

ocellus next the costa is very much larger and more distinct than that near the anal angle. The FEMALE of this species (represented in the Gen. D. L., plate lii, fig. 1, as the female of *Z. luxerii*) has the outer half of both wings tinged with a blue gloss, with an oblique bluish-white broad bar extending from the middle of the costa to the third branch of the median nervure, where it is broken up into three rows of spots; the interior conical, the middle row nearly rounded, and the outer ones semicircular. There is a slight trace of these spots continued along the outer half of the hindwing." (*Westwood, l. c.*)

The woodcut which accompanies represents the female of *Z. doubledati*, and is copied from the figure in the Gen. D. L. It is doubtful whether this species does really occur in India, in any case it is extremely rare; we have never seen a specimen.

The four species of this genus referred to above are all very closely allied, and appear to differ mainly in the tone and character of the blue markings on the upperside in the males.

Z. masoni has the blue patch on the hindwing extending from the anal margin nearly up to the discoidal nervule.

Z. amethystus has the patch extending from the anal margin to the fold in the second median interspace only.

Z. luxerii has the patch lilac, and at the outer angle only.

Z. doubledati has the patch blue, and extending from the outer angle to the anal angle.

Genus 35.—AMATHUSIA, Fabricius.

Amathusia, Fabricius, Illiger's Mag., vol. vi, p. 279 (1807); id., Westwood, Gen. D. L., vol. ii, p. 326 (1851); *Mitocerus*, Billb., Enum. Ins., p. 79 (1820).

"BODY rather small, very hairy. HEAD rather small [in *A. phidippus*, large in *A. portheus*], hairy, with a small, frontal, conical tuft of hairs; *nack* short. Palpi rather slender and compressed, porrected obliquely to about the length of the head, and raised at the tip nearly to the level of the top of the eyes, not united into a conical beak, scaly beneath; the back of the second and third joints hairy, the hairs of the middle joint being erect, and resting on the front of the face and side of the frontal tuft; terminal joint ovate-conic. [In *A. portheus*, the palpi are erect, and rise in front considerably above the level of the top of the eyes.] Antennæ about three-sevenths of the length of the forewing, slender, not straight; the joints very distinct; club long, very gradually formed, and very slender, finely carinated beneath, articulations distinct, the terminal ones gradually acuminate. THORAX ovate, very hairy, neither large nor robust. WINGS large, hindwing with two ocelli wide apart on the underside. FOREWING large, elongate-triangular, *costa* very much arched, *apex* rather rounded, *outer margin* about two-thirds of the length of the costa, entire, slightly concave; *hinder angle* rounded, *inner margin* nearly straight, rather narrowed towards the base. Subcostal nervure slender, the first branch nearly at the distance of one-third of the wing from the base, extending to the costa at about three-fourths of its length; second, third and fourth branches arising close together at about three-fourths of the length of the wing; the second and third very short, joining the costa; the fourth longer, extending to the tip; the remainder of the nervure extending to the apex below the tip. Upper disco-cellular nervule arising from the subcostal at about two-fifths of the length of the wing, extremely short and oblique; middle disco-cellular twice its length, and transverse; lower disco-cellular very long, strongly angulated in the middle, the anterior part continuing in the same line as the middle disco-cellular, the posterior part very oblique, uniting with the median nervure at a distance from its base equal to half the distance between the bases of the first and second branches of the median nervure, thus closing the discoidal cell in an acute point at nearly half the length of the wing; the third median nervule beyond the junction much arched, or rather angulated, at about the same distance beyond the junction as exists between the first and second median nervules. HINDWING subtriangular, *costa* arched, *apex* rounded, *outer margin* with wide but not deep scallops, *anal angle* produced into a broad short tail [in *A. phidippus*, but into a much longer and narrower one in *A. portheus*], extending between the extremity of the first branch of the median nervure and the submedian nervure. The *præcostal nervure* is curved at its tip towards the base.

Costal nervure curved, but extending only to two-thirds of the length of the costa. *Subcostal* nervure branching very near its base, its first branch extending to the outer angle of the wing. *Discoidal cell* very narrow, open. *Median* nervure branching far from the base, with a considerable distance between its first and second branches; at about the same distance from the base of its third branch as exists between the first and second branches is a thickening or swelling of the disc of the wing between this branch and the discoidal nervure, forming, as it were, an incomplete termination of the discoidal cell. *FORLEGS* of the MALE small, slender; *tarsus* hairy, forming a slender brush of nearly equal thickness throughout. Of the FEMALE considerably longer than those of the male, scaly; *femur* much longer than the *tibia*; *tibia* and *tarsus* gradually but slenderly dilated to the tip, where it is obliquely truncate."

"LARVA long, hairy, especially about the head; head with two short broad dentated horns, with two dark transverse bars between the first and second, and second and third thoracic segments; extremity of the body forked. PUPA long, boat-shaped, entire, head acuminate and bifid." (Extracted from Westwood's *Gen. D. L.*)

The genus *Amathusia* comprises a few very handsome tropical Asiatic species of large size, chiefly inhabiting the Malay Archipelago; like the rest of the subfamily they affect shady places, and the typical species is crepuscular; they have somewhat the appearance of the genus *Kallima* on the upperside and in outline, but the tail of the hindwing is shorter, and the underside has not the appearance of a leaf, it has numerous transverse stripes, with ocelli on the hindwing. Within our limits the genus is only found in Burma, and through the north-east corner of Bengal to Sikkim, and again in the South Andamans.

There are two distinct types of colouration, and the secondary sexual characters of the male insect appear to differ.

Key to the Indian species of *Amathusia*.

- A. Upperside brown, the apex and outer margin tinged with yellowish, with no broad transverse fascia on the forewing in either sex. Hindwing with a broad short tail at the anal angle.
 - a Male with latero-axial tufts of hair along the abdomen, and with a tuft of hair below the submedian nervure of the hindwing, and another placed in a pouch above it.
 - 275. *A. PHIDIPPUS*, Burma; Tenasserim; Andaman Isles; Malayana.
- B. Upperside blackish, forewing with a broad transverse fascia, blue in the male, yellow in the female. Hindwing with a narrower tail at the anal angle.
 - a Males generally, perhaps always, with a large dense tuft of hairs below the submedian nervure opposite the middle of the abdomen on the upperside of the hindwing*.
 - a¹. Male with the transverse fascia very broad, extending near the outer margin from the second discoidal nervure to the submedian nervure.
 - 276. *A. AMYTHAON*, Sylhet.
 - a². Male with the transverse fascia almost straight, regularly decreasing in width towards the hinder angle, and extending near the outer margin from the second median nervure to the hinder angle.
 - 277. *A. WESTWOODII*, Sylhet.
 - a³. Male with the transverse fascia curved, scarcely decreasing in width till it terminates near the outer margin, where it extends from the fold above the second median nervure to just below the submedian nervure.
 - 278. *A. FORTHEUS*, N.-E. India; Tenasserim.

275. *Amathusia phidippus*, Linnæus.

Papilio phidippus, Linnæus, *Syst. Nat.* vol. i, pt. ii, p. 752, n. 37 (1767); id., *Cramer, Pap. Ex.* vol. i, pl. lxi, figs. A, B (1775); *female*: *Morpho phidippus*, Godart, *Enc. Méth.* vol. ix, 439, n. 2 (1819); *Amathusia phidippus*, Horsfield, *Cat. Lep. E. I. C.* pl. vii, figs. 10, *larva*. 10a, *pupa*: 10b. *structure of imago* (1829); id., Doubleday, Hewitson, *Gen. D. L.* vol. ii, p. 327, pl. liv*, fig. 2 (1850) *male*; id., Horsfield and Moore, *Cat. Lep. E. I. C.* vol. i, p. 209, n. 498, pl. vi, figs. 4, *larva*; 4a, *pupa* (1857); id., Distant, *Rhop. Malay*, p. 10, pl. vi, figs. 6, *male*; 7, *female* (1882).

HABITAT: Burma; Upper Tenasserim; Andaman Isles; Malay Peninsula and Archipelago.

EXPANSE: 4.0 to 4.4 inches.

DESCRIPTION: "MALE: UPPERSIDE: Both wings dark fuliginous-brown. Forewing with the costal and outer margins somewhat paler, and with a distinctly paler submarginal fascia.

* See remarks on this group, p. 290.

Hindwing with the outer margin paler, and with a distinctly paler submarginal fascia, the marginal fringe ochraceous, the broad tail at the anal angle somewhat paler, and bearing two subnulate black spots, outwardly margined with white; these spots are placed near the apices of the first median nervule and submedian nervure. *UNDERSIDE* greyish, crossed by numerous fuscous fasciæ of varying width and hue; the first commences near the costal base of the forewing, and is continued on the hindwing, narrowing and becoming somewhat evanescent a little beyond the middle of the submedian nervure; the second crosses the cells of both wings about their centres, and terminates on the innerside of the first median nervule at about half its length; the third is short, crossing the cell, but not passing the median nervure of the forewing; the fourth is pale, with its margins darker, waved, and deflected beneath the third fascia on the forewing, passing a little beyond the second on the hindwing, and becoming confluent and terminating with that fascia beneath the median nervure; the fifth is wide and darkest, crossing both wings at the apices of the discoidal cells and terminating a little beneath the second median nervule; the sixth is widest, somewhat paler, with darker margins, outwardly sinuate and placed a little beyond the fifth; this sixth fascia is followed by three narrow fasciæ, which terminate on the abdominal margin of the hindwing, one being marginal and two submarginal, the middle one darkest and the inner one palest. The *hindwing* bears two large submarginal ocellated spots, which are ochraceous, speckled with fuscous, with white centres and black outer margins, the inner borders of which are narrowly ochraceous; the lower and larger spot has the white centre somewhat lunulate, and is followed posteriorly by a broad blackish suffusion; the upper of these spots is situated between the subcostal nervules, and the lower one between the first and second median nervules. The anal tail of the hindwing is spotted as on the upperside, and has a large central castaneous suffusion. *Body and legs* more or less concolorous with the wings. The male has four long, curved tufts of hair on each side of the terminal segments of the abdomen. A somewhat similar tuft is situated about the middle of the abdominal margin of the hindwing, on the inner side of the submedian nervure; and between the submedian nervure and first median nervule within a fold of the wing are also a few long hairs. Both of these, judging by analogous reasoning, are probably the coverings of scent-glands or pouches. *FEMALE*, larger than the male. *UPPERSIDE*, both wings paler, with an ochraceous discal fascia crossing both wings, widest near the costa of the forewing, and very narrow on the hindwing; the submarginal fasciæ as in the male, but concolorous with the ochraceous margins. *UNDERSIDE* as in the male, but much paler. This species varies in the depth and intensity of hue of the fuscous fasciæ on the underside." (*Distant*, l. c.)

LARVA cylindrical, of nearly equal thickness throughout, covered with long hairs placed in tufts on tubercles placed in rows along the body: colour pale brown, marked with a dorsal and two subdorsal longitudinal paler lines, with darker marks on each side of the dorsal line two on each segment: head dark brown, anal segment furnished with a somewhat short bifid tubercular tail. *PUPA* boat-shaped, acuminate to a long and somewhat sharp point at the head, and marked with streaks of a deeper green than the ground-colour. (Described from Horsfield and Moore's figures). Dr. Horsfield states that in Java it "feeds on the young leaves of *Cocos nucifera*, from December to April."

Several writers have noted the crepuscular habits of *A. phidippus*, and it is often found in cocoanut palm groves. We have specimens from Upper Tennasserim, and the Andaman Islands, and Dr. Anderson took a single male in the Mergui Archipelago in January, and Captain Adamson took it at Akyab in November.

Of the next group, in which the forewing bears a broad transverse fascia, blue in the males and yellow in the females, three species have been described from India. The first was described, but not figured, by Doubleday in 1847 as *A. amythaon*; in 1848 Westwood figured and described a species under the name of *A. amythaon*, Doubleday, but which does not at all correspond to Doubleday's original description; and in 1851 Westwood in the Gen. D. L. recorded some notes on *A. amythaon* which seem to refer to the species figured by him and

not to that described by Doubleday. In 1865 Dr. Felder described another species, *A. portheus*; and in 1869 Mr. A. G. Butler pointed out the differences between the *A. amythaon* as described by Doubleday, and as figured by Westwood, and gave to Westwood's figure the name of *A. westwoodii*, remarking at the same time that *A. portheus*, Felder, was probably the true *A. amythaon*, male, of Doubleday.

So far as recent experience goes, but a single species of this group is positively known to occur in Indian limits, and this species, of which we possess several specimens of both sexes, corresponds exactly with the description of *A. portheus*, Felder. We have seen no specimens of either of the other species, and we have no certain knowledge as to where specimens exist. Judging from the descriptions and figures only, the distinctions between the three species are of two kinds: (1) the sexual tufts and patches in the male; (2) the shape and extent of the transverse blue fascia of the forewing. As regards the first point, the evidence is chiefly negative and cannot be relied on; all that we can say is that for *A. amythaon*, Doubleday makes no mention whatever of any tufts or patches. Westwood says: "The internal basal portion of the hindwing is clothed with long jet black velvety scales, and there is a tuft of elongate brown hairs opposite the middle of the abdomen"; (Gen. D. L., vol. ii, p. 327), but his remarks probably apply to *A. westwoodii* and not to the true *A. amythaon*. For *A. westwoodii*, Westwood makes no special mention of the tufts in the description, while in the figure he shows the tuft below the submedian nervure greatly developed, but no discal patch of velvety scales. For *A. portheus*, Felder correctly describes the tuft and velvety patch of the known Indian species. As regards the second point, the shape and extent of the blue fascia, there appear to be sufficient differences to separate all three species, and on this we have based our key.

276. *Amathusia amythaon*, Doubleday.

A. amythaon, Doubleday, Ann and Mag. of Nat. Hist., vol. xix, p. 175 (1847).

HABITAT: Sylhet.

EXPANSE: 5 inches.

DESCRIPTION: "UPPERSIDE, both wings fuscous-black, darker, especially the hindwing, near the base. Forewing traversed by a broad oblique band of a beautiful light blue, with purplish reflections, commencing on the costa above opposite to the middle of the cell, and occupying in width about one-third of the costa, extending obliquely across to the submedian nervure, and terminating near the outer margin, where its upper boundary is the second discoidal nervure. UNDERSIDE, both wings pale chocolate, with lavender reflections, traversed by seven transverse lines; the first commencing on the costa of the forewing near the base, continued along the præcostal and first median nervules of the hindwing; the second continued across both wings to the origin of the second median nervule of the hindwing; the third short, just crossing the cell [of the forewing] a little beyond the middle; the fourth beyond the cell, continued nearly to the anal angle [of the hindwing]; the fifth more oblique, only reaching the first median nervule of the hindwing; the sixth arising near the apex, meeting the fourth at its termination; the seventh submarginal, common. Hindwing, slightly produced into a short round tail or palette at the anal angle, having, besides the markings already described, two ocelli composed of an oval black ring with a white pupil, the larger one near the costa between the first and second subcostal nervules; the second between the first and second median nervules at the point of junction of the fourth and sixth strigæ; the anal palette with two black spots edged with white. The vitta all white. HEAD, thorax, and abdomen brown. FEMALE paler, with the band of the forewing much narrower, not occupying any part of the cell, fulvous, marked near the outer margin with a brown waved striga. Much resembling *A. phidippus* in form, but known at once by the blue band above, and different markings of the under surface." (*Doubleday, l.c.*)

We have never seen this insect; no mention is made in the description of the very remarkable tufts borne by the male insect in the two following species; and it is strange that if present they should have escaped the attention of so profound an entomologist as Mr. Doubleday.

277. *Amathusia westwoodii*, Butler.

N. amythaon, Westwood, Cab. Or. Ent., p. 39, pl. xix, figs. 1, 2, male; 3, female (1848); *A. westwoodii*, Butler, Ent. Month. Mag., vol. vi, p. 55 (1869).

HABITAT: Sylhet.

EXPANSE: ♂, 5·2; ♀, 5·5 inches.

DESCRIPTION: "UPPERSIDE fuscous. *Forewing*, with an oblique broad fascia, light blue in the male, fulvous in the female. *UNDERSIDE*, pale chocolate, with seven transverse, unequal, darker streaks. *Hindwing* with two oval ocelli, having white pupils, and the short tails with two black dots. MALE. UPPERSIDE, *both wings* blackish brown, the basal portions being the darkest; the *forewing* traversed by a broad oblique band of a beautiful light blue, with purplish reflections, commencing close to the costa, a little beyond the middle of the cell, and occupying in width about one-third of the costa, extending obliquely across to the inner [hinder] angle of the wing, terminating near the outer margin, where its upper boundary is the second branch of the median nervure. *Hindwing* with the anal margin of a delicate pale lavender grey, fringed with a very thick row of long pale brown hairs; the anal angle is produced into a rather broad short tail, in which are two small black dots. *UNDERSIDE*, *both wings* pale chocolate coloured, with lavender reflections, the *forewing* traversed by seven, and the *hindwing* by four richer brown transverse lines, the first crossing both wings near the base; the second extending from the costa across the discoidal cell of the *forewing*, and terminating near the middle of the discoidal cell of the *hindwing*; the third very slender, crossing the discoidal cell of the *forewing* beyond the middle; the fourth extending from the costa of the *forewing*, and terminating just above the inner [lower] of the ocelli of the *hindwing*; the fifth paler and more oblique, extending only across the *forewing*, crossing the third branch of the median nervure where it is angulated; the sixth extending from near the apex of the *forewing* to the outside of the inner [lower] ocellus of the *hindwing*, beyond which it again reappears for a short distance; and the seventh very slight and submarginal, extending into the anal tail, and again ascending along the anal margin of the *hindwing*. The *hindwing* is, moreover, marked with two oval ocelli, consisting of a very slender dark brown ring with a white pupil, the remaining space filled with minute irrorations, one near the costal margin, beyond the middle, the other towards the tail, which is marked as above. The *body* and *antennæ* are brown. The FEMALE differs in having the wings paler brown, with the oblique fascia of the *forewing* much narrower, commencing outside of the discoidal cell, and of a fulvous colour, marked across within the outer margin by a brown waved striga. This species nearly resembles *A. phidippus* from Java, but differs in the blue band and the markings of the underside of the wings. It also resembles [superficially] the Javanese *Zeuxidia luxerii*, but this latter species has the outer portion of the *hindwing* glossed with blue, a patch of hairs in the middle of the discoidal cell of the same wing; the underside is also quite different, and the arrangement of the nervures of the *forewing* places it in a different genus." (Westwood, l. c.)

