316; *Moore, Lep. Ind.* v, 1901–1903, p. 90.

Type, *T. haquinus*, Fabr., from the Malayan Subregion.

Range. Indo-Malayan Region.

♂ ♀ Fore wing broadly triangular; costa arched, apex blunt; termen straight in ♂, somewhat convex in ♀; dorsum straight; cell closed; veins 6 and 7 very closely approximate, upper discocellular therefore obsolete, middle and lower subequal, concave; vein 3 from before lower apex of cell, 4 from apex; 10 and 11 free, the latter often anastomosed with apex of 12. Hind wing pear-shaped; costa slightly arched; termen strongly curved, margin in ♂ almost even, in ♀ scalloped, angulate, dentate or produced at apex of vein 4; apex and tornus rounded, dorsum curved; cell closed very short, barely one-third the length of the wing; vein 3 from before lower apex of cell, 4 from apex, 6 and 7 variable, sometimes stalked. Antennæ long, over half length of fore wing; club gradual, fusiform; palpi very short, somewhat compressed, third joint very minute; eyes naked.

Key to the forms of Taxila.

a. Underside: hind wing with two prominent subapical spots as in *Abisara* ..	*T. burnii*, p. 495.
b. Underside: hind wing without such spots.	
a'. Underside: fore wing with a prominent plumbeous streak obliquely across cell..	*T. thuisto*, p. 497.
b' Underside: fore wing without such streak	*T. haquinus*, race *fasciata*, p. 497.

475. **Taxila burnii**, *de Nicéville, Jour. Bomb. N. H. Soc.* ix, 1895, p. 266, pl. N, fig. 9 ♀; *Moore, Lep. Ind.* v, 1901–1903, p. 93, pl. 404, figs. 2, 2 *a*, ♀

"♀ *Upperside*: both wings light ferruginous, with all the

markings of the underside showing through, more or less by transparency. Fore wing with an outer discal or submarginal series of diffused or irrorated rounded whitish spots arranged in a slightly outwardly curved line across the wing from the costa to the first median nervule, more prominent anteriorly, obsolete posteriorly; a similar marginal linear series, each spot on both sides (?) outwardly defined with black. Hind wing with the marginal series of spots as in the fore wing, but the two anterior-most spots divided by the discoidal nervule larger than the others. *Underside*: both wings a little paler than above, rather more ochreous in shade. Fore wing with the inner margin as far as the submedian nervure whitish; the discocellular nervules narrowly defined by a dark ferruginous line; an inner discal macular white fascia, the anterior portion of which from the costa to the third median nervule is formed of spots divided only by the crossing veins and arranged in one straight line, followed by three spots placed in échelon in the median and submedian interspaces, these three spots forming an inwardly oblique straight line; an outer discal curved series of white spots arranged regularly across the wing from the third subcostal nervule to the median nervure; a marginal narrow, almost continuous, series of white spots prominently defined on both sides by a fine black line. Hind wing with an inner discal series of white spots, very similar to that on the fore wing, but the anterior portion ending on the third median nervule is wider; followed by an indistinct castaneous macular fascia, which is continued somewhat indistinctly on to the disc of the fore wing; two marginal apical large rounded black spots divided by the discoidal nervule, each spot bears outwardly a large white area, inwardly each spot bears a few white scales; in the median, submedian and internal interspaces are large conical-outline silvery-white spots, the base of the cone is on the margin, the apex is towards the base of the wing, the spot in the internal interspace the smallest and oval in shape. Cilia of both wings dusky, just touched inwardly with whitish. Antennæ above black, beneath prominently annulated with white, the base of the club also white. Thorax and abdomen above concolorous with the wings, beneath white. Legs with the femur white, the tibia and tarsi ochreous.

"*Exp.* ♀ 1·9 inches" (nearly 49 mm.).

Hab. Described from a single specimen taken at Loi-Maw, 5000 ft., Katha District, Upper Burma.

"*T. burnii* is an aberrant species and seems to form a link, as far as the markings go, between the known species of the genus *Taxila* and the typical group of the genus *Abisara* (*A. echerius*, Stoll) It posseses the two prominent apical black spots on the underside of the hind wing which are characteristic of all the species of *Abisara*, but are lacking in *Taxila*." (*de Nicéville*, *l. c.*)

476. Taxila thuisto, *Hewitson, Ex. Butt.* ii, 1861, Taxila, pl. 1, figs. 5, 6; *de N. Butt. Ind.* ii, 1886, p. 317; *Moore, Lep. Ind.* v. 1901–1903, p. 92, pl. 404, figs. 3, 3*a*–3*c*, ♂ ♀.

♂. *Upperside* deep brownish black, the apex of fore and dorsal margin of hind wing slightly paler. *Underside* dark ochraceous red; apical area of fore wing slightly paler; dorsal margin of the same broadly dusky. Fore wing with the following pale plumbeous, sometimes cobalt-blue, markings edged more or less inwardly and outwardly with dull black in the interspaces, the outer edgings narrow and obscure: an oblique streak in cell; a sinuous inner discal transverse narrow fascia; an outer discal transverse series of spots not extending below vein 1; a postdiscal transverse curved series of spots, the lower three broadly linear, the subcostal spot elongate, narrow; finally a subterminal series of transversely linear spots. Hind wing with the following similar markings: a basal and a subbasal transverse streak, the latter short, not reaching the upper apex of the cell; a strongly curved discal series of transverse spots; a postdiscal series of transverse linear spots, the inner bordering of black spots to these very broad and conspicuous; lastly a subterminal series of transverse slender streaks in the interspaces. Cilia of fore and hind wings dark brown. Antennæ, head, thorax and abdomen dark brownish black; beneath, the antennæ, palpi, head, thorax and abdomen paler brown; the palpi with a white lateral streak.—♀ *Upperside* more or less bright ochraceous red; the spots, especially the dark spots of the underside, showing through. Fore wing: a postdiscal curved transverse series of white spots, those in interspaces 4, 5, 6, 8 and 9 very large and conspicuous, and a subterminal transverse series of much smaller white spots inwardly bordered with black. Hind wing more or less uniform, only the postdiscal and subterminal series of transverse spots of the underside showing through clearly. *Underside* paler ochraceous red; markings more or less as in the ♂, but the spots a paler plumbeous blue, the postdiscal and subterminal series on the fore wing white, the anterior spots of the former large and conspicuous as on the upperside. Antennæ, head, thorax and abdomen ochraceous brown; beneath, the palpi, thorax and abdomen paler; the palpi with a white lateral streak as in the ♂

Exp. ♂ ♀ 40–42 mm. (1·56–1·65″).

Hab. Tenasserim from the Karen Hills north of Taungoo southwards; extending to the Malay Peninsula, Sumatra and Borneo.

477 Taxila haquinus, *Fabr.* (Papilio) *Ent. Syst.* iii, 1793, p. 55.

Race fasciata.

Taxila fasciata, *Moore, P. Z. S.* 1878, p. 832, pl. 52, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 318; *Elwes, P. Z. S.* (haquinus, var. fasciata) 1891, p. 287; *Moore, Lep. Ind.* v, 1901–1903, p. 91, pl. 404, figs. 1, 1*a*–1*c*, ♂ ♀.

Race **fasciata,** *Moore.*—♂ *Upperside* dark reddish brown or

plum-brown; fore wing with the apical area paler and traversed preapically by a very obscure and diffuse broad greyish fascia. Hind wing uniform without markings. *Underside* brighter ochraceous red, the preapical grey fascia on the fore wing as on the upperside but much more clearly defined, traversed by veins 6, 7 and 8, and inwardly margined with brownish; fore and hind wings with numerons black spots, the outer row margined with grey on the outer side. the rest more or less with silvery blue, terminal margins with a prominent subterminal series of transversely linear grey spots margined on both sides by brown; a terminal slender dark line. Antennæ reddish brown; head, thorax, and abdomen brown beneath very pale ochraceous brown.— ♀ Similar. *Upperside* dull ochraceous red, the preapical oblique bar on fore wing as in the ♂, but much broader and more distinct; the spots of the underside on both fore and hind wings showing faintly through by transparency. *Underside* very bright ochraceous red; the white preapical band on the fore wing as on the upperside; the spots on both fore and hind wings as in the ♂, but smaller, of a rich dark red, outwardly margined with silvery grey; the subterminal series of transversely linear spots as in the ♂, but further from the margin; the terminal dark line more clearly defined.

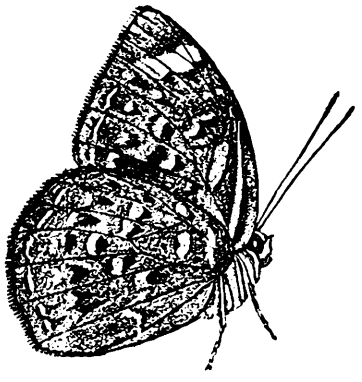

Fig 92.—*Taxila haquinus*, race *fasciata*, ♂. ½.

Exp. ♂ ♀ 52–55 mm. (2·15–2·17″).

Hab. Burma; Tenasserim.

A slightly differentiated form of the Malayan *Taxila haquinus*, Fabr. Differs from it chiefly in the less prominent spotting on the underside and in the white, not grey, preapical patch on the fore wing in the ♀.

Genus **ZEMEROS.**

Zemeros, *Boisduval, Spéc. Gén. Lép.* i, 1836, pl. 21, fig. 5; *de N. Butt. Ind.* ii, 1886, p. 307; *Moore, Lep. Ind.* v, 1901–1903, p. 95.

Type, *Z. flegyas*, Cramer, from India, China, &c.

Range. Indo-Malayan Region.

♂ ♀. Fore wing very broadly triangular; costa slightly arched, apex subacute; termen scalloped, convex, more strongly convex in the ♀ than in the ♂; tornus obtuse; dorsum straight; cell slenderly closed, short, not half length of wing; veins 6 and 7 very closely approximate, upper discocellular therefore obsolete, middle and lower subequal, concave; veins 3 and 4 from lower apex of cell, 10 and 11 free; 12 very short, terminating before middle of costa. Hind wing broadly pear-shaped; costa arched; apex broadly rounded; termen scalloped, uneven, angulated at vein 4, and below that to tornus, slightly more produced outwards

than the upper portion; tornus angulate; dorsum long, curved; cell very short, not half length of wing; middle and lower discocellulars concave; veins 6 and 7 from upper apex of cell, sometimes shortly stalked. Antennæ a little longer than half length of fore wing; club fusiform, gradual; palpi very short, porrect, third joint minute; eyes naked.

A single form is recorded from within our limits.

478. **Zemeros flegyas,** *Cramer* (Papilio), *Pap. Ex.* iii, 1780, pl. 280, figs. E, F, ♂; *de N. Butt. Ind.* ii, 1886, p. 308, pl. 24, fig. 115 ♂; *Dudgeon Proc. A. S. Beng.* 1890, p. 140; *Moore, Lep. Ind.* v, 1901–1903, p. 96, pl. 405, figs. 1, 1*a*–1*g*, ♂ ♀.

Wet-season form.— ♂. *Upperside* dark vinaceous brown, the veins ochraceous brown. Fore and hind wings crossed by four series of minute white spots, the postdiscal series very often obscure, each spot bordered inwardly by a more or less elongate black spot; a terminal very slender black line; cilia alternately black and white. *Underside* bright ochraceous brown, the veins conspicuously paler, the white black-bordered spots as on the upperside but larger, more clearly defined and prominent. Antennæ brown ringed with white; club black, ochraceous at apex; head, thorax and abdomen concolorous with the wings; beneath, the palpi, thorax and abdomen slightly paler than the wings.

Dry-season form.— ♂ *Upperside*: ground-colour darker than in the wet-season form; the spots smaller, duller in colour. On the fore wing the postdiscal series of spots often obsolescent except the spots in interspaces 3, 6 and 8, the latter two very large and prominent; subterminal series of spots also often obsolescent. The veins on both fore and hind wings not paler than the ground-colour. *Underside*: similar to the underside in the wet-season form, but the ground-colour a shade darker; the veins not conspicuously paler; the white spots as in the wet-season form, except the postdiscal and subterminal series on the fore wing, which are as on the upperside, the anterior large white spots of the postdiscal series being very prominent; the inner black bordering to the white spots much smaller than in the wet-season form. Antennæ, head, thorax and abdomen as in the wet-season form.— ♀ *Upper* and *under sides* very similar to those of the wet-season form, but the ground-colour brighter and paler; markings also similar, but the black bordering to the white spots less prominent.