This is Westwood's description of the insect, which he also figures under the name *o. A. amythaon*, Doubleday. In 1869 Mr. A. G. Butler pointed out that it was distinct from *A. amythaon*, and proposed the name *A. westwoodii* for it with the following remarks: "The figure in the 'Original Entomology' represents a species with a much narrower and duller violet band on the *forewing*, leaving a large brown space at the apex; the brushes on either side of the body seem also to be unusually developed. There can be little doubt that this is a distinct species." (Butler, l. c.) We have never seen a specimen; the shape of the blue fascia is quite different from that of *A. portheus*; it is much widest at the costa, its outer margin is nearly straight, and it narrows backward to the hinder angle. Westwood in the Gen. D. L. in writing about *A. amythaon*, though more probably he referred to the species afterwards separated as *A. westwoodii*, says:—"The internal basal portion of the *hindwing* [in the male] is clothed with long, jet black, velvety hairs, and there is a tuft of elongate brown hairs opposite the middle of the abdomen." It is possible that the secondary sexual characters are the same in the males of all the species of this group, though Mr. Doubleday omitted to mention them as regards *A. amythaon*.

278. *Amathusia portheus*, Felder.

A. portheus, Felder, Reise Novara, Lep., vol. iii, p. 461, n. 780 (1865); id., Butler, Ent. Month. Mag., vol. vi, p. 55 (1869).



HABITAT: North India.

EXPANSE: ♂, 4·8 to 5·0; ♀, 5·3 inches.

DESCRIPTION: "MALE: UPPERSIDE as in *A. amythaon*, but the forewing with the fascia narrower towards the costa, and much wider hindward than in that species [evidently *A. westwoodii* is here referred to]. Hindwing with a patch of raised blackish scales filling almost the entire cell as in *Discophora*, and with similar scales below the median nervure and a tuft of brown hairs. UNDERSIDE as in *A. porthaon*" [from Java], but with the streaks of the hindwing including the ocelli more divergent. FEMALE: UPPERSIDE as in *A. amythaon*, but the yellow fascia of the forewing less excised, not at all interrupted, the hinder end divided by a streak of the ground-colour; a yellowish spot below it between the first and second median nervures. UNDERSIDE as in the male, but with the streaks a little wider." (Felder, l. c.)

Butler remarks (l. c.):—"Felder's Indian species is probably the true male *A. amythaon* of Doubleday." It is impossible for us to settle the point without seeing the type of the latter species, but the descriptions apparently apply to different insects.

The underside is almost exactly similar in all these species; we have one male specimen of *A. portheus* however from Sikkim which entirely lacks the upper ocellus of the underside of the hindwing. *A. portheus* is a rare insect: Captain C. T. Bingham took a few specimens of both sexes in the autumn and winter months in the Thoungyen forests in Upper Tenasserim, and the Indian Museum, Calcutta, has specimens from Sibsagar in Assam, from Sikkim, and from Cachar taken by Mr. Wood-Mason in August.

The figure shows the upper and undersides of a male specimen in the Indian Museum, Calcutta, from Sibsagar in Upper Assam.

* *A. porthaon*, Felder. HABITAT: Java. EXPANSE not given. DESCRIPTION: "MALE: UPPERSIDE as in *A. amythaon*, but the forewing with the fascia pale plumbeous blue, a little wider, but much less dilated at the costa. Hindwing with the internal gutter whitish, the interno-anal margin beyond the first median nervure irrorated with violet. UNDERSIDE as in *A. amythaon*, but the forewing with the two discal strigæ more divergent. Hindwing with the outer one directed to higher up the inner margin, the ocelli larger." (Felder, Reise Novara, Lep., vol. iii, p. 461, n. 779, 1867).

Genus 36.—DISCOPHORA, Boisduval.

Discophora, Boisduval, Spec. Gén., vol. i, pl. xii, fig. 3 (1836); id., Westwood, Gen. D. L., vol. ii, p. 329 (1837).

BODY robust, very woolly. **HEAD** rather small, woolly, with a small woolly frontal tuft [between the tips of the *palpi*]; *eyes* large, prominent, broadly oval; *palpi* compressed, directed obliquely upwards and reaching as high as the level of the top of the eyes, almost erect; basal joint hairy beneath, middle joint scaly in front, but very hairy behind, the hairs resting on the sides of the frontal tuft, terminal joint very short; *antenna* not quite half the length of the forewing, slender, terminated by a long and gradually formed but slender club, finely carinated beneath, the seven terminal joints gradually acuminate. **THORAX** very robust and woolly; *abdomen* of moderate size. **FOREWING** large, triangular; *costa* much arched; apex acute; *outer margin* straight, oblique or slightly concave; *hinder angle* scarcely rounded; *inner margin* straight, nearly equal in length to the outer margin; *costal nervure* and first and second *subcostal* nervules anastomosing for part of their length; *upper* and *middle disco-cellulars* both very short, the *discoidal* nervules originating close together near the subcostal; *lower disco-cellular* long, but much shorter than is usual in this subfamily, concave and closing the cell considerably beyond the origin of the second median nervule; *submedian* nervure nearly straight. **HINDWING** with the *costa* slightly arched; the *outer margin* convex, sometimes angled at the extremity of the third median nervule, and slightly sinuate throughout; *discoidal cell* entirely open; *anal angle* acuminate; the *anal margin* convex and highly channelled to receive the abdomen, and straight beyond the body. **FORELEGS** of the **MALE** small, very hairy; those of the **FEMALE** rather longer, scaly, almost destitute of hairs.

"**LARVA** long, cylindrical, with hairy tubercles; extremity of the body armed with two small conical spines. **PUPA** broadly boat-shaped, simple, widest across the wing-cases; head-piece acuminate into two long points." (*Westwood*, l.c.)

The species of *Discophora* are very closely allied, and the markings of the underside are of the same general pattern throughout the genus; they are entirely Indo-Malayan, but extend to North-East India, South India and Ceylon in the region of heavy rainfall. Nine species are recognised, of which five are included in the Indian list, the other four inhabit the islands of the Malay Archipelago. The upperside is typically bicorn of various shades, marked on the forewing with three series of spots on the outer half, sometimes continued on the hindwing; and the variations consist in the more or less complete obsolescence of the spots on the one hand, and in the development of a subapical fascia on the forewing on the other hand; the colour of the spots also differs in the different species. In all the species the male insect has a prominent oval patch of raised plush-like scales on the upperside of the hindwing at the lower end of the cell.

Key to the Indian species of *Discophora*.

A. Males, upperside brown, with deep indigo-blue reflections, the spots ochreous. Females brown, with a broad subapical fulvous fascia on the forewing.

a. Males, forewing with the submarginal series of spots usually complete, sometimes obsolescent, the discal and median series obsolete, except near the costa.

a¹. All the spots small and well separated.

279. *D. CYLINDR*, N.-E. India, Burma, Andaman Isles, Malay Peninsula, Java, Borneo.

b¹. The spots of the discal and median series near the costa large and tending to coalesce into a subapical bar.

280. *D. NERCHO*, Tenasserim, Java.

B. Male, upperside purplish brown, forewing with the spots large bluish-white, three (sometimes four) in number, the uppermost in the median, the rest in the discal series, but all arranged in a curved series beyond the cell. Female, forewing with the three series of spots large bluish-white, the uppermost of the median and discal series merged in a broad whitish fascia.

281. *D. LEPIDA*, S. India, Ceylon.

- C Male, with the upperside pure velvety brown, with three series of small spots, usually all bluish-white, sometimes irregularly tinged with fulvous; female with three series of large spots, white, the inner tinged with blue.

282. *D. tullia*, N.-E. India, Burma, Upper Tenasserim.

- D. Male, with the upperside pure velvety brown unspotted. Female with three series of large spots, the median bluish-white, the discal fulvous below, bluish above, the outer pure fulvous.

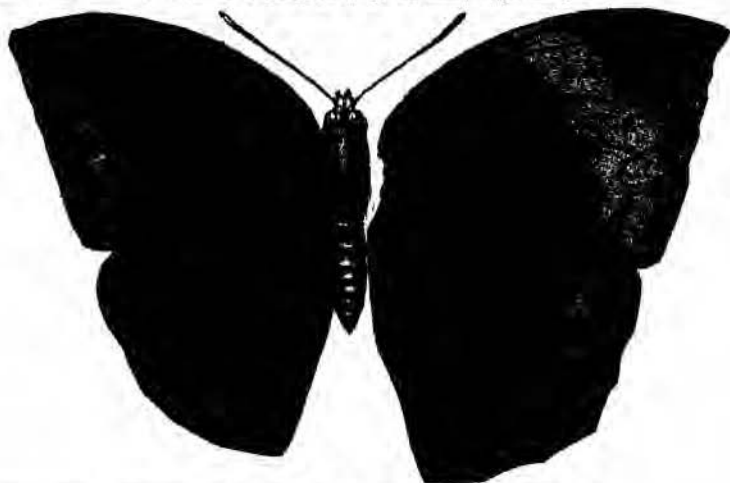
283. *D. sal*, Burma, Malay Peninsula.

In all the males the hindwing is unmarked or with barely a trace of obsolete spots. In the females of *D. celinde* and *D. nrecho* there are more or less obsolete traces of fulvous lunular spots; in those of *D. apida* there are three series of prominent fulvous lunules or marks, and in those of *D. tullia* and *D. sal* there are three complete series of fulvous spots in continuation of those of the forewing.

The habits of *D. tullia* and *D. celinde* very much resemble those of the species of the genus *Melanitis*. In Calcutta Mr. de Nicéville has found the former not uncommonly throughout the year under bamboo clumps and bushes amongst dry leaves, starting up when disturbed, flying a short distance, and then settling again amongst the leaves; they not unfrequently enter houses. In Sikkim, at low elevations, he found males of *D. celinde* commonly sucking up moisture from damp spots with their wings folded: when disturbed they fly off into the jungle. The rich indigo blue of the upperside of the male of this species when fresh makes it a very handsome insect on the wing.

279. *Discophora celinde*, Stoll.

Papilio celinde, Stoll, Suppl. Cramer, Pap. Ex., pl. xxxvii, figs. i, 1A (1790), male; *P. menetho*, Fabricius, Ent. Syst., vol. iii, pt. i, p. 83, n. 260 (1793); id., Donovan, Insc. India, pl. xxx, fig. 1 (1800); *P. aristides*, Fabricius, Ent. Syst., vol. iii, pt. i, p. 85, n. 268 (1793); *Morpho celinde*, Godart, Enc. Méth., vol. ix, p. 446, n. 18 (1817); *M. menetho*, idem, id., n. 20 (1819); *Discophora celinde*, Herrich Schaffner, Ex. Schmett., figs. 3, 6 (1850), male; id., Distant, Rhop. Malay., p. 75, pl. v, figs. 10, male; 11, female (1882).



HABITAT: North-East India, Burma, Andaman Isles, Malaya.

EXPANSE: ♂, 3.4 to 3.8; ♀, 4.0 to 4.5 inches.

DESCRIPTION: MALE: UPPERSIDE dark olivaceous, with deep indigo-blue reflections. Forewing with a linear discal spot below the first discoidal nervule (in the median series), another beyond it below the second discoidal nervule (in the discal series), and a submarginal series of five spots, all ochraceous. Hindwing, with the usual patch of raised plush-like scales. UNDERSIDE reddish ochraceous, with dark brown transverse strise, most numerous on the outer half, a dark brown median fascia across the middle of both wings, and two submarginal lunulate lines, the outer indistinct; the ground-colour between the two irrorated with

whitish on the forewing and near the anal angle of the hindwing; the colour between these and the median fascia suffused with brown in the middle, forming a broad indistinct transverse band: a subbasal highly irregular dark zigzag line crossing the middle of the cell on both wings, within which are on the forewing three dark spots in a row across the cell, and on the hindwing two dark spots below the cell; between it and the median fascia the dark brown strizæ are longer and more pronounced. *Hindwing*, with two ocelli just beyond the median fascia, one between the subcostal nervules, the other smaller between the lower median nervules, reddish brown, with diffused white pupil, narrow yellowish and black rings, and a yellowish outer lunule along the inner edge. **FEMALE**: **UPPERSIDE** vinaceous brown, lacking the bluish reflections and darkest on the outer half, where it is suffused with fuscous, especially about the apex of the forewing. *Forewing* with a broad fulvous fascia from the middle of the costa beyond the cell to near the outer margin between the third median nervule and submedian nervure, divided at its outer end by a submarginal, highly lunulate dark line into three submarginal lunulate patches. *Hindwing*, with a more or less prominent continuation of the dark lunulate submarginal line inwardly defined with fulvous lunules, sometimes reduced to a row of small fulvous submarginal spots, the outer margin of both wings tinged with fulvous. No discal patch of raised scales on the hindwing. **UNDERSIDE**, as in the male but much paler, and the dark markings ill-defined; the brown strizæ pale, but almost uniformly distributed, especially on the basal half.

The ochreous spots on the forewing of the **MALE** are not constant; in a specimen from the South Andamans all of them are obsolete, except the linear one between the discoidal nervules; in many specimens from Sikkim and some from Malacca there are two spots in the discal series, and in most specimens from Malacca there are three; the constant spot being in all cases the lowest of the series. The markings of the **FEMALE** also vary to a certain degree; the form above described, in which the outer end of the fulvous fascia is divided by a lunulate dark line into three submarginal spots is the common form in Sikkim; in a specimen from the Andaman Islands the dark line is obsolete at its upper end, and in the form figured by Mr. Distant from Malacca the line is altogether absent, the fulvous fascia extending uninterruptedly to near the outer margin. There are also traces of the median series of spots below the fascia; generally a single spot on the forewing, sometimes two or more on the hindwing.

D. celinde has rather a wide range; it is recorded from Nepal in the British Museum. In Sikkim it is not uncommon; the Indian Museum, Calcutta, has specimens from Sitsagar in Upper Assam, but we have as yet no record of its occurrence between Assam and Tenasserim; in Upper Tenasserim it appears to be more closely allied to *D. necho*, Felder, from Java, and was identified as such by Mr. Moore from Limborg's specimens; the only specimen, a male, sent by Captain C. T. Bingham is apparently intermediate between the forms *celinde* and *necho*, and is referred to below under the latter name; in the Malay peninsula it is common, but the Malayan race appears to be nearly as distinct from the typical Sikkim race as *D. necho* is; and those from the Andamans are again separable as an insular race from the obsolete character of the fulvous markings in the male. Dr. Anderson took a single male in the Mergui Archipelago in March. It is of the *necho* type, but the spots are smaller than in our specimen of this species from Upper Tenasserim, and it is an even more decided connecting link between *D. celinde* and *D. necho*.

The figure shows the uppersides of a male and a female both from Sikkim in the Indian Museum, Calcutta.

280. *Discophora necho*, Felder.

Discophora necho, Felder, Reise Novara, Lep., vol. iii, p. 462, n. 782 (1867); id., Moore, Proc. Zool. Soc. Lond., 1873, p. 827; *Morpho ? celinde*, Hornfield, Cat. Lep. E. I. C., pl. vi, fig. 6, female; pl. vii, fig. 11, larva; 11a, pupa; 11b—k, structure of imago (1899).

HABITAT: Upper Tenasserim, Java.

EXPANSE: ♂, 4.0; ♀, 4.2 inches.

DESCRIPTION: "**MALE**: **UPPERSIDE** paler than in *D. celinde*. *Forewing* with an oblique abbreviated fascia immediately beyond the middle, deeply and angulately cut through between

the median nervules, and outwardly above below the lower discoidal nervule, and three outer lunular spots closely approximating to it, whitish. *Hindwing* with the velvety patch broader than in *D. celinde*. *UNDERSIDE* as in *D. celinde*, but the *forewing* with the discal striga arched and slightly drawn back, and the powdery whitish border streak very macular and slightly arched. *Hindwing* with the discal striga more directed inwardly at the hinder end, the upper ocellus much smaller, the lower minute, the whitish border spots evanescent. **FEMALE**: *UPPERSIDE* as in *D. celinde*, but the *forewing* with the fascia rather broad, extending a little beyond the first median nervule immediately beyond the cell, and three outer spots, large, adherent, pale ochraceous. *Hindwing* with spots almost all as in *D. celinde*, but more obscure, much smaller, and more obsolete. *UNDERSIDE* as in the male, but very pale, the striga scarcely visible. Larger than *D. celinde*. (Felder, l. c.)

LARVA cylindrical, slightly tapering at each end, pale purplish brown; with a dorsal whitish line marked on each side on each segment with a black dash, a lateral darker line defined on both sides with still darker brown. On either side of this line is a series of tubercles one on each segment furnished with long pale brown hairs. The lower portion of the insect bearing the legs pale; brown than the rest of the body, this pale portion sharply defined; the anal segment furnished with a bifid tubercular process. **PUPA** boat-shaped, reddish-brown, streaked with darker brown, tapering to a point at either end. (Described from Horsfield's figures).

The single male specimen we have received from Upper Tenasserim has the submarginal series of spots on the forewing larger, the constant spot of the discal series much larger and another below it, the spot of the median series also much larger, with a short streak above and a spot below, all paler ochraceous than in *D. celinde*, but not whitish; the five last mentioned spots are almost coalescent into a subapical fascia, and the specimen is clearly intermediate between *D. necho* and *D. celinde*; on the underside the lower ocellus of the hindwing is obsolete, but has a prominent white pupil; it is a good deal larger than our largest male specimen of *D. celinde*. It was taken by Captain C. T. Bingham, at Houndraw, on the 18th December. Limborg's specimens, which came from the same locality, were identified by Mr. Moore as *D. necho*.

281. *Discophora lepida*, Moore.

Enicte lepida, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 253, n. 435 (1857); *Discophora lepida*, id., Lep. Ceylon, p. 36, pl. xviii, figs. 1, male; 12, 16, female (1880).

HABITAT: Hills of South India, Ceylon.

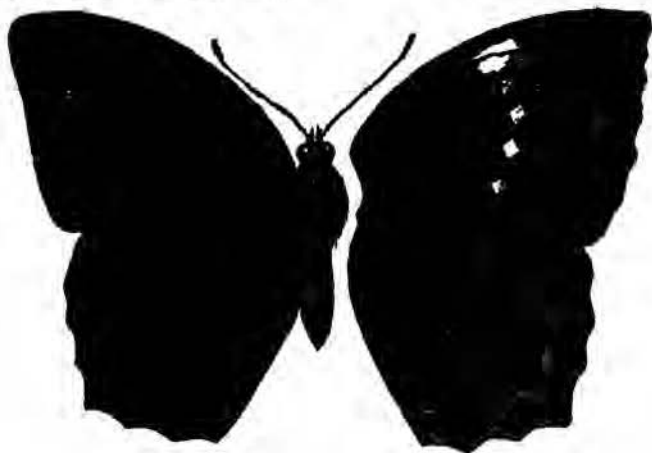
EXPANSE: ♂, 3.6 to 4.3; ♀, 4.0 inches.

DESCRIPTION: **MALE**: *UPPERSIDE*, velvety brown, slightly purplish, darkest in the middle, paler at the base and outer margin of both wings. *Forewing* with an oblique band beyond the cell of three coalescent bluish-white spots, sometimes a fourth separate below, and some faint marginal dots near the hinder angle. *Hindwing* unmarked, except for the oval patch of plush-like scales on the disc, though sometimes with a discal and submarginal series of obscure ochreous spots. *UNDERSIDE* almost exactly as in *D. celinde*, but darker and the dark markings less distinct. **FEMALE** paler brown. *Forewing* with a bluish-white band from the costa beyond the cell to the third median nervule, below which are three series of three bluish-white spots, the first marginal linear, the second submarginal lunulate, the third discal irregular. *Hindwing* paler brown, with three series of fulvous spots in continuation of the series on the forewing, the first reaching the anal angle, the second reaching the first median nervule, and the third only extending to the end of the cell; outer margin of both wings fulvous, divided by a brown line. *UNDERSIDE* pale ochreous, indistinctly covered with numerous slender brown strigæ; other markings as in the male, but less distinct.

D. lepida is found in Ceylon and in the hills of South India. We have as yet only received it from Travancore, where both sexes have been taken by Mr. H. S. Fergusson in the Ashambo Hills; it is a rare butterfly everywhere. In Ceylon it has been "taken in forest land near Galle in July; very rare." (Hutchinson.) Mr. Moore in his 'Lepidoptera of Ceylon' includes this genus among the *Nymphalina*.

232. *Discophora tullia*, Cramer.

Papilio tullia, Cramer, Pap. Ex., vol. i, pl. lxxxi, figs. A, B (1775). *female*; *Morpho tullia*, Godart, Enc. Méth., vol. ix, p. 446. n. 19 (1819); *Discophora tullia*, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 4, p. 311, n. 431, pl. xii, figs. 15, *larva*; 132, *pupa* (1857).



HABITAT : North-East India, Burma.

EXPANSE : ♂, 3'3 to 3'8; ♀, 3'5 to 3'9 inches.

DESCRIPTION : MALE : UPPERSIDE velvety fuliginous brown. *Forewing* with three nearly complete series of bluish, fulvous, or white spots, one submarginal, one near to it discal, and one more remote median. *Hindwing* with the usual patch of plush-like scales, two obsolete submarginal series of ochraceous spots. UNDERSIDE paler than in *D. celinde*, but more uniform in tone, the dark markings not so prominent. FEMALE paler brown, sometimes with a fulvous tinge. *Forewing* with the three series of spots larger, white, the discal ones only irrorated with bluish, the median and discal spots between the discoidal nervules coalesced. *Hindwing* with three corresponding series of bright fulvous spots, and a series of indistinct fulvous spots on the outer margin. UNDERSIDE as in the male, but much paler and duller in colour.

LARVA brown, thickly covered with brown hairs, with a paler dorsal line, and a dark brown spot on each side of it on each segment; the first three segments with a yellow ring. "Feeds on *Bambusa*." (l. c.) PUPA pale brown, smooth, boat-shaped, tapering to a fine point at the head. (Described from Moore's figures.)

D. tullia is commoner than *D. celinde*, and has been taken in more localities, but the geographical range is the same within Indian limits, excepting that *D. tullia* is known to occur in the plains of Bengal as far south as Calcutta at all events. In the MALE the blue spots on the *forewing* are generally small, sometimes partially obsolete; all three series are usually clearly traceable; in some specimens the submarginal series is obsolete, in others the median series has disappeared, with the exception of the spot between the discoidal nervules. In the Malay race figured by Mr. Distant in his *Rhopalocera Malayana* all three series have disappeared, and the upperside is unspotted, but this latter is probably the male of the next species, *D. sal*. The FEMALE varies much in tone, and in some all three series of spots on the *forewing* are white as in Cramer's type figure without any trace of bluish irrorations. *D. tullia* is common in Sikkim and in Tenasserim from September to April. In the neighbourhood of Calcutta Mr. de Nicéville has taken it throughout the year. They rest under the shade of large trees among the dead leaves on the ground, taking short flights when disturbed, and are easily captured. Mr. Wood-Mason took it commonly in Cachar from May to August; and there are specimens in the Indian Museum, Calcutta, from Sibsagar, and Sylhet.

The figure shows the upperside of both male and female, and is taken from specimens from Sibsagar in the Indian Museum, Calcutta.

283. *Discophora sal*, Westwood.

D. sal, Westwood, Gen. D. L., vol. 11, p. 331, n. 5 (1851), note, idem, id., Trans. Ent. Soc. Lond., new series, vol. 14, p. 188 pl. xxi, figs. 5, 6 (1850), female, id., Moore, Proc. Zool. Soc. Lond., 1876, p. 826 *D. tullia*, Distant, Rhop. Malay., p. 74, pl. vii, figs. 8, male, 9 female (1882).

HABITAT: Pegu, Tenasserim, Malay Peninsula.

EXPANSE: ♂, 2.8 to 3.3; ♀, 3.55 to 4.10 inches.

DESCRIPTION: FEMALE: "Forewing with the apex subfalcate. Hindwing angulated in the middle of the outer margin and at the anal angle. UPPERSIDE fulvous. Forewing with the costa pale, and with the outer half fuscous, bearing a triple series of spots, the inner series white, the rest fulvous. Hindwing fulvous, with a triple series of fuscous lunules and a cloudy fuscous submarginal line. UNDERSIDE whitish-yellow, with a narrow line and spots near the base fuscous, an obscure not very distinct median fascia, and two small ocelli placed beyond the middle."

"This species is remarkable for the somewhat falcate form of the forewing, and the angulated hindwing, the white colour also of the innermost row of spots on the forewing is characteristic. In this wing the ground-colour is brown, the spots being pale coloured, but in the hindwing the spots are so much increased in size as to constitute the ground-colour of the wing, reducing the separating dark parts to rows of obscure lunules. The oblique nervule which closes the discoidal cell [in the forewing] is curved at its base, and marked by a dark brown spot, with a dark dot beneath it. There is also a corresponding dark dot on the discoidal cell of the hindwing, which is not closed by a disco-cellular transverse nervule. The very pale buff colour of the underside of the wings, with the markings nearly obsolete, is also very characteristic" (Westwood, l. c. in Trans. Ent. Soc. Lond.). Expanse of Westwood's figure, 3.85 inches.

The above description evidently refers to a FEMALE specimen, and the male has not as yet been discriminated. The fulvous colour of the two outer rows of spots on the forewing renders it notably distinct from the female of *D. tullia* independently of other minor differences. We have a female specimen from Rangoon which answers exactly to the description of *D. sal*, except that the basal half of the upperside is fulvous brown rather than fulvous, and bears an incomplete but prominent fourth series of spots (shown in Westwood's figure), the median series is pure white, and the two upper discal spots are tinted bluish white; all the rest are pure fulvous and Limborg took others in Upper Tenasserim, but among all the numerous males that we have received from Tenasserim none are separable from *D. tullia*. From Mr. Distant's figure and description the females in the Malay Peninsula are all of the *D. sal* type, but differing as in the Rangoon specimen noted above only more prominently, the basal area is more decidedly brown, and the upper three spots of the discal series are tinted with blue; the fourth series of spots is, however, only represented by a spot in the cell of the forewing and one beyond it; and they are clearly the *D. sal* of Westwood. The MALE of the Malayan race, as described and figured by Mr. Distant, differs from *D. tullia* in having the upper surface entirely unspotted, all three series of spots being obsolete; and the conclusion we come to is that *D. sal* is a well defined local race of *D. tullia*.

Genus 37.—ENISPE, Westwood.

Enispe, Westwood, Gen. D. L., vol. 11, p. 292 (1850) idem, id., p. 330 (1851).

BODY robust, woolly. FOREWING with three branches only to the subcostal nervure, the second branch being obliterated, the first anastomosing with the costal nervure. HINDWING with the outer margin evenly convex, not angled at the tip of the third median nervule. MALE without the discal patch of raised plush-like scales, but having the discoidal cell and the fold below the median nervure clothed with long hairs, otherwise not differing from *Discophora*. FORELEGS in both sexes slightly longer than in *Discophora*, those of the FEMALE more distinctly hairy, but not nearly so hairy as in the male. Transformations unknown.

The genus *Enispe* comprises as yet only two species, both of which inhabit the north-eastern corner of India not extending to the Malay peninsula. The typical species has the wings bright orange-red, with several series of blackish markings; but the other species has very much the colouring of a *Discophora*. Little or nothing is known of their habits, which are probably similar to those of the closely-allied *Discophoras*.

Key to the species of *Enispe*.

A Forewing with the outer margin straight and the apex acute; hindwing with the outer margin regularly convex, and the anal angle acute

a. Both sexes bright orange with black markings.

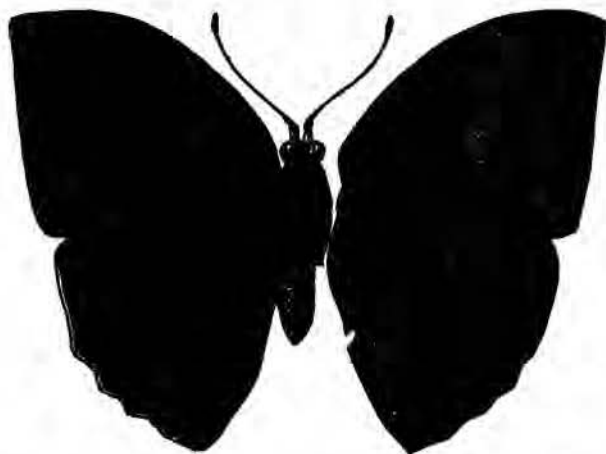
284. *E. eUTHYMIUS*, N.-E. India, Tenasserim.

b. Both sexes brown, with a lilac band and spots on the forewing; female with ochreous yellow spots on both wings.

285. *E. CYCNEUS*, N.-E. India.

284. *Enispe euthymius*, Doubleday.

Adolus euthymius, Doubleday, Ann. and Mag. of Nat. Hist., vol. xvi, p. 179 (1845); *Enispe euthymius* Doubleday, Hewitson, Gen. D. L., vol. ii, p. 292, pl. xl, fig. 2 (1850), male.



HABITAT: Sikkim, Naga and Khasi Hills, Assam, Cachar, Upper Tenasserim.

EXPANSE: 3.4 to 3.9 inches.

DESCRIPTION: "MALE: UPPERSIDE, both wings bright orange-red. Forewing with a large [fuscous] spot on the disco-cellular nervules, followed by two small ill-defined ones on [either side of] the lower discoidal nervule; the outer margin broadly fuscous black, with faint indications of four or five reddish lunules; this black border dilated towards the apex, much dentate internally, preceded by a broad, zigzag [fuscous] striga, commencing near the anterior and extending nearly to the inner margin; the median nervules each with a round fuscous spot before their middle [and similar spots on the discoidal nervules completing the series]. Hindwing clothed at the base with long hairs; a discoidal spot, two lunulated bands, and the outer margin slightly fuscous. UNDERSIDE paler. Both wings marked at the base with some indistinct fuscous spots, beyond which is an undulating striga crossing the middle of the discoidal cell of the forewing, and reaching the inner margin of the hindwing near the middle. Beyond this is a less curved band commencing on the costa beyond the middle and reaching nearly to the anal angle, followed by a space rather paler than the rest of the

wing. Beyond the middle are four black dots [on the hindwing], the first and fourth largest, the latter pupilled with white [these dots are sometimes obsolete]. Faint indications of the bands above are visible below. HEAD rufous. *Antennæ* brown, darker towards the apex. *Palpi* red. *Thorax* and *abdomen* brick-red." (Doubleday, l. c.) FEMALE similar to the male, but with the fuscous marks more defined and extended. *Forewing* with the reddish marginal lunules prominent and dividing the fuscous margin as on the hindwing. *Hindwing* with a discal series of fuscous lunules in continuation of the macular series on the forewing; *both wings* with a prominent fuscous median line, corresponding with the median band of the underside, thus making five complete series of dusky markings on both wings in addition to the patch at the end of the cell of the forewing. UNDERSIDE as in the male.

The markings of the male insect vary, approximating more or less from the form described above to the markings of the female. The tone of the ground-colour also varies a good deal, a male specimen taken by Mr. Wood-Mason on Nemotha in Cachar in September being of a far deeper and richer orange-red than any other specimens we have seen.

E. euthymius is found in the mountains to the north and east of Bengal, extending southward as far as Tenasserim. It is not uncommon in Sikkim; the Indian Museum, Calcutta, has specimens from the Naga Hills; it was not met with by Limborg, but Captain C. T. Bingham has taken it in the lower Thoungyeen forests in Upper Tenasserim in March and April.

The figure shows the upper and undersides of a male specimen from Sikkim in the Indian Museum, Calcutta.

285. *Enispe cyenus*, Westwood.

E. cyenus, Westwood, Gen. D. L., vol. ii, p. 330 (1851), note; id., Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 212, n. 434 (1857).

HABITAT: Sikkim, Upper Assam, Sylhet.

EXPANSE: ♂, 3.12; ♀, 3.62 to 4.00 inches.

DESCRIPTION: "MALE: UPPERSIDE blackish-brown; base and exterior margins paler. *Forewing* with an oblique band from the middle of the anterior margin terminating in a transverse series of lunular spots, and a parallel outer row of four quadrate spots, lilac-white. *Hindwing* with very indistinct marginal and submarginal pale spots. UNDERSIDE with a transverse brown dentate band from middle of costal margin to anal angle [outwardly distinctly and inwardly indistinctly edged with a darker line]; the base of the wings orange-yellow, with narrow irregular transverse markings [arranged as in *E. euthymius*, but much more prominent]; exterior half of wings light brown [darkest inwardly], with [three] indistinct transverse [lunular] lines. *Hindwing* with a small anterior black dot and a posterior white dot. FEMALE: UPPERSIDE: *Forewing* with the base obliquely dull chocolate-brown, the rest brownish-black; the lilac white oblique band and spots as in male, but larger, with two inner rows and terminal spots ochreous yellow. *Hindwing* with the basal half to abdominal angle dull chocolate-brown, with a marginal, submarginal, an inner third and a short fourth row of ochreous-yellow spots, the spaces between blackish. UNDERSIDE yellow throughout, with a slight greenish tinge; transverse dentate band and markings as in male." (Moore, l. c.) The discal band and markings of the basal area are very prominent, those on the outer half obsolescent.