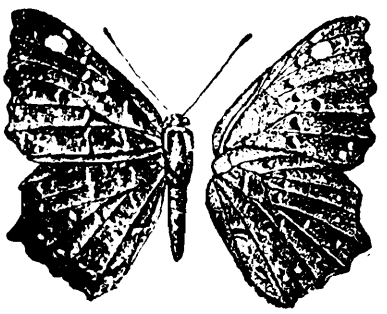

Fig. 93.
Zemeros flegyas, ♂. ½.
Dry-season form.

Exp. ♂ ♀ 40–48 mm. (1·59–1·9″).

Hab. The Himalayas, Mussoorie to Sikhim and Bhutan; Assam; Burma; Tenasserim; extending to the Malay Peninsula and China.

Larva. "Adult: length ·75 of an inch. Ovate, extremely flattened, inconspicuous. Colour pale green, head and anal segment slightly lighter; all the segments laterally rounded, covered with a whitish down, especially at the sides; an indistinct double longitudinal dorsal darker-green line throughout, enclosing a minute orange spot on seventh and eleventh segments; middle segments more than twice as broad as they are long; legs pale green, set well beneath the animal and rather close together. Full-grown at the end of March. Feeds on *Mœsa montana*. Larva when about to change into the pupal state attaches itself to a patch of silky web, by the last segment, to the underside of a leaf of the food-plant, with the head towards the apex, and is girt about the middle with another web." (*Dudgeon.*)

Pupa. "Length 55 to ·70 of an inch. Fusiform, broadest in the middle . anterior end truncate-rounded, distinctly broader than the posterior; the whole pupa flattened and of very slight depth even in the thickest part; the divisions between the segments well-marked; posterior segment bluntly rounded; head also rounded and divided in the middle at the apex into two lobes by a shallow notch colour bright yellowish green throughout, marked above with rich emerald-green narrow lines arranged in an arabesque-like pattern on the two outer-thirds; a series of round spots along the middle of the back on the abdomen only, and a subdorsal line on either side interrupted at the segmental constrictions. Under surface pale yellowish green throughout, entirely unmarked The whole surface of the pupa smooth, without any hairs or shagreening whatever."—(*Dudgeon.*)

Genus **STIBOGES.**

Stiboges, *Butler, P. Z. S.* 1876, p. 308; *de N. Butt. Ind.* ii, 1886, p. 315; *Moore, Lep. Ind.* v, 1901–1903, p. 100.

Type, *S. nymphidia*, Butler, from Penang.

Range. Indo-Malayan Region.

♂ ♀ Fore wing broadly triangular; costa very slightly arched, nearly straight; apex more or less acute, slightly rounded; termen convex, strongly convex in the ♀; tornus rounded; dorsum straight; cell slenderly closed, about half length of wing; upper discocellular obsolete, middle and lower concave; vein 3 from before lower apex of cell, 4 from apex; 10 and 11 free; 12 closely approximate to subcostal, turning abruptly outwards and terminating opposite upper apex of cell. Hind wing oval, costa obliquely convex; apex and tornus rounded, termen strongly arched; dorsum nearly straight; cell half length of wing, slenderly closed; vein 3 from before lower apex of cell, 4 from apex, 3 and 7 stalked, 8 short. Antennæ slightly longer than half length of fore wing, articulations prominent; club long, flattened, gradual; palpi very short, porrect, third joint minute; eyes naked.

A single form is recorded from within our limits.

479. **Stiboges nymphidia**, *Butler*, *P. Z. S.* 1876, p. 309, pl. 22, fig. 1 ♂; *de N. Butt. Ind.* ii, 1886, p. 316, pl. 24, fig. 119 ♀; *Moore*, *Lep. Ind.* v, 1901–1903, p. 101, pl. 405, figs. 2, 2 *a*, ♂ ♀.

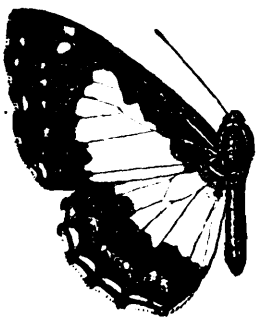

Fig. 94.—*Stiboges nymphidia*, ♂. ½.

♂ *Upperside* pure white, base of wings narrowly, costal margin of fore wing very broadly; with the apical and terminal third of the fore wing and terminal third of the hind wing black, the inner margin of this colour irregularly crenulate. Fore wing with subterminal and terminal very incomplete transverse series of white spots, the anterior two of the former series being the largest. Hind wing with a subterminal undulated pale line, in some specimens white where it crosses the veins, and a terminal series of white lunules. Cilia white alternated with black. *Underside* similar, the markings generally more clearly defined, the pale subterminal line on the hind wing replaced by a line of obscure minute spots. Antennæ black with white rings at the articulations; head, thorax and abdomen black; beneath, the palpi and abdomen white, the thorax black.— ♀ Similar; fore wing with the black apical and terminal areas proportionately narrower; hind wing with a series of spots instead of the subterminal pale line on the upperside. Antennæ, head, thorax and abdomen as in the ♂

Exp. ♂ ♀ 36–47 mm. (1·4–1·85″).

Hab. Bhutan; the hills of Assam and Upper Burma; extending to the Malay Peninsula, Sumatra, and eastwards to China.

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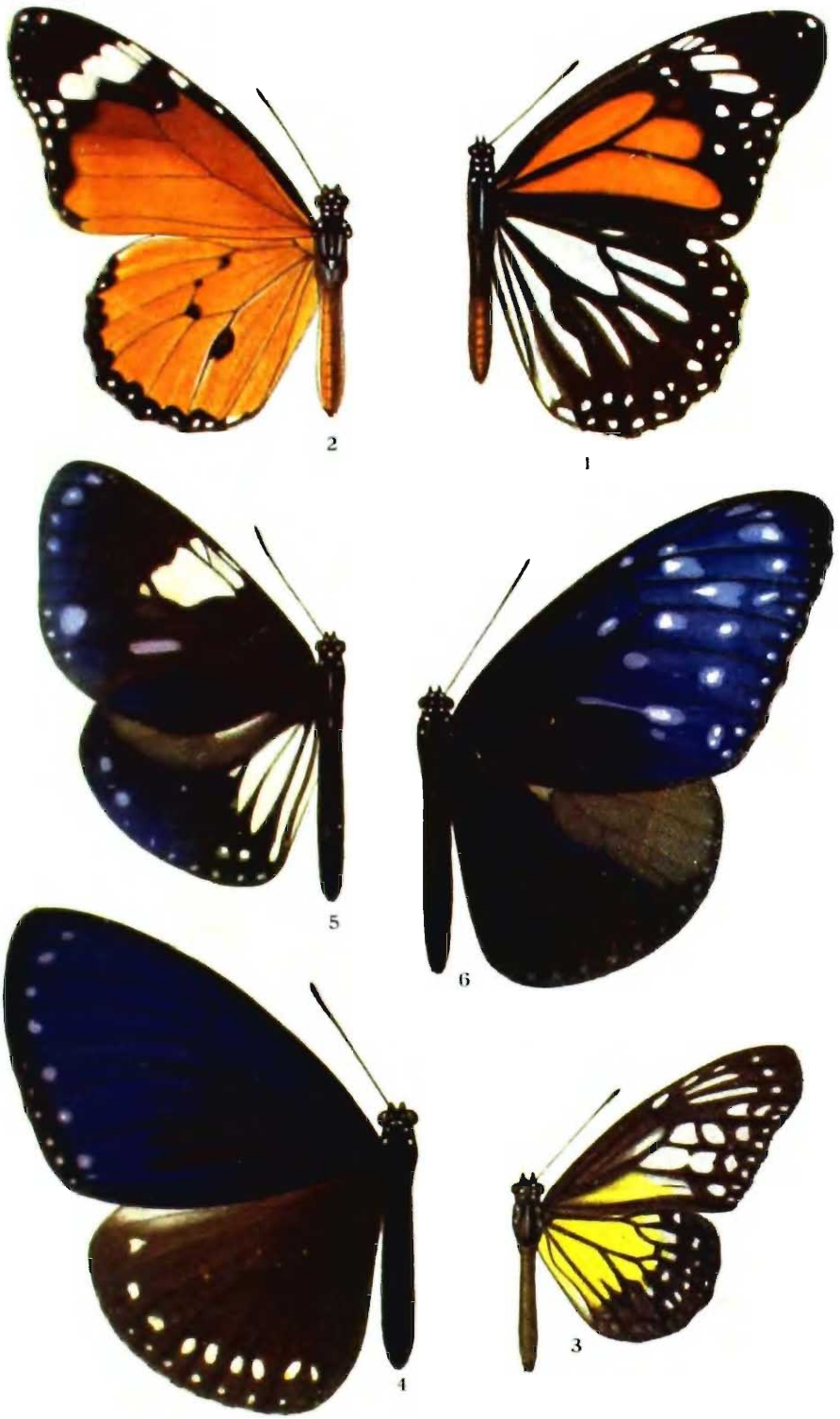
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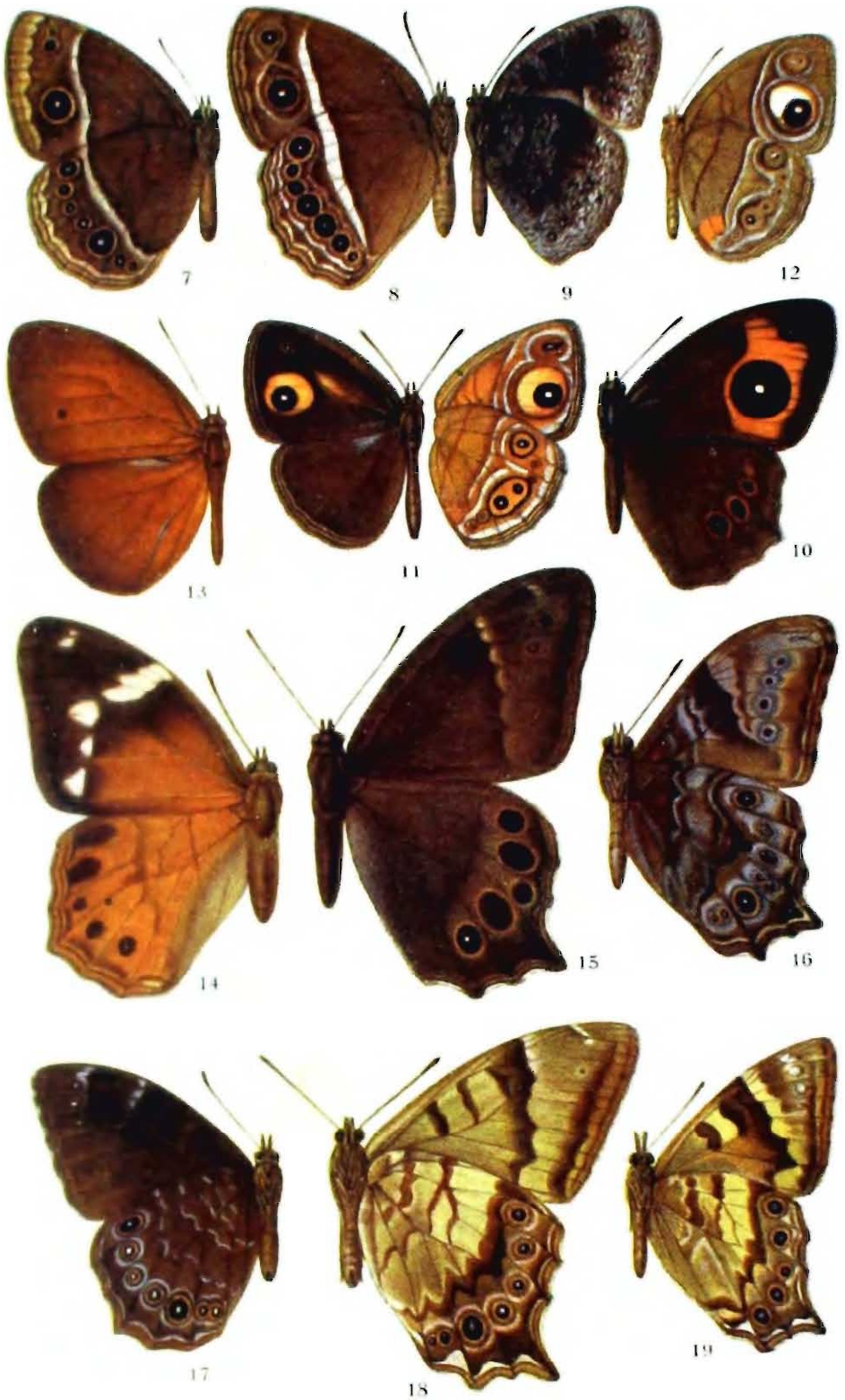