E. cyenus is a rare and very interesting species; the MALE has the colouring of a *Discophora*, and it has the hairy clothing of the *Hindwing* far more extended than in *E. euthymius*, the long hairs covering the whole discoidal cell and as far beyond as the curve in the third median nervule. The FEMALE also has the *forewing* marked as in *Discophora* and the *hindwing* as in *Enispe*, and on the whole most nearly resembling the same sex of *D. lepida*, but in structure it is a true *Enispe*. The type specimen was received from Sylhet; the Indian Museum, Calcutta, has a male specimen from Sibsagar in Upper Assam; another with no record of locality, and a female from Sikkim. We know of no other specimens in collections in this country.

Genus 33.—ÆMONA, Hewitson. (FRONTISPIECE.)

Æmona, Hewitson, Ex. Butt., vol. iv, pl. *Zeuxidia* and *Æmona* (1868); *Æmona*, Wood-Mason, Journ. A. S. B., vol. xlix, pt. ii, p. 175 (1880).

"HEAD small. *Antennæ* rather short. FOREWING acutely pointed and produced, or sharply angulated, at the apex; its inner margin straight in both sexes, not being lobed at the base in the male as it is in *Clerome* and less distinctly in *Thaumantis*; the costal nervure reaching to the end of the fifth seventh of the length of the anterior margin; the subcostal four-branched, the first branch given off just before the end of the cell, and, after running free for nearly the same distance beyond that point as it originates before it, completely coalescing with the costal, but again becoming free just before this last named nervure turns off to the anterior margin; the three remaining branches free. HINDWING more elongated than, and not quite so rounded as, in *Clerome*; without the pencil of erectile setæ which, in the males of *Thaumantis*, arises from the wing-membrane of the discoidal cell close to the subcostal nervure, and lies obliquely across a patch of elevated and crowded scales on the other side of this nervure, the male scent-fans, if such are really present in this genus, being situated in a different part of the wing, viz., in the anal region, where a line of setæ running along the anterior side of the submedian nervure ends in a curled whisp which, when at rest, lies in a slight groove or fold of the wing-membrane. In the form of the hindwing and in the position of the male scent-fans *Æmona* agrees best with *Xanthotenia*, and in its pointed forewing with *Zeuxidia*, *Enispe*, and *Discophora*, but it differs from these and from all the other Indian genera of *Morphine* in the relations of the costal and subcostal nervures to one another, and in other respects." (*Wood-Mason*, l. c.)

The genus *Æmona* is confined to the north-east corner of India extending into Upper Tenasserim. It contains three species only; they are "plain and delicate butterflies of a pale fulvous colour, inconspicuously or obsoletely ocellated on the underside." (*Wood-Mason*, l. c., p. 176). *Æ. lena* is a very distinct species; *Æ. amathusia* and *Æ. pealii* are very closely allied, differing chiefly in the apex of the forewing, which in the former species is sharply produced; in the latter more rounded. Nothing is known of the habits of any of the species, and all of them are very rare. We have not seen a female specimen of any of the species.

Key to the species of *Æmona*.

- A. Forewing produced and pointed at the apex, with its outer margin concave-sinuous.
 - a. Forewing marked with a series of five pale lanceolate blotches on the upperside.
 - 286. *Æ. LENA*, Upper Tenasserim.
 - b. Forewing with no pale blotches on the upperside.
 - 287. *Æ. AMATHUSIA*, Northern India, Naga Hills.
- B. Forewing sharply angulated at the apex, with its outer margin convex.
 - a. Upperside marked almost exactly as in *Æ. amathusia*.
 - 288. *Æ. PEALII*, Upper Assam.

286. *Æmona lena*, Atkinson.

Æ. lena, Atkinson, Proc. Zool. Soc. Lond., 1872, p. 215, pl. xii, fig. 1, male; id., Moore, Anderson's Researches, vol. i, p. 944, vol. ii, pl. lxxxii, fig. 1 (1878); id., Wood-Mason, Journ. A. S. B., vol. xlix, pt. ii, p. 177, n. 2 (1880).

HABITAT: Upper Tenasserim.

EXPANSE: ♂, 3.25 inches.

DESCRIPTION: MALE: "UPPERSIDE: Forewing pale brownish grey, crossed by a dark brown band, interrupted by the nervures from before the apex to near the posterior margin at two-thirds of its length from the base; beyond the band darker, with a slightly marked and incomplete submarginal line, before which is a series of five pale lanceolate blotches between the nervures directed towards the outer margin. All the nervures tinged with yellow, and more or less dark-bordered. Hindwing: Anterior portion from base to outer margin pale, posterior portion bright yellow, crossed by a submarginal series of three dark-bordered white blotches, and a fourth fainter blotch between the nervures, forming a short interrupted band from near the apex to the second median nervule. The submedian nervure fringed from its

origin to near its extremity with long yellowish hairs, longest and most conspicuous towards its extremity. **UNDERSIDE**: Both wings crossed by a dark ferruginous band with sharply defined outer edge from the costa of the forewing near the apex to near the extremity of the submedian nervure of the hindwing, and having a faintly traced submarginal line, before which is a series of blind white-centred ocelli. The cell of the forewing crossed near its middle by a curved ferruginous band. Hindwing crossed by a ferruginous band near the base. *Antenna* ferruginous; *palpi* and *legs* tawny yellow." (Atkinson, l. c.)

"Atkinson does not give the sex of the specimen described and figured by him, but, as the two specimens in the Indian Museum obtained at the same time are males and agree perfectly in size and markings with his figure, he may be presumed to have described a male. In a specimen of the male recently received from the Upper Thoungyen forests, British Burmah, by Major G. F. L. Marshall, [where it was taken in April], the three white spots on the anterior half of the hindwing are larger, forming a band divided by the veins." (Wood-Mason, l. c.)

This species was also taken by Lumborg in Upper Tenasserim at Moolai, 3,000 to 6,000 feet elevation.

287. *Æmona amathusia*, Hewitson. (FRONTISPICE, FIGS. 2, 2a ♂.)

Clerome amathusia, Hewitson, Trans. Ent. Soc. Lond., third series, vol. v, p. 566 (1867); *Æmona amathusia*, id., Ex. But., vol. iv, pl. *Zenaxidia* and *Æmona*, figs. 3, 4 (1868), female; id., Wood-Mason, Journ. A. S. B., vol. xlix, pt. ii, p. 176, n. 1, pl. vi, figs. 2, 2a (1880), male.

HABITAT: Northern India, Naga Hills.

EXPANSE: ♂, 2.9; ♀, 3.2 inches.

DESCRIPTION: "FEMALE: UPPERSIDE rufous-brown, the bands of the underside seen through. Forewing crossed beyond the middle by a band of orange-yellow: the apex dark brown. Hindwing with some arcuate spots near the apex. **UNDERSIDE** rufous, tinted with darker colour. Both wings crossed at the middle by a common rufous-brown band: both with a band of minute rufous ocelli, some of which are pupilled with white: both with a submarginal rufous band. Forewing with a pale rufous band near the base, and a spot of the same colour at the end of the cell. Hindwing with a dark rufous band near the base." (Hewitson, l. c.) "MALE: Lighter-coloured than the female. UPPERSIDE pale fulvous, the strigæ or bands of the underside showing through. Forewing darker at the base and at the tip, between which darker parts the colour is very pale yellowish-fulvous. Hindwing of the same shade as the base of the forewing to within a short distance of the margin, whence it is paler, and with an indistinct submarginal series of arcuate marks extending from the apical to the anal angle. **UNDERSIDE** uniform pale fulvous; the strigæ as in the female; the ocelli (one, the second and largest, perfect, the remaining five rudimentary) of the hindwing also as in the female, but in the forewing only the one between the first and second median nervules and faint traces of that between the first median nervule and the submedian nervure are present; the thin submarginal brown line more obviously engrailed than in the female." (Wood-Mason, l. c.)

The male specimen described above is unique in the collection of the Indian Museum, Calcutta.

288. *Æmona pealii*, Wood-Mason. (FRONTISPICE, FIGS. 3, 3a ♂.)

Æ. pealii, Wood-Mason, Journ. A. S. B., vol. xlix, pt. ii, p. 177, n. 3, pl. vi, figs. 3, 3a (1880), male.

HABITAT: Sibsagar, Upper Assam.

EXPANSE: 2.8 inches.

DESCRIPTION: "MALE: Closely allied to *Æ. amathusia*. UPPERSIDE coloured and marked in the same manner, but with the ocelli as well as the strigæ of the underside showing through. Forewing with the apex angulated, but not produced, the outer margin arched instead of concave-sinuuous, and the inner angle not so broadly rounded. Hindwing darker-coloured and also paler towards the outer margin, but with the submarginal series of arcuate marks smaller and less distinct. **UNDERSIDE** coloured and marked in much the same manner, but with more perfectly formed and more numerous ocelli; the forewing having three (the first between the submedian nervure and the first median nervule, the second the largest and best defined) perfect ocelli and two or three rudimentary ones following them, and the hind-

wing, one rudimentary (close to the submedian nervure) and six (the first in the same interspace with the rudimentary one, and the second the largest of all) perfect ones; each ocellus dark brown encircled by a very fine line of the colour of the strigæ and pupilled with iridescent silvery-white; the thin submarginal brown line rather more deeply engrailed." (Wood-Mason, l. c.) The FEMALE is unknown.

There are two male specimens of this species, including the type, in the Indian Museum, Calcutta.

Genus 39.—THAUMANTIS, Hubner.

Thaumantis, Hübner, Samml. Ex. Schmett. (1816-1824); id., Westwood, Gen. D. L., vol. ii, p. 335 (1851), in part; idem, id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 170 (1856), *Monograph*.

BODY somewhat robust, hairy. HEAD large, hairy, with a small frontal tuft. EYES large, prominent, naked; palpi slender, compressed, nearly erect, scarcely rising above the level of the eyes, densely clothed in front with short scaly appressed hairs, a tuft of longer hairs at the back of the middle joint against the face, terminal joint short, slender. WINGS large, rounded, ample. FOREWING with the apex more or less rounded, the hinder angle much rounded; subcostal nervure with four branches, the first anastomosing with the costal nervure for part of its length, the second anastomosing with the first, the third and fourth free; upper and middle disco-cellular nervules short, the middle usually longer than the upper; the lower disco-cellular long, feebly concave or nearly straight. HINDWING with the costa, apex, outer margin and anal angle all rounded; the third median nervule much bent and approximating closely at the bend to the discoidal nervule. The internal nervure long, nearly straight. FORELEGS of the MALE slender and very slightly hairy; of the FEMALE much longer, more slender, scaly, and somewhat truncate at tip.

The genus *Thaumantis* contains some of the most beautiful and largest Butterflies of the Eastern world; in the size of its wings it is exceeded by the allied genus *Stichophthalma* and by the *Amathusias* of the *portheus* group, but in brilliancy of colouring it is surpassed by neither.

Only seven species are known, all from the Indo-Malayan region. Even as restricted by the exclusion of *Stichophthalma* (which some authors still unite with it) the genus presents two distinct groups, differing both in style of colour and in structural features.

Key to the Indian species of *Thaumantis*.

- A. Wings black, with brilliant metallic purple reflections, the forewing with the apex much rounded; males with a distinct tuft of erectile hairs on the hindwing along the subcostal nervure, the rest of the base of the wing scarcely hairy.
 - a. The brilliant metallic purple reflections confined on the forewing to a broad curved band.
 289. *T. DIOROS*, N.-E. India.
 - ß. The brilliant metallic purple reflections much spread inwardly, and occupying on the forewing nearly the entire disc.
 290. *T. RAMDRO*, N.-E. India.
 - T. ODANA*, Singapore, Java.
 - T. LUCIPOR*, Malay Peninsula, Borneo.
 - T. NOUREDDIN*, Malay Peninsula, Borneo.
- B. Wings brown, with a pale yellowish or white oblique fascia on the forewing; the apex and outer portion of the hindwing bright fulvous. Forewing with the apex less rounded, the outer margin straight. Males with the entire base of the hindwing clothed with long hairs, longest and partially erectile below the subcostal nervure.
 291. *T. PSEUDALIRIS*, Tenasserim, Malay Peninsula.
 - T. ALIRIS*, Malacca, Borneo.

289. *Thaumantis dioros*, Doubleday.

T. dioros, Doubleday, Ann. and Mag. of Nat. Hist., vol. xvi, p. 234 (1845); id., Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 171 (1856).

HABITAT: Sikkim, Assam, Naga Hills, Sylhet.

EXPANSE: 4.0 to 4.7 inches.

DESCRIPTION: Sexes alike. "UPPERSIDE: Both wings fuscous black, the forewing with a broad band-like spot, commencing near the costa beyond the middle, and extending

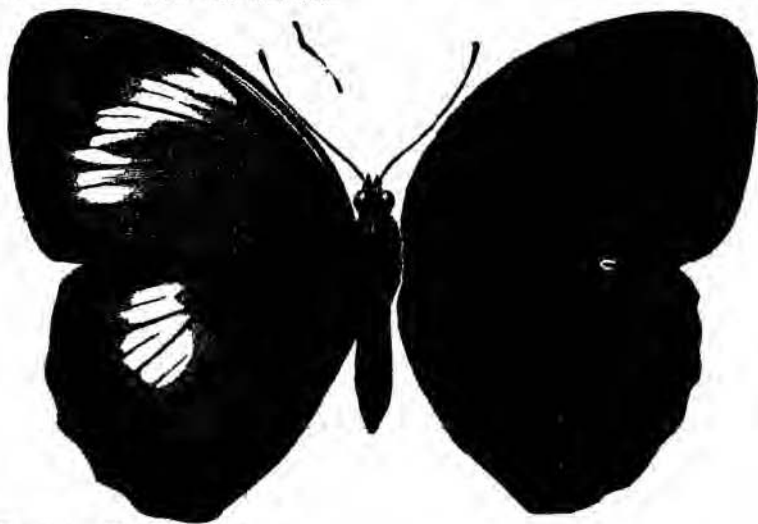
towards the anal angle as far as the lowest median nervule. This spot is of a brilliant metallic, changeable blue, much paler and less changeable externally. On the *hindwing* is a large patch of the same rich blue, paler in the centre, occupying the whole disc of the wing. *UNDERSIDE*, both wings less black than above, the outer margin paler; this pale portion bounded internally by an undulated pale or whitish striga, becoming brown towards its termination at the anal angle of the hindwing; between this and the margin is another less distinct similar striga. The *forewing* has besides two fuscous strigæ in the discoidal cell inclosing a paler space, and a third striga commencing on the costa beyond the cell, and extending obliquely nearly to the anal angle, slightly bordered internally with whitish. The *hindwing* has a transverse fuscous striga near the base, and another commencing near the middle of the costa, and reaching nearly to the anal angle. Just within the pale submarginal striga near the costa is a round yellowish spot, enclosing a brown one placed towards its outer margin, and between the first and second median nervules a round black spot sprinkled with blue atoms anteriorly, and surrounded by a yellowish and a black iris. Anal angle with a geminate spot, composed of black and white atoms. *Head*, thorax and abdomen fuscous" (*Doubleday*, l. c.)

"The MALE has a patch of brown hairs capable of erection at the base of the *hindwing* on the *UPPERSIDE*. The apical angle of the forewing and the anal angle of the hindwing is much more rounded than in *T. odana*; the body is also much less robust. The branches of the subcostal nervule of the forewing in this species are of the same number and almost identical in their arrangement with those of *T. odana*." (*Westwood*, l. c.)

The metallic blue band on the forewing of this species seldom extends to below the first median nervule; in a single specimen in the Indian Museum, Calcutta, it extends to the inner margin, but even in this one the inner edge of the band is parallel to the outer margin, and scarcely extends into the cell; on the hindwing the metallic blue patch only reaches the first median nervule and scarcely tinges the cell. It is not uncommon in Sikkim, and is confined to the north-east corner of Bengal, not extending so far as is known into British Burma. Mr. Wood-Mason took it on Nemotha in Cachar in September and October.

290. *Thaumantis ramdeo*, Moore.

T. ramdeo, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i. p. 215, n. 441; id., Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 179 (1856).



HABITAT: Sikkim; Assam.

EXPANSE: 4'0 to 4'75 inches.

DESCRIPTION: "Differs from *Thaumantis diorea* in being larger, and in having the

brilliant blue patch very large, it being an inch in diameter either way, and extends over the whole of the middle of the wings. The *underside* is paler than in *T. diorea*, and the wavy line running near the exterior margins of *T. diorea* is nearly obsolete in *T. ramdeo*, the two ocelli on the *hindwing* are very small" (Moore, l. c.) FEMALE like the male, but larger, and lacking the erectile tuft of hairs on the hindwing.

Thaumantis ramdeo is found over the same ground as *T. diorea*; the Indian Museum has specimens from Sikkim, from Sibsagar in Assam, and from the Daffa hills. It is a very beautiful species; the metallic blue patch is paler with an even more brilliant metallic sheen: on the forewing it extends to the inner margin and well into the discoidal cell, and on the hindwing it extends well below the first median nervule and covers the entire cell to the base.

The figure shows the upper and undersides of a male specimen from Sibsagar, Upper Assam, in the Indian Museum, Calcutta.

T. odana,* the typical species of this section, inhabits Singapore and Java. It differs from the Indian species in lacking the metallic blue patch on the hindwing. Two other species of the group, *T. lucifer* and *T. noureddin*, occur in the Malay Peninsula,† descriptions of them are appended for reference. They have the anal angle less rounded and more produced than in the Indian species.