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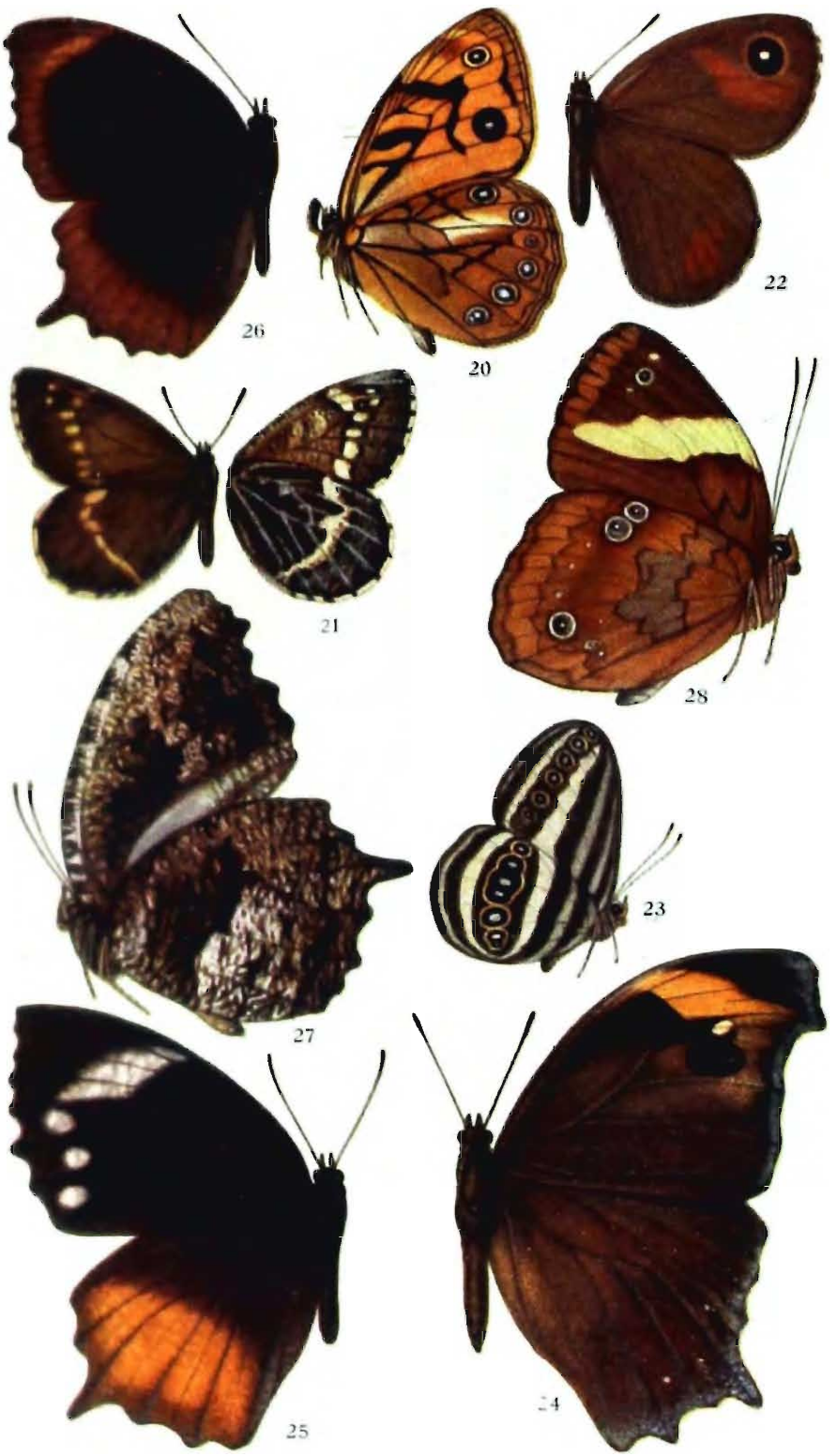
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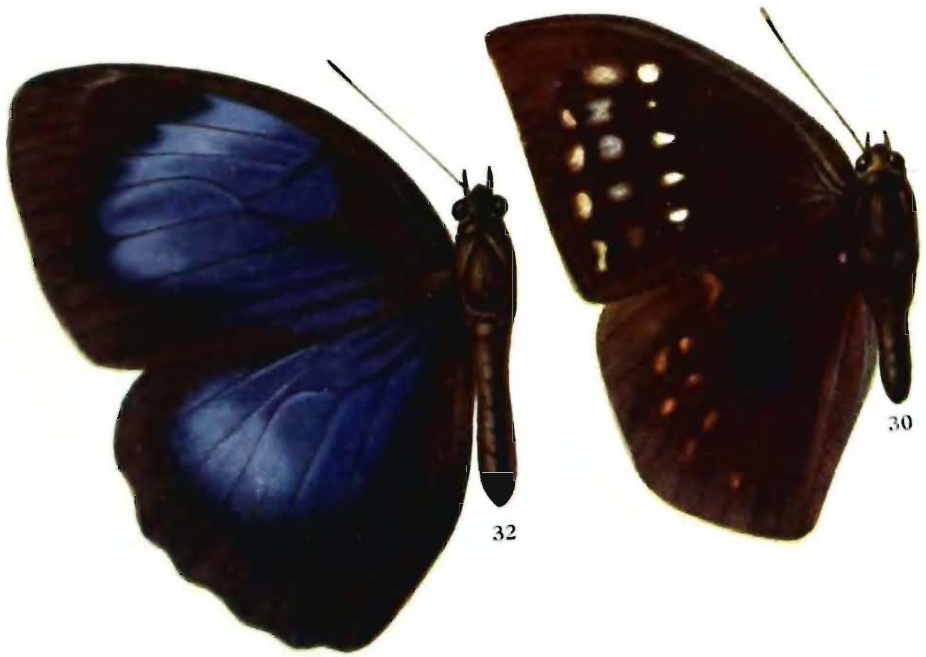

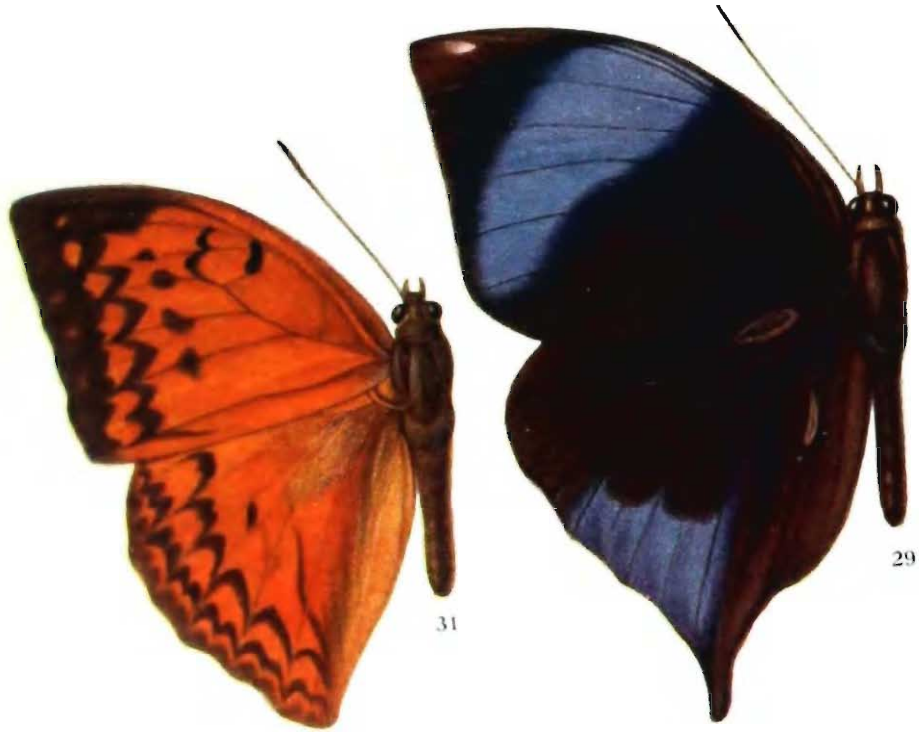

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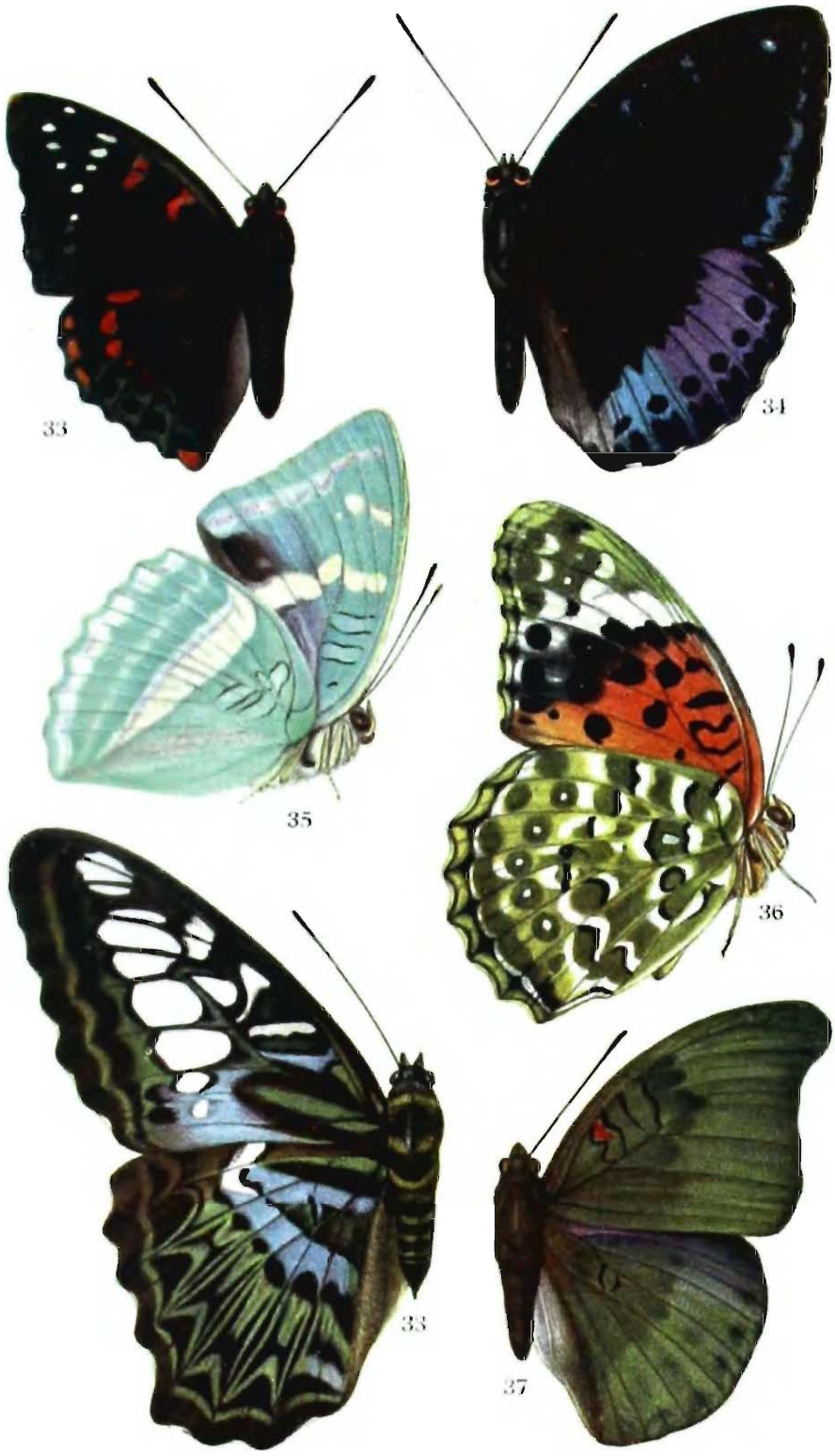