* *Morpho* [*Thaumantis*] *odana*, Godart, Luc Méth., vol. ix, p. 445 n. 16 (1819), id., Horsfield Cat. Lep. E. I. C. pl. vi, figs 5, 5a (1820). *Thaumantis odana* Boiduval Spéc. Gen. Léop. vol. 1 pl. xii (viii B) fig. 1 (1831). HABITAT: Singapore, Java, EXpanse 4 inches. DESCRIPTION: "Sexes alike in colour. *UPPERSIDE*, both wings blackish fuscous. *Forewing* with a broad oblique purplish blue discal fascia shining paler in the middle and a white subapical dot. *UNDERSIDE* with discal stræ and outer margin greyish or lilac white. *Hindwing*, with a small costal marginal dot and a large ocellus towards the anal angle curved with yellow above. The underside varies considerably in the intensity of the markings, especially in specimens from Singapore, from whence it has been sent by Mr. Wallace. The male has a pair of hairs at the base of the hindwing on the upperside." (Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 170 (1856). Mr. Distant does not include this species in his *Rhopalocera Malayana*.)

† *Thaumantis lucifer*, Westwood, Gen. D. L., vol. ii, p. 337 n. 5 (1851), note, idem, id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 171 n. 5, pl. xix (1856), id., Distant, Rhop. Malay., p. 77, pl. ix, figs 8, male, 9, female (1882). HABITAT: Province Wellesley, Borneo. EXpanse. *Male*, 3.5 to 3.7, *female*, 3.8 inches. DESCRIPTION: "MALE. *UPPERSIDE*, both wings pale chocolate brown, the discal darker, and with dark and resplendent bluish reflections, which do not extend to the costal area and wide outer margin (diminishing from the apex) of the forewing nor to the abdominal or outer margin of the hindwing. *UNDERSIDE*, both wings chocolate brown with the outer margins broadly and distinctly paler. *Forewing* with three very indistinct and irregular pale fasciæ crossing the cell and terminating about the first incision; an nervule near the pale outer margin, which possesses a submedial and much wavy darker line on the inside of which the colour is much suffused with greyish, beneath the first median nervule the colour is pale brownish. *Hindwing* with the basal area much suffused with greyish, on which is a large, irregular and curved fascia, which is broadest on the costal margin and narrowest at its termination near the submedian nervule. At the boundary of the pale outer margin the colour is much darker, and between the first median nervule and the submedian nervule appears as a suddenly bent and reflected fascia, this area contains two ocellated spots: the first and uppermost of which, situated between the subcostal nervules, is dark with a slightly paler margin, and its inner hind white, the lower is situated between the second and first median nervules, and has its inner margin white. The outer pale margin possesses a submedial and much wavy darker line, on the inside of which the colour is much suffused with greyish, and between the first median nervule and the submedian nervule is an oblong black spot with an outer white continuation. *Body and legs* more or less concolorous with the wings. The male possesses two basal patches of pale (described as black by Professor Westwood in the typical specimen, so probably variable in hue) hairs near the costal base of the upperside of the hindwing, which probably denote scent secretory organs. FEMALE larger, and with the wings on the upperside slightly paler than in the male, with similar blue reflections as in that sex, but which do not extend beyond the basal halves of both wings. *Forewing* with the blue reflection outwardly bounded by a more or less distinct pale oblique but broken fascia commencing above the first discoidal nervule and terminating near the first median nervule. Two small subapical ochraceous spots on each side of the fifth subcostal nervule, followed by a much wavy and sinuated submarginal ochraceous fascia, commencing near the first discoidal nervule and terminating near the outer angle. *Hindwing* with a much wavy and sinuated fuscous submarginal fascia, commencing near the apex of the first subcostal nervule and terminating near the anal angle, between the subcostal nervules this fascia is outwardly bordered by a pale ochraceous marginal spot. *UNDERSIDE* somewhat paler and brighter than in the male, excepting the dark shadings, which are as intense as in that sex. *Hindwing* crossed by a narrow undulating dark fascia, commencing near the costa, crossing near the apex of the cell, and terminating at the first median nervule (this is faintly discernible in the male). The submedian waved fascia to the pale outer margin of both wings are also very distinct." (Distant, l. c.)

Thaumantis noureddin, Westwood, Gen. D. L., vol. ii, p. 337, n. 6 (1851), note; idem, id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 175, n. 6, pl. xx (1856), id., Distant, Rhop. Malay., p. 78, pl. vii, fig. 3, male, pl. ix, fig. 7, female (1882). HABITAT: Province Wellesley, Malacca, Borneo. EXpanse. *Male*, 3.7, *female*, 3.7 to 3.9 inches. DESCRIPTION: "MALE. *UPPERSIDE*, both wings dark fuscous-brown, the outer margins broadly paler. *Forewing* with the pale outer margin much wavy inwardly, and there denoted by a row of more or less distinct whitish spots placed upon the nervules, the costal area and basal portion of the cell also somewhat paler. *Hindwing* is paler outer portion much less well defined, broadest at the anal angle and terminating

The apices of the forewing in the females of both species are also somewhat truncated, not rounded, as in *T. dores* and *ramides*; the male of *T. lucifer* has the apex of the forewing acute. *T. lucifer*, male, has the upperside almost entirely suffused with blue; in the female this colour is confined to the basal areas of both wings, but it has a deeply dentate submarginal line, ochreous in the forewing, fuscous in the hindwing. In *T. noureddin* the blue colour is obsolete on the upperside in the male, but present at the base of both wings in the female, which latter has a submarginal and discal series of five ochreous spots, the inner series bent inwards anteriorly.

291. *Thaumantis pseudalris*, Butler.

T. pseudalris, Butler, Journ. Linn. Soc. Lond., Zoology, vol. xii, p. 115 (1876), id., Trans. Linn. Soc. Lond., Zoology, second series, vol. i, p. 538, pl. lxviii, fig. 1 (1876), male, *Thaumantis alris*, Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 176 (1856) male, *Thaumantis pseudalris*, Distant, Rhop. Malay, p. 79, pl. viii, fig. 3 (1882), male, id., Butler, Ann. and Mag. of Nat. Hist., fifth series, vol. x, p. 372 (1882).

HABITAT. Tenasserim, Malay Peninsula.

EXpanse. ♂, 44 to 47, ♀, 45 to 54 inches.

DESCRIPTION. MALE. UPPERSIDE, forewing velvety blackish-brown, the outer margin slightly paler, the base suffused with dull ferruginous, a pale ochreous transverse fascia from the costa just beyond the cell to the first median nervule and continued to near the hinder angle by a coalescent spot of the same colour below the first median nervule; two white spots near the apex. Hindwing velvety blackish-brown, the base suffused with dull ferruginous; the apex and the anal third from discoidal nervule to abdominal margin bright orange fulvous. UNDERSIDE, forewing with the basal area greyish ochreous, densely clothed with short hairs, a chestnut line across the cell, within which is a large chestnut spot and a smaller one above it on the costa, the pale fascia of the upperside but whiter and continuous, the space between it and the basal area chestnut shading into deep brownish black near the hinder angle, and into greyish-ochraceous along the inner margin; beyond the fascia the outer margin is broadly ferruginous, inwardly sharply defined by a fuscous line, the triangular space left between this border, the costa, and the pale transverse fascia also ferruginous, irrorated with dusky, darkest near the fascia, palest outwardly and suffused with white at the extremity. Hindwing with the basal area greyish-ochraceous as in the forewing, extending almost to the anal angle, and bearing a large chestnut spot near the costa, a small one just below it, one near the base of the cell and a few indistinct ones below, defined outwardly by a rich chestnut band broadest at the costa, narrowing to a point at the anal angle, the inner edge even, the outer highly irregular, greatly constricted just below the discoidal nervule, where and above which it is decreasingly bordered with whitish; outer half pale ferruginous bearing an indistinct dusky submarginal lunular line and two large reddish ocelli ringed narrowly with black and pale ochreous, the upper one between the subcostal nervules irrorated with a few white atoms in the centre, the lower one between the first and second median nervules bearing a black patch at its inner end, beyond which is a whitish linear mark and numerous whitish dots, between these two ocelli are three white dots, placed one in each interspace; an elongated black spot on the margin between the first median nervule and

on the abdominal margin. UNDERSIDE, both wings pale castaneous, crossed by an almost straight submarginal dark castaneous fascia, bordered outwardly with greyish. Forewing with a pale waved fascia crossing the cell near its centre, a narrow oblique greyish fascia beyond the cell, commencing near the costal nervule, and terminating at the third median nervule, beyond which it is continued and indicated by a narrow dark line only, between these pale fasciae the colour is somewhat darker, and is thus continued in a waved and narrower form on the hindwing, where it terminates in a faint and indistinct manner about the middle of the abdominal margin. Hindwing with two ocellated spots on the inner side of the submarginal fascia, these spots are inwardly margined with white, and are situated, one between the subcostal nervules, and one between the second and first median nervules, the apical angle with a fuscous spot, bordered on each side with greyish. The male is provided with two tufts of long dark hairs near the base of the upperside of the hindwing, covering the discs of two distinct pseudo scent glands or pouches. FEMALES larger than the male. UPPERSIDE, both wings with distinct basal resplendent bluish reflections. Forewing with a discal, curved and outwardly convex series of five ochraceous spots placed between the nervules, commencing above the first discoidal nervule, and terminating near the first median nervule and a straight submarginal series of five ochraceous spots also placed between the nervules. Hindwing with a waved fuscous marginal fascia. UNDERSIDE slightly paler than in the male, the oblique greyish fascia beyond the cell of the forewing much more distinct, broader, and continuous, the straight submarginal fascia to both wings outwardly much more widely bordered with greyish, ocellated spots larger, and anal angle less produced than in the male. The males of this species vary in the amount of melanism. In some specimens the submarginal series of pale spots on the upperside are scarcely visible." (Distant, l. c.)

the submedian nervure. FEMALE identical in colour and markings with the male, but much larger, and the base of the hindwing much less hairy on the upperside.

The above description is from specimens in Major Marshall's collection, which were taken by Captain C. T. Bingham in Upper Tenasserim. They differ from the figure of the male in Mr. Distant's *Rhopalocera Malayana*, which was taken from the specimens in the British Museum. On the UPSERSIDE Mr. Distant's figure shows the wings tinted with ferruginous throughout the dark portion instead of only at the base; the pale fascia of the forewing is narrower, much attenuated outwardly, coming to a point at the first median nervule and not nearly reaching the outer margin; whereas in our Tenasserim specimens it touches nearly one-third of the length of the first median nervule. On the hindwing in Mr. Distant's figure the anal fulvous patch extends broadly up to the base of the wing, whereas in our specimens it stops short beyond the extremity of the abdomen, where it shades into the dark brown ferruginous-tinted basal area. On the UNDERSIDE the differences are less striking, the triangular costal patch on the forewing is outwardly much suffused with violet in Mr. Distant's figure, and on the hindwing the basal area is much paler, the upper ocellus is yellow, and the lower is densely irrorated with violet-white. Further, Mr. Distant remarks that the "male has two large basal tufts of hair on the upperside of the hindwing, the smaller near the costa, the larger at the base of the cell." In the Tenasserim specimens there is no trace of the smaller tuft near the costa, but the male has in addition to the large tuft in the cell the whole basal area under the subcostal nervure very hairy, and large lateral tufts of hair on the abdomen as in *Amathusia phidippus*, but curved upwards not downwards. It seems very probable that the Tenasserim species is distinct, but without comparing them with specimens from Malacca it is impossible to say.

Captain C. T. Bingham has taken this rare and beautiful butterfly in the Thoungyeen forests and in the Donat range in October and in April; it was not met with by Lamborg who collected over the same ground from December to April.

Westwood's original description of *T. aliris** from Borneo, and Butler's original description of *T. pseudaliris*† are appended for reference.

Genus 40.—STICHOPTHALMA, Felder.

Stichophthalma † Felder, Wien Ent Monatsch., vol. vi, p. 27 (1862); *Thaumantis*, Westwood, Gen. D. L., vol. ii, p. 335 (1841), in part; id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 170 (1866), in part.

"Differs from *Thaumantis*, Hubner, in the following points: HEAD smaller; antennæ shorter; palpi much longer, differing in the sexes. FOREWING with the subcostal nervure

* *Thaumantis aliris*, Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 176, pl. xvii (1866), female. HABITAT: Borneo. EXPANSE: Female, 6.25 inches. DESCRIPTION: "UPPERSIDE, forewing fuscous, the base more ferruginous, an oblique median fascia, and two subapical spots, white. Hindwing fuscous, the outer half more or less fulvous. UNDERSIDE, both wings grey at the base, with brown irregular spots; a broad oblique irregular brown fascia. Forewing with the oblique white fascia of the upperside, joining a pale line parallel with the outer margin. Hindwing with two large equal ocelli beyond the middle, and the apex broadly fulvous." (Westwood, l. c.)

† Westwood's figure of the female of this species differs from our female specimen of *T. pseudaliris* from the Donat range, on the upperside being entirely dark brown, not tinted at the base with ferruginous, the white band on the forewing is much wider and of nearly equal width throughout, and almost reaches the inner margin, where it is tinted with lilac. On the underside the white band is developed into a large triangular patch, broken at the costa beyond its middle by a patch of brown, covered with numerous darker stræ. On the hindwing the ocelli are many times larger than in our specimen, and the markings throughout are darker and bolder.

† *Thaumantis pseudaliris*, Butler, Trans. Linn. Soc. Lond., Zoology, second series, vol. i, p. 538, n. 2, pl. lxxviii, fig. 1 (1870), male; *T. aliris*, Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 176, n. 7 (1866), male. HABITAT: Malacca. EXPANSE: 4.6 to 5.0 inches. DESCRIPTION: "This species differs from the male of *T. aliris*, from Borneo, in having the band of the forewing above half the width, not notched, and yellower in tint; the basal area of both wings ferruginous. UNDERSIDE, the area beyond the band is not striated, and is of the same rusty red colour as the broad outer border; the latter is also paler at the edge, and is cut much shorter by the obliquity of the transverse band, the basal spots are rusty red instead of red-brown and black; the irregular band of the hindwing is paler and much more constricted in the middle, the external and discal areas are altogether paler and more uniform in tint; the ocelli are considerably smaller and paler, the spots beneath the ocelli and the yellow submarginal spots are obsolete. As Professor Westwood figures the Bornean female, I am obliged to rename the Malacca male." (Butler, l. c.)

"The MALE is considerably smaller than *T. aliris*, female, from Borneo, with the oblique fascia of the upperside of the forewing about half the width of that of the female, and with two white spots near the tip, which is considerably suffused with ferruginous at the base; such is also the colour of the base of the hindwing, which is gradually shaded off to a rich fulvous colour; there is, however, a broad dark longitudinal patch extending to the outer margin of the wing, occupying the space between the second and third branches of the subcostal nervure. On the UNDERSIDE the markings agree in the two sexes, except that the oblique bar of the forewing is even rather narrower than on the upperside, and the great ocelli are also much less conspicuous than in the female. The middle of both fore and hindwing is occupied with a broad irregular chocolate-ferruginous bar." (Westwood, l. c.)

† ἔτικος, series; ὀρθαλμός, ocellus.

having four branches [including the terminal portion], all the branches free; the *upper discoidal* nervule more remote from the subcostal than from the lower discoidal nervule; the *lower disco-cellular* nervule highly convex in the middle. *HINDWING* with the upper trunk of the nervules more deflexed; the *third median* nervule not at all bent; the *internal nervus* lower, shorter, and more bent." (Felder, l. c.)

This genus contains the largest and handsomest butterflies of the subfamily; indeed *S. camadeva* and *S. louisa* are amongst the most splendid of the butterflies occurring in India. Only five species are known, of which three are included in the Indian list, but the authority for one of them, *S. noumahal*, is doubtful; the other two are found one in China, *S. howqua*, and the other in Cambodia, *S. cambodia*. They all have in a more or less defined degree a curiously arranged series of spots on the outer margin of the forewing, consisting of a triangular or diamond shaped submarginal series, the outer corner of each produced and coalescing with a marginal series of concave lunules. The secondary sexual characters of the male insect consist only of a small erectile tuft of hairs on the hindwing near the base of the subcostal nervule; in colour and pattern the sexes are similar so far as is known.

Key to the Indian species of *Stichophthalma*.

- A. Upperside, basal area of both wings rich brown, outer area of forewing purplish-white.
292. *S. CAMADEVA*, N.-E. India.
- B. Upperside, basal area of both wings pale bright fulvous; outer area of forewing nearly pure white.
293. *S. LOUISA*, Upper Tenasserim.
- C. Upperside, basal area of both wings rich chestnut brown; outer area of forewing fulvous, the extreme apex fuscous.
294. *S. NOUMAHAL*, Sikkim (?) Borneo.

292. *Stichophthalma camadeva*, Westwood.

Morpho (*Thaumantis*) *camadeva*, Westwood, Cab. Or. Ent., p. 9, pl. iv (1848); *Thaumantis camadeva*, id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 177, n. 8 (1856); id., Doubleday, Hewitson, Gen. D. L., vol. ii, p. 337, pl. lv, fig. 2 (1851).

HABITAT: Eastern Himalayas, Assam, Cachar, Sylhet.

EXPANSE: 5½ to 6½ inches.