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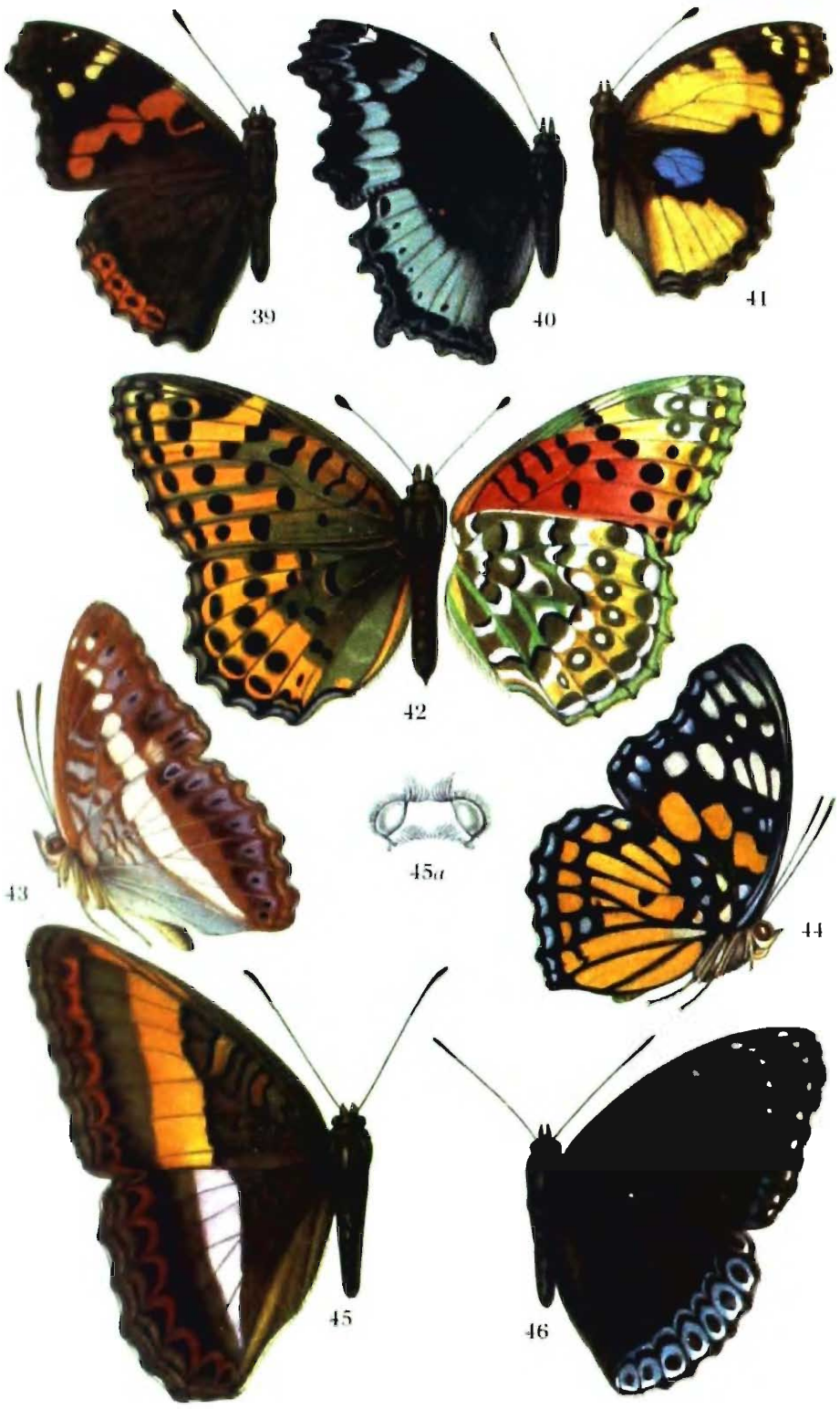
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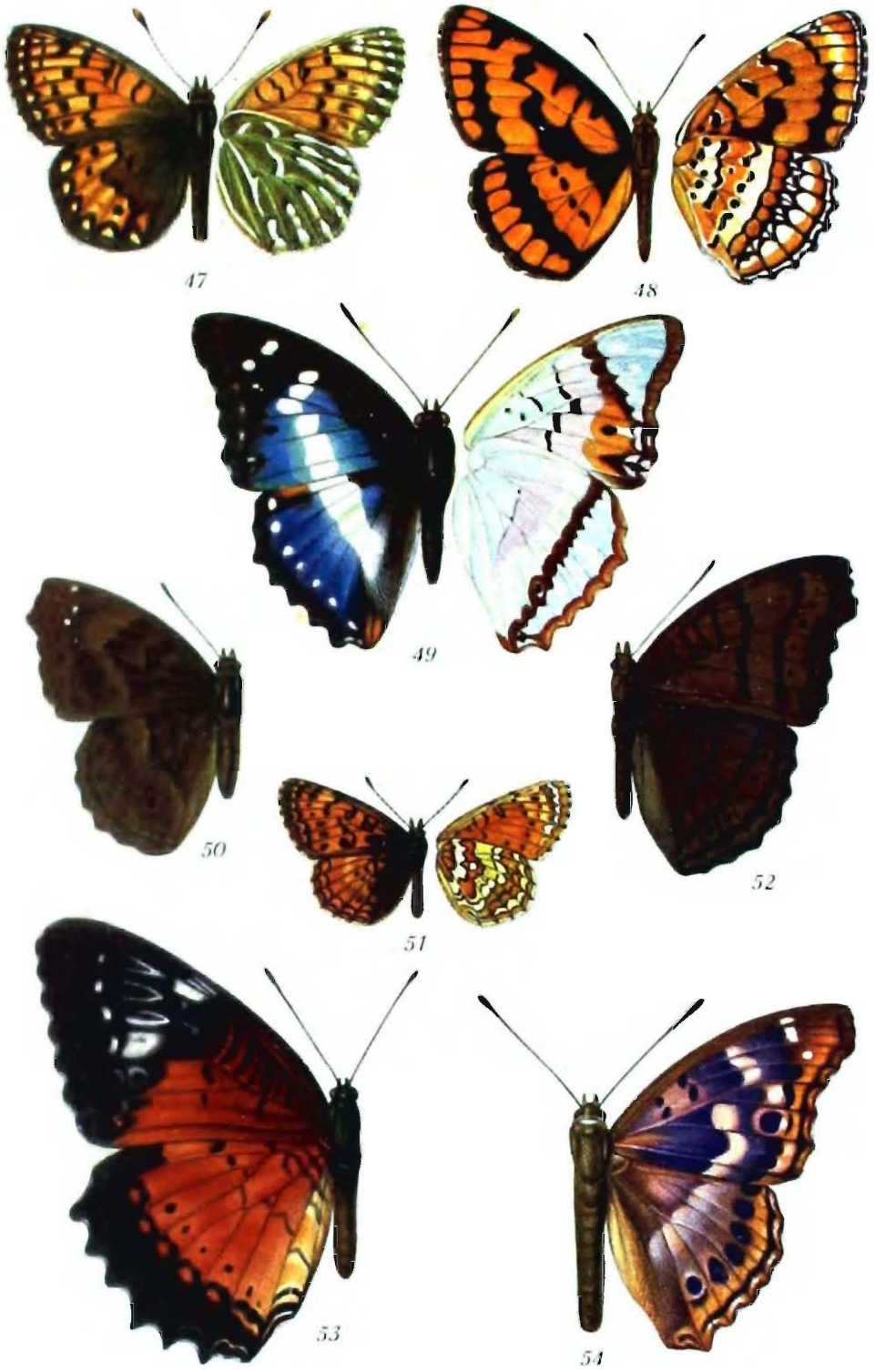