DESCRIPTION: "UPPERSIDE: *Forewing* white, tinged with a delicate purplish leaden colour, the base of a rich brown; with a row of lozenge shaped spots, and another of brown continuous lunules near the outer margin. *Hindwing* brown, the base of a richer colour; considerably beyond the middle is a row of large leaden-white lunules, and a smaller row close to the margin of the wing. UNDERSIDE: The basal portion of *both wings* is of a delicate buff with a slight greenish tinge, and the apical portion fulvous; a broad irregular fulvous fascia runs across both wings before the middle, edged on each side by a black line, and beyond the middle, each wing has a row of five red ocelli, with black irides, beyond which are two pale brown continuous fasciæ. The three or four round brown spots on the upperside preceding the rows of lozenge-shaped marks near the extremity of the forewing occupy the place of the ocelli of the underside; and the broad row of white lunules on the hindwing is the continuation of the pale space between the lozenge-shaped spots and row of lunules of the forewing; since, in a strong light, the dark ground-colour of the hindwing also exhibits a row of still darker-coloured lozenge-shaped spots, preceding the pale lunules. On the underside of the forewing the broad fascia is dilated on the anterior half of the wing, so as to include half of the discoidal cell and the like distance beyond it, inclosing a black lunule which marks the nervule which closes the cell; the ocelli are preceded by a longitudinal darker cloud; the larger ocelli bear a slender white central lunule, and the red pupil is separated from the black iris by a fulvous ring; the anal angle is marked with a black spot, outwardly edged with white. The upperside of the body is brown, but the underside, with the palpi, legs, and anal area of the hindwing, are fulvous." (Westwood, l. c. in Cab. Or. Ent.)

"The general appearance of the two sexes is nearly identical; the male has a tuft of hairs at the base of the hindwing, on the upperside." (Westwood, l. c. in Trans. Ent. Soc. Lond.)



STICHOPHTHALMA CAMADEVA, Moore.

Mr. Wood-Mason met with this species in profusion in May in the forests around Silchar, Cachar; other specimens were taken in July. Mr. A. O. Hume found it commonly in the forests of Eastern Manipur in the spring, and Mr. Otto Moller has taken numerous specimens in the neighbourhood of Darjiling in June.

The figure on the opposite page shows the upper and undersides of a female specimen from Sikkim in the Indian Museum, Calcutta.

293. *Stichophthalma louisa*, W.-M.

Thaumantis louisa, Wood-Mason, Proc. A. S. B., p. 163 (1877); id., Journ. A. S. B., vol. xlvii, pt. ii, p. 175, pl. xii (1878), male; id., Moore, Proc. Zool. Soc. Lond., 1878, p. 837; id., Marshall, Journ. A. S. B., vol. li, pt. ii, p. 40, n. 5 (1882), female.

HABITAT: Upper Tenasserim.

EXPANSE: ♂, 5.25; ♀, 5.8 inches.

DESCRIPTION: "MALE: UPPERSIDE whitish. Forewing with the basal half, and hindwing with the basal two-thirds deep and pure fulvous; each wing, as in *S. howqua*, with a submarginal lunular fascia with spear-shaped spots coalescing, deep violaceous-fuscous; the lunules and spots of the hindwing much larger. UNDERSIDE luteous-fulvous. Forewing with the median part only whitish, scarcely tinted with luteous; with four sinuate lines, two basal deep brown, two others submarginal, obsolete, and only near the anal angle brown coloured. Forewing with five ocelli all obsolete; hindwing with two, rufous, with whitish pupil and slender black iris, and three intermediate obsolete." (Wood-Mason, l. c. in Journ. A. S. B.) "FEMALE differs from the figure of the male in the following particulars: UPPERSIDE with the fulvous ground-colour on the hindwing extending completely up to, and embracing the heads of, the hastate border spots, the ground-colour of the outer portion of both wings being not white but pure French grey, the only traces of pure white being on the forewing, at the middle of the costal margin and outside the median transverse line and decreasing from its costal end. The dusky tipping at the apex also extends below the subcostal nervure. UNDERSIDE with the fulvous portions not luteous, but strongly suffused with grey, and altogether of a far colder tone; the hastate border spots of the upperside pale, but perfectly distinct and complete. Hindwing with the outer submarginal lunular line obsolete, the inner one slender and incomplete, whereas in the figure of the male both these lunular lines are complete and prominent. It of course lacks the tuft of erectile hairs on the hindwing which is present in the male." (Marshall, l. c.)

"This fine and distinct species belongs to the same division of the genus as *S. camadeva*, *S. nourmahal*, *S. cambodia*, and *S. howqua*, to the last of which it is most nearly related, but from which it differs in having the upperside of the wings white and fulvous, instead of fulvous throughout, and in having five spots, the red rings of the ocelli, on the underside of the forewing, and only two well-developed ocelli on the hindwing, instead of three and five ocelli respectively." (Wood-Mason, l. c. in Journ. A. S. B.)

The type specimen was taken at Taoo, 3,000 to 6,000 feet altitude, by Limborg in the cold weather. Capt. C. T. Bingham took the female above described between March and May in the Lower Thoungyeen forests, and Mr. Butler records it (Ann. and Mag. of Nat. Hist., fifth series, vol. x, p. 372, 1882) from the Thoungyeen valley, from specimens also collected by Capt. Bingham.

* *Thaumantis howqua*, Westwood, Trans. Ent. Soc. Lond., new series, vol. i, p. 174 (1851); idem, id., vol. iv, p. 178, n. 9, pl. xvii, figs. 2, 2a (1856); *Stichophthalma howqua*, Felder, Wien Ent. Monatsch., vol. vi, p. 28, v. 23 (1862). HABITAT: Shanghai, China. EXPANSE: 5 inches. DESCRIPTION: MALE and FEMALE: UPPERSIDE, both wings fulvous, with a submarginal series of much curved black lunules, and inwardly with black spear-shaped spots coalescing with them, which are larger on the hindwing. UNDERSIDE, both wings luteous fulvous, paler than above, crossed by two oblique, irregularly sinuate black lines, the inner one crossing both cells but not reaching the abdominal margin of the hindwing, the outer one beyond the middle of the forewing about the middle of the hindwing recurved just before the anal angle of the hindwing, below which is an irrorated fuscous and grey spot. The two black lines are very wide at the costa of the forewing, decreasing irregularly towards the anal angle of the hindwing, the space between them darker than the rest of the ground. A discal series of five ocelli on both wings, red with whitish pupil and slender black iris, the first and fourth on the forewing and the fourth on the hindwing not quite perfect. Within the series of ocelli the ground is somewhat darker, becoming paler before reaching the outer fuscous line. A submarginal somewhat lunulate fuscous line. (Described from Westwood's figure).

294. *Stichophthalma noumahal*, Westwood.

Thaumantis noumahal, Westwood, Gen. D. L., vol. ii, p. 337, n. 8 (1851), note; idem, id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 178, pl. xviii, figs. 1, 1a (1856); id., Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 215, n. 442 (1857).

HABITAT: India (*Westwood*); Sikkim (*Moore*), Sikkim ?? (*Ku by*); Borneo.

EXPANSE: ♂, 3.75; ♀, 4.25 (*Westwood*); 4.8 Sikkim (?) specimen in Indian Museum, Calcutta.

DESCRIPTION: "FEMALE: UPPERSIDE chestnut-fuscous. Forewing with a very broad oblique fulvous fascia beyond the middle, extending to the outer margin and anal angle, a common submarginal series of fuscous V-shaped marks, and another lunular of the same colour; a whitish subapical dot on the forewing. UNDERSIDE brownish fulvous, with two narrow oblique almost straight greenish silvery bands, the first passing through the middle of the discoidal cell, the second almost from the middle of the costa to the anal angle, each margined inwardly with a black line; the outer margin broadly paler, in which on the forewing are two ferruginous-fulvous ocelli, on the hindwing three, each marked in the middle with a whitish lunular dot; two black submarginal lines very flexuous and dentate, and a black spot at the anal angle slightly irrorated with lilascent."

"The description published by me in the Genera of Diurnal Lepidoptera, was made from a female at that time unique in the collection of W. W. Saunders, Esq., F.R.S. The East India Company has, however, subsequently received both sexes from India. The MALE differs from the female, as I am informed by Mr. F. Moore, merely in wanting the white subapical spot near the extremity of the forewing."

"On the upperside the wings are of a rich chestnut brown colour, the forewing having a very broad oblique fulvous fascia, extending from the costa to the outer margin and anal angle; the tip of the wing being dark brown, with a small white subapical spot in the female. There is also a series of submarginal brown V-shaped marks, and another of brown lunules in both wings, [and the hindwing is outwardly bordered with fulvous in continuation of the fascia of the forewing]. Underside, the colour is paler, with a broad oblique subcentral fascia, edged with a slender black slightly irregular line on each side, the one nearest the base being internally, and the outer one externally edged with a line of pale silvery greyish green scales. The discoidal cell in the forewing is closed by black veins, but in the hindwing the outer black striga forms its termination. The forewing has also five ocelli [the first, third and fourth obsolete, replaced by pale spots], and the hindwing three, in the alternate spaces between the nervules, the intervening spaces being marked by paler dots, indicating obsolete ocelli. Near the apex of both wings are two slender dentated black lines, ending at the anal angle [of the hindwing] in a black dot, slightly suffused with lilac scales." (*Westwood*, l. c. in Trans. Ent. Soc. Lond.)

There is a single female specimen in the Indian Museum, Calcutta, obtained from the old East India Company's Museum, which is marked "Darjeeling," and which is the only specimen we have seen. In spite of the authorities given above for its occurrence in India, we very much doubt the fact; of late years, at any rate as far as we know, no specimens have been obtained within our limits.

Genus 41.—CLEROME, Westwood.

Clerome, Westwood, Gen. D. L., vol. ii, p. 333 (1851), idem, id., Trans. Ent. Soc. Lond., new series, vol. iv, p. 182 (1856), *Monograph*; *Faunis*, Hübner, Verz. Bek. Schmett., p. 55 (1816).

"BODY moderately robust; wings large, plainly coloured, with a row of small spots between the middle and the outer margin on the underside. Head rather broad. Antenna long (two-thirds the length of the forewing), nearly straight, composed of rather long joints, terminated by a long, but very slender, scarcely distinct club formed of short joints. Palpi compressed, ascending obliquely to about the height of two-thirds of the eye, porrected in front nearly to the length of the head, not convergent, scaly; middle joint clothed behind with hairs applied to the face. Thorax oval, very hairy. Abdomen rather small and slender,

FOREWING large, oval-triangular. *Costa* very much arched; apex rounded; outer margin about two-thirds of the length of the costa, entire, slightly convex; inner angle rounded; inner margin rather longer than the outer, slightly dilated at the base in the male. *Costal* nervure extending to about two-thirds of the length of the costa, *subcostal* nervure with its first branch arising at about two-sevenths of the length of the wing, second branch arising at about three-fifths of the length of the wing; third and fourth arising at short distances beyond the second; all these branches free, the fourth extending to the tip of the wing; *upper disco-cellular* nervule very short, arising nearly at one-third of the length of the wing; *middle disco-cellular* equally short, nearly transverse; *lower disco-cellular* very long and curved, somewhat like the letter *ω*, the extremity reaching nearly to the middle of the wing, where it joins the third branch of the median nervure at a short distance beyond its base, terminating the closed discoidal cell nearly in a point. **HINDWING** broadly ovate; costa scarcely curved; outer margin rounded, anal angle rounded. The disc above, near the extremity of the thorax, is furnished with a tuft of fine hairs in the male. *Præcostal* nervure short, curved towards the body, *costal* nervure extending to about two-thirds of the length of the costa, *subcostal* nervure with its branches arising quite close to the base of the wing, the outer branch extending to the outer angle; *discoidal cell* very narrow and open; *median* nervure with its branches wide apart. **FORELEGS** of the MALE very small and brush-like, very woolly, of the FEMALE longer than those of the male, slender, scaly; tarsus not half the length of the tibia, articulations indistinct, except when denuded of scales; obliquely truncate at the tip, armed with very small spines. Four **HINDLEGS** long, strong, scarcely spined beneath, tibial spurs minute" (*Westwood*, l c, in *Gen D L*)

Clerome is a genus of plain looking Butterflies, the upperside fulvous, marked only in some species with darker or lighter shades of the ground-colour towards the margins, but spotted and sometimes ocellated on the underside, and marked with fuscous lines. About fourteen species are at present known, inhabiting N. E. India, Burma, the Malay peninsula and islands, and extending to China.

Key to the Indian species of *Clerome*.

- A. Male and female, upperside fulvous. Underside with three fuscous strigæ, and a series of ochreous spots across both wings.
 - a. Male and female alike. Of moderate size (under three inches).
 - 295. *C. ARCESILAEUS* Sikkim, Sylhet, Perma, Malay Peninsula, Java.
 - b. Male, upperside, forewing uniform fulvous, female with a discal paler band. Of large size (3.5 inches and above).
 - 296. *C. ASSAMA*, Assam, Khasi Hills.

Except in size there is little difference between the males of the two Indian species, but as that difference is considerable, it will at once be found sufficient to separate them. The females are very distinct.

295 *Clerome arcesilaeus*, Fabricius

Papilio arcesilaeus, Fabricius, *Mant Ins.*, vol. ii, p. 28, n. 305 (1787) id., Donovan, *Ins India*, pl. xxx, fig. 2 (1800) *Clerome arcesilaeus*, Doubleday, Hewitson, *Gen D L*, vol. ii, p. 334 n. 4, pl. liv, fig. 5 (1851), female, id., *Westwood*, *Trans Ent Soc Lond*, new series, vol. iv, p. 183 (1856) *Fauna canina*, Hübner, *hamm Ex Schmett* (1816-24), *Morpha leonteus*, Zinken, *Nova Acta Acad Nat Cur.*, vol. xv, p. 170 pl. xvi, figs. 14, 15 (1831).

HABITAT Sikkim, Sylhet, Upper Tenasserim, Siam, Malacca, Singapore, Java.

EXPANSE: 2.1 to 2.75 (*Westwood*), 2.7 to 2.9 inches

DESCRIPTION: "Wings entire. **UPPERSIDE** fuscous-ochraceous, unmarked. **UNDERSIDE** fuscous or brownish-fuscous; both wings crossed by three obscure strigæ (the first sometimes subobsolete), and a series of yellowish dots."

"The uniform colour of the upperside of both wings, united to the minute and uniform size of the row of pale dots on the underside, will suffice to distinguish this species from *C. numicus* [from China]. Specimens sent from Malacca by Mr. Wallace (about 2.5 inches in expanse) differ in the richer red-brown colour of the upperside, and in having the outer dark strigæ obsolete [on the underside] of the forewing. A specimen from Singapore, in the British

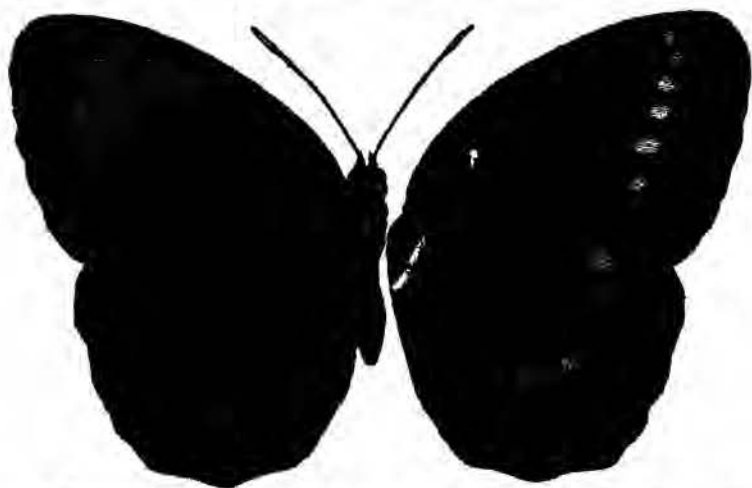
Museum, about 2.75 inches in expanse, does not differ from Javanese individuals in the same collection; whilst specimens from India and Sylhet, in the same collection, and of the same size, have the upperside richer and redder fulvous than the Java specimens, and on the underside the middle striga is more distinct, and much more angulated, and the series of white dots small." (Westwood, l. c.)

Mr. Distant does not give *C. arcusilaus* in his "Rhopalocera Malayana," but there is a female specimen in the Indian Museum, Calcutta, acquired from the old India Museum, London, from Singapore, and Westwood mentions (*ante*) a specimen in the British Museum from the same locality. We have specimens from Sikkim from the collection of the late L. Mandelli; from the Donat range in Upper Tenasserim taken by Captain C. Bingham in January, and others taken by him in the Thoungyeen forests in March and December. All these specimens are males and are very constant. Our female specimen from Singapore differs from the male in being a very little larger, and the inner margin of the forewing straight, and no tuft of hair on the upperside of the hindwing; it differs in tone of colouration from Indian examples as mentioned by Westwood. The Javan specimen in the India Museum is identical with Indian ones on the underside, but on the upperside the forewing especially is a darker fulvous. Limborg also met with this species above Ahsown in Upper Tenasserim in the cold weather.

An allied species has been recorded from Malacca.* It differs from *C. arcusilaus* in being smaller, the upperside ferruginous rather than fulvous, and with an ocellus on the hindwing. The underside is also ferruginous, the fifth lower spot on the forewing is developed into an ocellus, as also are the first and fifth on the hindwing.

296. *Clerome assama*, Westwood.

C. assama, Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 124 (1856).



* *Clerome gracilis*, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xx, pl. viii, fig. 7 (1867), male; id., Distant, Rhop. Malay, p. 61, pl. viii, fig. 1 (1882), male. HABITAT: Malacca, Singapore, Borneo. EXpanse: Male, 2.3 inches. DESCRIPTION: "Male: Upperside, both wings brownish ochraceous. Hindwing with a somewhat faint discal ocellated spot, situated between the second and first median nervules. Underside somewhat paler, and crossed by two waved narrow fuscous fasciæ; the first passing through the middle of both cells, and the second commencing about the costal margin of the forewing, passing beyond the cellular apices and terminating near the middle of the abdominal margin of the hindwing; a submarginal and strongly annulated narrow fuscous fascia to both wings. Between the middle and submarginal fasciæ are placed the following spots: on the forewing a series of four small whitish spots placed between the nervules, the first above the upper discoidal nervule, and the fourth beneath the first median nervule, followed between the second and first median nervules by an ocellated spot, black, with a pale centre and ochraceous and black margins. Hindwing with an ocellated spot between the subcostal nervules, followed by three whitish spots between the nervules, and an ocellated spot between the second and first median nervules. Body and legs more or less concolorous with the wings. I have not seen the female of this species. It is one of the smallest species of the genus, and appears to be seldom found by collectors." (Distant, l. c.)

HABITAT: India, Assam, Khasi Hills.

EXPANSE: 4'0 (Westwood); ♂, 3'4; ♀, 4'0 inches.

DESCRIPTION: MALE: UPPERSIDE uniform fulvous. UNDERSIDE darker fulvous, crossed by three fuscous lines, the first subbasal, the second beyond the middle of the wings, the third submarginal, very sinuous. Between the two outer lines in the forewing is a series of six small ochreous rounded spots from the costa to the first median interspace, the penultimate one the largest; on the hindwing there are six similar spots, the first much the largest. FEMALE larger. UPPERSIDE, both wings a deeper fulvous, especially at the apex of the forewing, which is crossed by a broad curved lighter fulvous band, broadest at the costa, obsolete at the hinder angle; this band is outwardly somewhat distinctly defined by the darker ground-colour, inwardly it is diffused. UNDERSIDE marked as in the male, but all the strigæ and the spots better defined, the latter being much larger.

This species is perhaps only a geographical variety of the *C. eumeus*, Drury, from China. It is larger, and has "the broad, oblique, fulvous fascia of the forewing [on the upperside of the female] but ill-defined, and gradually shaded off to the darker ground-colour of the wing. The three strigæ of the underside are distinct, the outer one more angulated; the white spots are of unequal size; the fifth in the forewing, and the first in the hindwing, being the largest." (Westwood, l. c.) These remarks evidently refer to the female, which is the sex of *C. eumeus* figured by Drury. The MALE apparently has not previously been described, unless the following remarks of Westwood (l. c.) refer to a male specimen: in no case does he state the sex of the specimens of this species described by him: "A specimen from Northern India, measuring 3'5 inches in expanse, has the wings on the upperside of an uniform fulvous brown colour, whilst on the underside they are similar to the above described individuals from Northern India."

The Indian Museum, Calcutta, has a male from the Khasi hills taken by Colonel Godwin-Austen, and another without history, but probably taken at the same time; and two females from the same locality, one of which is figured above, and shows the upper and undersides.

Another species, formerly included in the genus *Clerome*, occurs in the Malay Peninsula. It is a very remarkable butterfly, the wings are semi-transparent, upperside pale fuscous, hindwing with the abdominal half below the cell bright yellow, and the underside with two conspicuous lunulate discal fuscous strigæ, and other fuscous markings at the base of the wings. It has been placed under a separate subgeneric title, *MELANOCYMA*,* and forms the type and only species of the subgenus.

* Subgenus *MELANOCYMA*, Westwood.

Melanocyra, Westwood, Trans. Ent. Soc. Lond., new series, vol. iv., p. 186 (1856).

"In the 'Genera of Diurnal Lepidoptera' I arranged this singular insect in the genus *Thaumantis*. The arrangement of the branches of the nervures of the forewing is, however, unlike that of any of the species of that genus, agreeing in the circumstance of the second branch of the subcostal nervure of the forewing arising far beyond the extremity of the discoidal cell, as well as in the sinuosity of the wings, with *Clerome*, in which latter respect also it differs from *Draconia*. The fact, however, of its being entirely destitute of ocelli is perhaps of sufficient importance to warrant its subgeneric separation, in which case it may receive the name of *Melanocyra*. The second branch of the subcostal nervure of the forewing arises at about three-fourths of the length of the wing from the base opposite to the junction of the costal nervure with the costa, and the fourth branch opposite to the junction of the extremity of the first branch with the costa. The lower discoidal nervule closing the discoidal cell is singularly angulated, and the costal nervure of the hindwing also extends to the middle of the costal margin. Another peculiarity of the species consists of the slight clothing of the wings, which enables the black undulated markings of the underside to be partially seen from above. The specimen which I have examined is a female." (Westwood, l. c.)

MELANOCYMA FAUNULA, Westwood.

Thaumantis faunula, Westwood, Gen. D. L., vol. ii, pl. liv, fig. 1 (1851), female; *Clerome faunula*, idem, id., p. 334, note; *Clerome (Melanocyra) faunula*, Westwood, Trans. Ent. Soc. Lond., new series, vol. iv, p. 186, pl. xxi, fig. 2 (1856), female; *Clerome faunula*, Distant, Rhop. Malay., p. 81, pl. viii, fig. 2 (1882), female. **HABITAT:** Malacca, Mount Ophir, Singapore, Cambodia. **EXPANSE:** Female, 3'9 inches. **DESCRIPTION:** "FEMALE: UPPERSIDE, both wings, pale fuscous. Hindwing with the abdominal half beneath the cell, and to about the second median nervule bright shining yellow. Forewing with the upper discal-cellular nervule very darkly infuscated, and with the following dark markings: a transverse streak across the cell near the apex, preceded by a rounded spot beneath which are two other spots situated between the base of the first median nervule and the submedian nervule; two discal, transverse, strongly waved and sinuated fasciæ, the first crossing the wing a little beyond the apex of the cell, and the second being somewhat submarginal; and a very faint, waved, narrow, marginal fasciæ, which is obsolete towards the apex. Hindwing with the follow-

ing dark markings: an oblique fascia near the base terminating about the internal nervure; two very strongly waved and sinuated discal fasciæ, which become united at the lower subcostal nervule, the inner one then crossing the wing at the apex of the cell, and terminating near the middle of the submedian nervure, the outer one somewhat submarginal, and much less strongly waved and sinuated after passing the first median nervule, till it terminates at the submedian nervure; and a waved marginal fascia becoming obsolete towards the anal angle. *Underside* pale greyish, marked as above, but with the yellow colouration of the *hindwing* richer and darker, and with all the fasciæ and spots very dark fuscous; costal area of the *forewing* pale fuscous. *Body and legs* more or less concolorous with the wings. This is not only a beautiful but also an aberrant species, it being quite destitute of ocellated spots—a character which Professor Westwood was reasonably of opinion should warrant its subgeneric separation. The wings are also semi-diaphanous, thus allowing the fasciæ beneath to be visible above." (*Distant*, l. c.)

SUBFAMILY V.—*ACRININÆ*, Bates.

Acraïna, Bates, Journ. Ent., vol. II, p. 176 (1864), *Acraïde*, Doubleday, Gen. D. L., vol. I, p. 137 (1848).

"HEAD rather small, scaly, but little if at all hairy. Eyes oval or rounded, prominent. Palpi divergent, ascending, rising considerably above the forehead; basal joint short, hairy; second joint elongate, mostly much swollen, hairy, the hairs often very thinly scattered; third joint very short, especially in those species which have the second joint most swollen. Antennæ scarcely more than half the whole length of the body, rather abruptly clavate; the club compact, obtuse at the apex, the joints composing it not more distinct than those of the other portion of the antennæ. Thorax oval, generally rather elongate; the prothorax very distinct. Abdomen elongate, clavate, much arched; the last segment in the female often furnished with a cornuous appendage. FOREWING opaque, or partially or wholly diaphanous, subtriangular, elongate; the apex more or less rounded, the costa but little arched; outer margin seldom more than half the length of the costa, sometimes nearly straight, except towards the apex, sometimes rounded; inner margin nearly straight. Costal nervure extending considerably beyond the middle of the costa, subcostal nervure invariably five-branched [if the termination of the subcostal nervure is counted as a branch if not, it is only four-branched]; its first branch thrown off at or near to the end of the cell, the second always considerably beyond the cell; discoidal cell seldom more than half the length of the wing; upper disco-cellular nervule very short, or entirely wanting; internal nervure wanting. HINDWING obovate; the costa nearly straight; the outer margin much rounded; the inner margin about equal in length to the outer, slightly embracing the base of the abdomen. Discoidal cell always closed, narrow, sometimes very short, rarely half the length of the wing; discoidal nervule sometimes appearing to be a third subcostal nervule; sometimes united to the subcostal nervure, or to its second branch by a distinct upper disco-cellular; lower disco-cellular always united to the third median nervule, often very close to its origin. FORELEGS of the MALE with the femur mostly longer than the tibiae, tibiae nearly cylindric, smooth or very slightly spiny, longer than the tarsus; tarsus cylindrical or slightly fusiform, sometimes one-jointed, sometimes showing indications of four or five joints. Of the FEMALE with the tarsus four or five-jointed; each joint, except the fifth when present, armed at the apex with a short pair of spines, sometimes covered by a bunch of stiff hairs arising from the base of the following joints; first joint generally about as long as the rest combined; the second, third and fourth progressively shorter, generally very obliquely truncate at the apex; fifth, when present, always very minute, barely distinguishable. MIDDLE and HINDLEGS rather short, with the tibiae and femora about equal in length; tarsi rather shorter; tibiae spiny, especially towards the apex, nearly cylindrical; tarsi spiny, the spines much longest at the sides; the first joint more than equal to the two following combined, nearly cylindrical; second and third rather flattened, elongate ovate; the second slightly longer than the third; fourth joint shorter than the third; fifth rather longer than the second; claws without paronychiae or pulvilli, broad at the base, where there is a large lobe, then suddenly narrowed, tapering to a very acute point, often much bent, especially the outer claw in the males, which is much shorter than the inner in many species."

"LARVA cylindric, spiny. PUPA suspended, slender, angulate." (*Doubleday*, l. c.)

The head-quarters of this subfamily is in Africa, but numerous species have been described from the New World, a few from Australia, and only two species from India, one of which occurs again in Java. Where they occur these two species are numerous in individuals, though

in the North-West Himalayas one species, *A. vesta*, is decidedly local. Their flight is slow and sailing, they frequently settle, often at the end of a branch, stick, leaf or other conspicuous position, and appear to be quite unmolested by birds. Mr. de Nicéville has experimented with the carnivorous *Mantis* on many of the Butterflies believed to be offensive to birds, and he has found *A. viola* is the only Butterfly which all the species of *Mantis* he has experimented with refuse to eat. The abdominal plate or pouch with which the females of both the Indian species are provided, is also found in the genus *Parnassius*, a genus of the subfamily *Papilioninae*.

The *Acraeinae* are distinguished by their elongate wings, the hindwing being free from the abdomen along its inner margin and not channelled to enclose it. They are closely related to the *Heliconina* of America. The subfamily originally contained but a single genus, *Acraea*, which Doubleday in the Genera of Diurnal Lepidoptera divided into six well-marked sections, and these, so far as the Indian species go, appear to be worthy of generic separation. The general characters of the genus *Acraea* are those of the subfamily; the special characters of the sections represented in India are given in the following key.

Besides the six sections of *Acraea* only one other genus of the subfamily has been recognized (*Alana*, Boisduval), which contains a single species (*A. amasoula*) from South Africa.

Neither of the Indian species have any sexual tufts or patches on the wings of the male insect

Key to the Indian Genera of ACRÆINÆ.

- A. Palpi very small, compressed, not rising to the level of the top of the eyes. Antennæ with a gradually formed club. Hindwing with the first subcostal nervule given off from the subcostal nervure some distance beyond the cell.

XLII.—PAREBA.

- B. Palpi long, porrected forwards, rising to the level of the top of the eyes. Antennæ with an abruptly clavate flattened club. Hindwing with the first subcostal nervule given off from the subcostal nervure before the end of the cell.

XLIII.—TELCHINIA.

Genus 42.—PAREBA, Doubleday.

Acraea, section *v. Pareba*, Doubleday, Gen. D. L., vol. i, p. 142 (1848)

"PALPI small, the second joint but little swollen, scaly and hairy. First subcostal nervule of the forewing thrown off at [just before] the end of the cell. Discoidal nervule of the hindwing thrown off from the subcostal nervure considerably before it divides." (*Doubleday*, l. c.)

This genus contains but a single species, which occurs all along the Himalayas, and from Assam to Burma, and again in Java. As far as we know, it is only to be found in or very near to hills.

297. *Pareba vesta*, Fabricius.

Papilio vesta, Fabricius, Mant. Ins., vol. ii, p. 14, n. 250 (1787); id., Donovan, Insecta China, pl. xxx, fig. 1 (1799); *Acraea vesta*, Godart, Enc. Méth., vol. ix, p. 233, n. 9 (1819); id., Horsfield, Cat. Lep. E. I. C., pl. iii, fig. 21, larva (1829). *Papilio terpsichore*, Cræmer, Pap. Ex., vol. iv, pl. cxcviii, figs. A—C (1780). *Telchinia issoria*, Hübner, Verz. bek. Schmett., p. 27, n. 220 (1816). *Acraea anomala*, Kollar in Hügel's Kaschmir, vol. iv, pt. 1, p. 425, pl. iii, figs. 3, 4 (1848)

HABITAT: Himalayas, Assam, Upper Burma, Java.

EXPANSE: 2.0 to 3.5 inches.

DESCRIPTION: MALE and FEMALE: UPPERSIDE, both wings fulvous, with the veins black, and more or less broadly bordered with black irrorations. Forewing with the costa and outer margin black, the latter bearing a marginal series of eight fulvous oblong spots, one in each interspace, except the last, which has two. A hook-shaped black mark in the cell, the disco-cellulars broadly defined with black, beyond which is a black streak from the costa to the second median nervule, angulated inwards at the third median nervule; a black mark near the base of the first median interspace, and another in continuation below the first median

nervule *Hindwing* with a series of four blackish spots, one in each interspace outside the cell from the first median nervule; a marginal highly dentate line leaving a series of yellow spots on the margin, one in each interspace, this line more or less coalescing with a submarginal series of diffused spots, the space between them being richer ochreous. *UNDERSIDE*, paler. *Forewing* marked as above, but the space between the angulated discal streak and a submarginal ochreous band whitish; the margin ochreous, bearing a highly dentate blackish line, obsolete at the apex. *Hindwing* with two submarginal black lines, the outer lunulate, the points of each lunule resting on the margin at the ends of the nervules, and the inner irregular, the space between them rich ochreous. Between the inner black line and the end of the cell is a broad band of whitish extending from the costa to the abdominal margin. Collar and costal base of the forewing rich ochreous, body black, marked with two series of round whitish spots. The markings of the female are usually darker than in the male.

A. vesta is a very variable species; in some specimens the black markings coalesce everywhere leaving only spots of ochreous on the forewing, which on that wing vary in tone from deep ochreous to pale whitish buff; in others again the black markings are confined to a narrow band on the costa of the forewing, and on the outer margin of both wings bearing a complete series of large ochreous spots; the disco-cellulars of the forewing are broadly black, and all the rest of the nervures of both wings are narrowly pencilled black. Between these two extremes every gradation is found. The size of the insect too varies greatly.

"*LARVA* feeds on the willow-leaved nettle (*Bohemera talicifolia*) Imago, July to September. Eggs deposited in September, and hatch in about twenty days. Length of young larva three to four lines, entirely black. When about three weeks old they moult and then hibernate, re-appearing in the following April. They moult again early in May, when they assume the red head. The larvæ generally feed on the upper branches of the plant, are gregarious, and drop to the ground when disturbed. Third moult early in June, about the middle of which month they suspend themselves by the tail near the bottom of the stems of the bushes, and there change to the pupa state. The imago appears in about fifteen days, in the first or second week in July. A few come out in August and September, but not in sufficient numbers to constitute a succession of broods. The imago is seldom found far from the food plant, which grows near running water." (*A. Graham Young, Proc. Zool. Soc. Lond., 1882, p. 243*)

A. vesta is found, locally, throughout the Himalayas from the Chenab to Sikkim and extending through the Khasi hills to Upper Burma. Major C. H. T. Marshall has taken it in Chumba in May and June. Mr. A. Graham Young records the following note of its occurrence in Kulu:—

"It is a very local insect, but, where occurring, abundant. It is to be found in wet ravines at from 3,000 to 4,000 feet elevation in Kulu. It is not a rapid flier and is easily captured; when at rest it may be taken with the fingers. It is very constant in its appearance, frequenting the same localities year after year. The imago does not hibernate." (Note by Mr. A. Graham Young, *Proc. Zool. Soc. Lond., 1882, p. 243*.)