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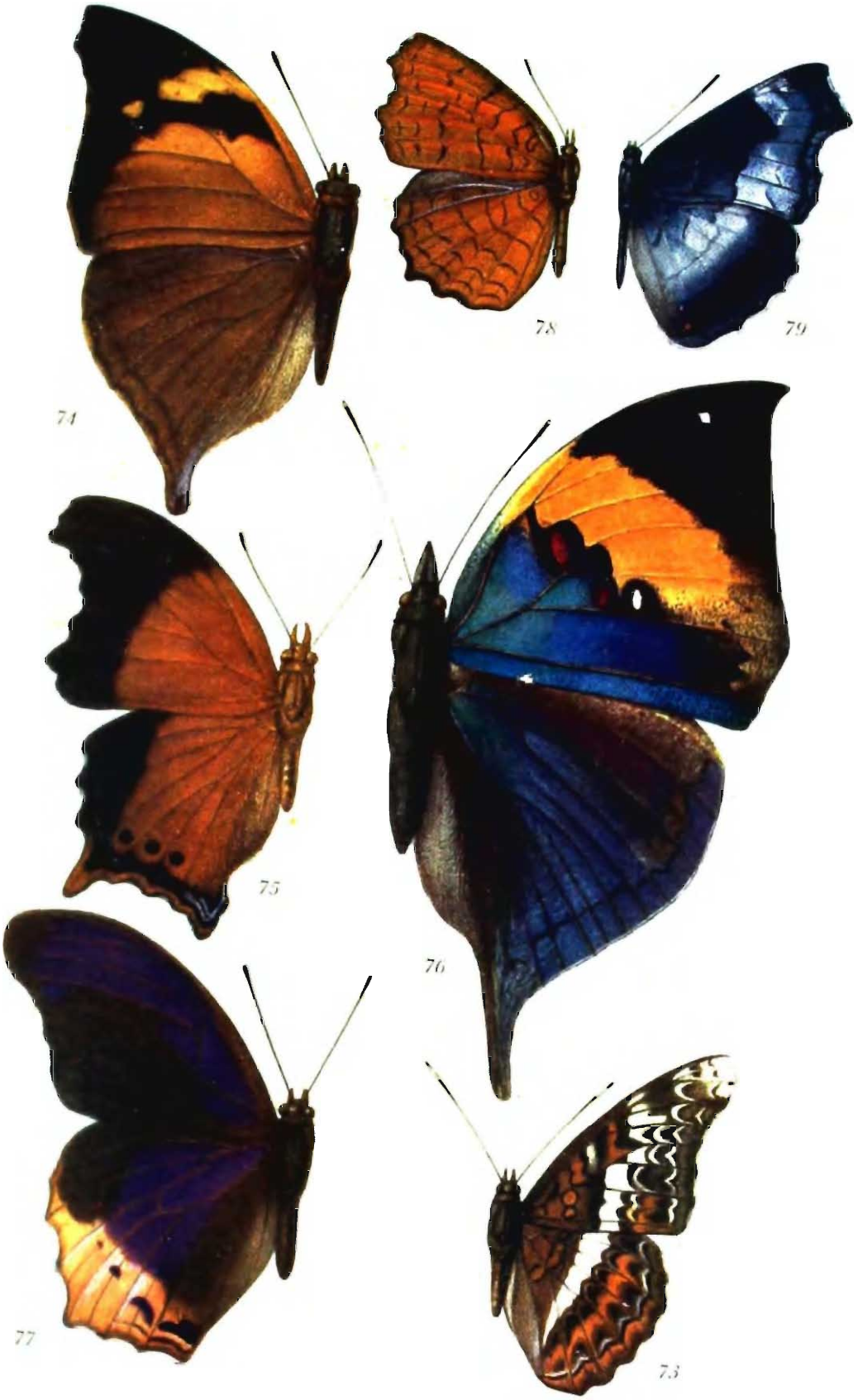

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