Freiherrn v. Hugel took it at Missoorie; Mr. E. T. Atkinson records it from the submontane tracts of Kumaon. In Sikkim Mr. de Nicéville met with it in profusion at from 2,000 to 7,000 feet elevation in October, the larvæ covering the weeds all along the cart-road between Chunabati and Darjiling; in Simla he only met with it in a limited area of about 200 yards in the bed of a stream; and the Indian Museum has specimens from Bhutan, Sibsagar, the Dafia and Khasi hills, and from Upper Burma.

Genus 43.—TELCHINIA, Hubner.

Telchinia, Hübner, *Verz. bek. Schmett.*, p. 27 (1816), id., Moore, *Lep. Cey.*, p. 65 (1881), *Acraea*, section IV, *Telchinea*, Doubleday, *Gen. D. L.*, vol. I, p. 241 (1848)

"*FOREWING* narrow, triangular; costa slightly arched towards the end, apex scarcely rounded; exterior margin oblique, slightly convex; inner margin short. *Costal* nervure extending to two-thirds of the margin. first subcostal nervule emitted at a short distance before the

end of the cell; second, third and fourth at about equal distances apart beyond the end of the cell; *discoideal cell* long; *disco-cellulars* very oblique, *upper* bent near the subcostal nervure, concave below, *lower* straight; *discoideal nervules* from the angle and end of the upper *disco-cellular*; *second median* nervule emitted at a short distance before the end of the cell, *first* at one-half the length of the cell; *submedian* nervure slightly recurved. **HINDWING** small, short, broadly ovate; costa straight, outer margin convex; *costal* nervure extending to the apex, *precostal* nervure slightly bent outward at its end; *first subcostal* nervule emitted at four-fifths from the base; *discoideal cell* long; *disco-cellulars* very oblique, the *upper* concave, the *lower* straight, *discoideal* nervule from their middle, *second median* nervule emitted at a short distance before the end of the cell; *third median* nervule from more than one-half the length of the cell; *submedian* and *internal* nervures slightly recurved. **BODY** slender, abdomen long, last segment of the female furnished with a corneous appendage; *palpi* ascending, stout, finely pilose, second joint projecting slightly beyond the head, third joint very short; *legs* slender; anterior tarsi of the male clothed with short spiny scales, fore tarsi of the female armed with a pair of spines on each joint; *antennæ* abruptly clavate" (Moore, l c)

This genus is represented by but a single species in India, which seems chiefly confined to the plains, seldom ascending into the mountains. It occurs in the moister tracts of eastern continental, and throughout peninsular India and in Ceylon, where it has been taken up to 4,000 feet elevation. There are numerous species of this group in Africa and Madagascar.

298. *Telchinia viola*, Fabricius.

Papilio viola, Fabricius, Syst Ent, p 460, n 74 (1775). *Acræa viola*, Horsfield, Cat Lep E I C, pl vii, figs 2, larva, 2 a, pupa (1829). *Telchinia viola*, Moore, Horsfield and Moore, Cat Lep E I C, vol 1, p 135, n 279, pl v, figs 1, larva 1a, pupa (1857), idem, id., Lep Cey, p 66, pl xxxiii, figs 1, male; 1a, female; 1b, larva and pupa (1881). *Papilio cephea*, Cramer, Pap Ex, vol. iv, pl. ccxcviii, figs. D, E (1780). *Telchinia cephea*, Hübner, Verz bek Schmett, p 27, n 213 (1816)



HABITAT: India, Ceylon.

EXPANSE: 1·8 to 2·5 inches.

DESCRIPTION: " **MALE:** **UPPERSIDE,** both wings ochreous-red. *Forewing* with a small black spot and an oblique streak within the cell, a large disco-cellular streak, an upper discal oblique series of four small spots, a single spot below these, and another between the median and submedian nervures; costal margin black speckled, exterior margin and up the veins for a short distance, black. *Hindwing* with a small black spot at the end of the cell, another on the costal border, and a black marginal band traversed by a series of pale yellow spots. **FEMALE** paler, with the markings and marginal band broader, the *hindwing* also having two black spots in the cell, two on the disco-cellular nervule, and a curved discal series beyond. **UNDERSIDE:** **MALE** glossy red; black spots and marginal border of the *forewing* as on the upperside, the latter bordered inwardly with yellowish-white. *Hindwing* with a basal cluster of five black-ringed white spots, two costal black spots, three discoidal and a discal outer series of smaller spots; the marginal band with larger yellowish-white spots and inner border. **FEMALE** duller coloured. *Hindwing* pale yellowish-ochreous, marked as above, also with a basal cluster of ochreous-white black-ringed spots, and the marginal band with larger spots."

"LARVA pale purple-brown; the segments armed with six rows of lengthened branched spines. Feeds on *Cucurbitaceæ*. PUPA reddish-white, streaked with black; the abdominal streaks spotted with red." (*Moore*, l. c. in *Lep. Cey*)

This species is less variable than *P. testa*, but in some specimens many of the black spots are obsolete. Mr. de Nicéville has taken it commonly in Calcutta throughout the year. It is not uncommon in Sikkim, and Mr. E. T. Atkinson records it from the submontane districts of Kumaon, which is probably its westerly limit in the north. It is found in the moister parts of the Peninsula on both coasts; we have specimens from Malwan on the west coast, and from Rajamundry on the East, and there are specimens in the Indian Museum, Calcutta, from Badrachallum, Madras City, Bangalore and Trevandrum. "Found generally in Ceylon in the plains and up to about 4,000 feet throughout the year." (*Mackwood*). "Common at Kandy." (*Wade*).

The figure shows the upper and undersides of a male specimen from Calcutta, in the Indian Museum, Calcutta.

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[Specific names are printed in small type (actæa), specific synonyms and varieties in italics (*adamsoni*), generic names in small capitals (ACRÆA); generic synonyms in small capital italics (*AEMONA*); subfamily and family names in large capitals (ACRÆINÆ); and subfamily and family synonyms in large capital italics (*ACRÆIDÆ*).]

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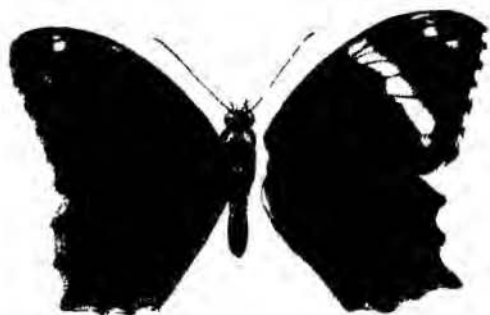
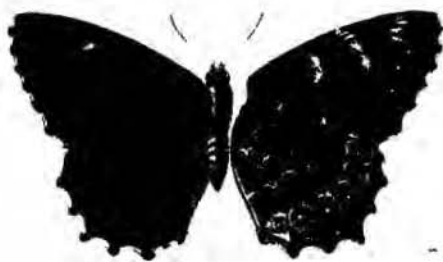
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NOTE.—Part I, containing the title page, dedication, list of illustrations of Vol. I, glossary of technical terms, preface, introduction, and pp. 21-94, with Frontispiece and Plates I-IX, was published in August, 1882. Part II, containing pp. 95-307, with Plates X-XVI, was published in August, 1883.



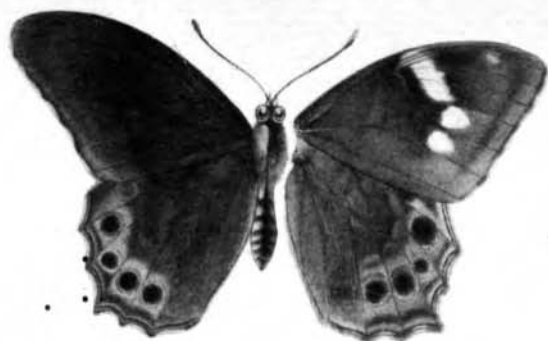


FIG. 24. *LETHYSTRIS WESSALIA* MOORE

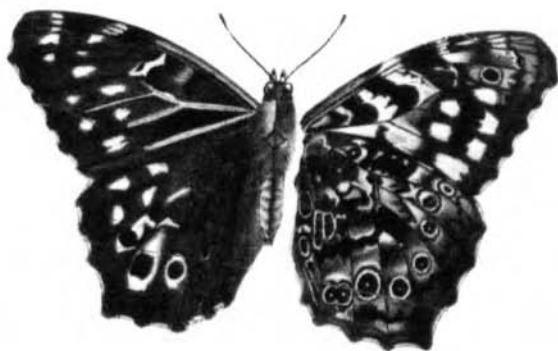


FIG. 25. *NEOPE PULCHRA* MOORE ♀

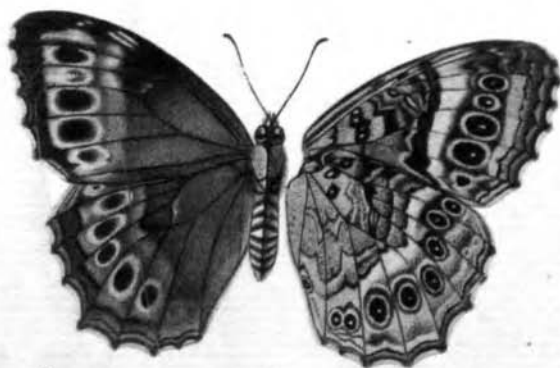


FIG. 26. *NEOPE RHIMA* MARSHALL ♀

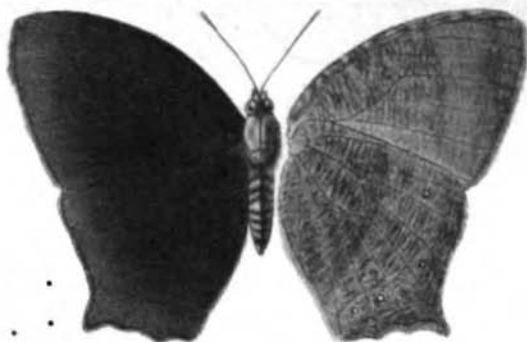


Fig. 27

MELANITIS TRISTIS, Felder.

♂



Fig. 28

MELANITIS ISMENE, Cramer.

♂



Fig. 29

MELANITIS SYLVIA, Huet.

♀



FIG. 30. CYLOOGENES SURADEVA, MOORE.

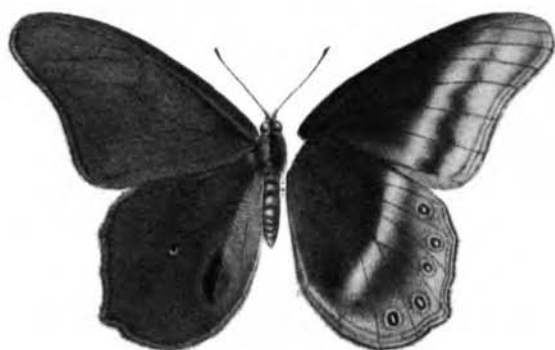


FIG. 31. EUPHAEDRA MORMON, WOODWARD.



FIG. 32. ORITISMA RAMANIS, GRAY.



Fig. 33.

ZETHENIA DIADEMOIDES. Moon.

♂

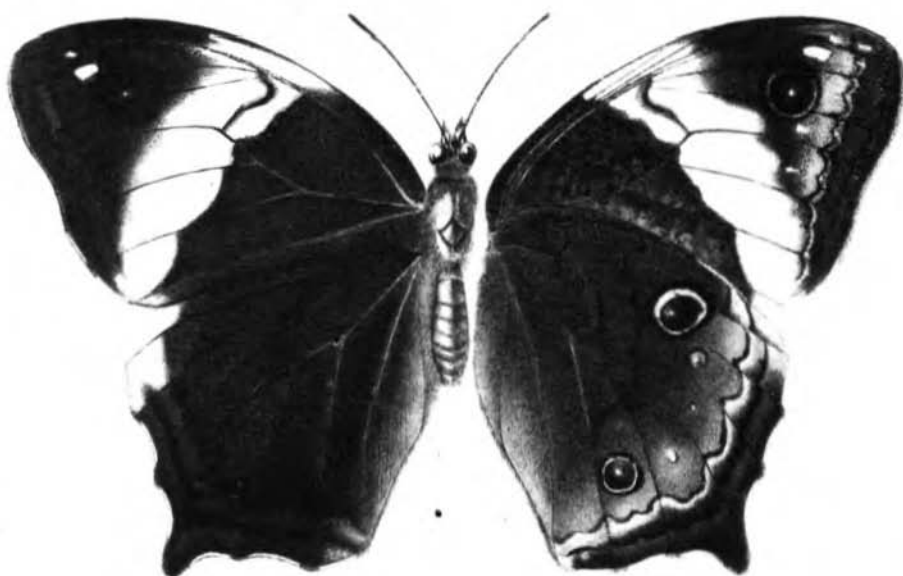


Fig. 34.

NEORINA CHISHNA, Westwood.

♀

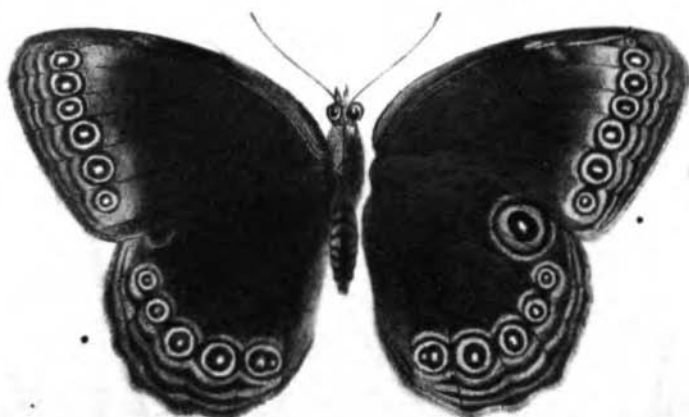


Fig. 35.

ANADERIS HIMACHALA. Moore.

♀



FIG. 36. *RAGADIA CRISTIDA*, Howison. ♀



FIG. 37. *ENKITE FUMILUS*, Felder. ♂



FIG. 38. *RHAPHIGENA MOOREI*, Butler. ♂



FIG. 39. *EPINERPHILA LAVENDRA*, Moore. ♀



FIG. 40. *EPINERPHILA PULCHRELLA*, Felder.



FIG. 41. *EPINERPHILA MAIRA*, Loeb. ♀



FIG. 42. *EXENTIA SHALLADA*, Loeb. ♂



FIG. 43. *EXENTIA MANI*, de Nicéville. ♂

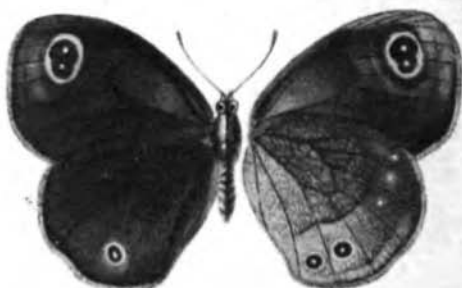


FIG. 44. *CALLEREDIA AMBADA*, Moore. ♂

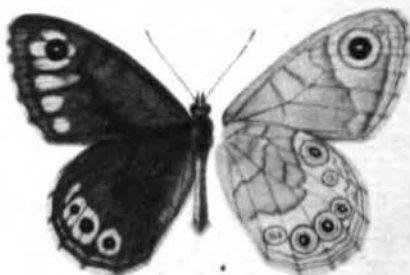


FIG. 45. *AMECERA SUBAENA*, Kollar. ♂

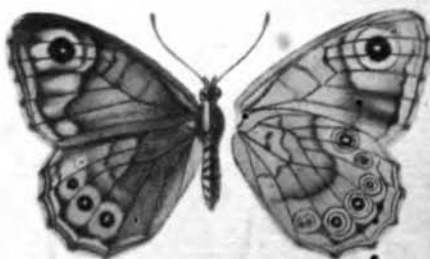


FIG. 46. *AMECERA SUBAENA*, Kollar. ♀



FIG. 47

HIPPARCHIA PARISATIS, BOULAF.

♀



FIG. 48

HIPPARCHIA LUTUANA, MOORE

♀



FIG. 49

ATLOPHERA WERANGA, LADG.

♂



FIG. 50

ERISE ANGULARIS, MOORE.

♀

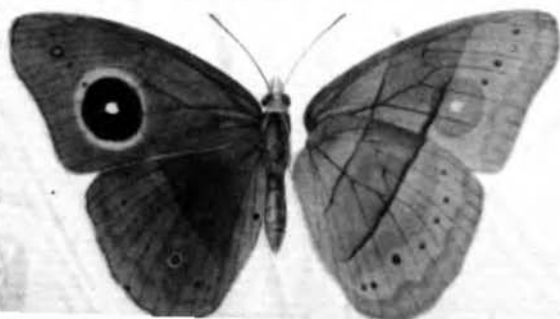


FIG. 51

MYCALINIS VITALA, MOORE.

♂

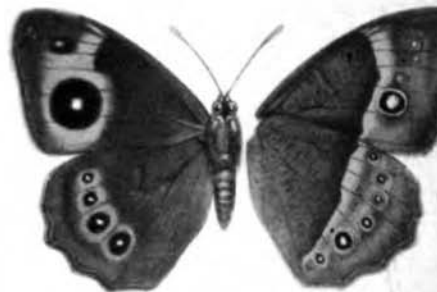


FIG. 52

MYCALINIS OCELLUS, MARSHALL.

♀



FIG. 53

MYCALINIS ANAXIAS, HAWITSON.

♂



FIG. 54

MYCALINIS GLAUCUS, FAIRCHILD.

♀



FIG. 55

MYCALINIS HUMERA, MOORE.

♂

