

None of the species are common; one species occurs in Burma; three closely allied and doubtfully distinct species are described from N E India; one is found in south India, and another distinct species is found only in Ceylon. The Burman species is very distinct, with the *forewing* splendidly shot with blue, no spots on the disc, and a double marginal series of white spots on the hindwing. The N.-E. Indian species has the forewing with numerous paler blue spots on the disc, and but few marginal spots on the hindwing; the Ceylon species lacks the splendid blue shot; but both these have the two sericeous bands large and well defined as in the *Euplaas* of the *alcatha* and *detone* types. *E. coreoides*, the south Indian form, has almost exactly the colouration of *E. core* and *E. asela*, and strangely enough, like them, has the sexual brands small and inconspicuous.*

Key to the Indian species of *Stictoplaea*.

C. c. Males with two well defined brands on the interior median area of the forewing.

α² Upperside dark velvety olive brown palest externally, with a double row of whitish spots along the border of both wings as in *E. core*

75 *E. (Stictoplaea) coreoides*, S India.

β¹ Upperside deep rufescent swarthy, tinged with violet on basal area, border spots of forewing evanescent or wanting

76 *E. (Stictoplaea) montana*, Ceylon.

γ¹ Upperside forewing shot with vivid blue

α² With no discal spots on forewing

77 *E. (Stictoplaea) krotzi*, Tenasserim.

β² With numerous discal spots on forewing.

78 *E. (Stictoplaea) hopei*, N E India

79 *E. (Stictoplaea) binotata*, N E India.

80 *E. (Stictoplaea) microsticta*, N E India.

In the Lepidoptera of Ceylon, p. 13, Moore has taken *E. coreoides* as the type of yet another genus, which, under the name of *Naimaia*, he characterises as follows.—“Forewing elongated, triangular, costa slightly arched; apex somewhat acute, exterior margin oblique, posterior [inner?] margin in male slightly convex, with two sericeous streaks between the median and submedian nervules; hindwing triangular.” In what way this is supposed to differ from *Stictoplaea* of Butler, or why Butler’s name for this section has been dropped, there is apparently nothing to show. The one single definite expression in the description, namely, the presence of two sericeous brands in the male, is precisely the point on which Butler’s prior designation is founded.

75. *Euplaea coreoides*, Moore.

E. coreoides, Moore, Ann and Mag Nat Hist, fourth series, vol xx, p. 44 (1877).

HABITAT: Malabar, Nilgiris, Wynnad, Trevandrum.

EXPANSE: ♂, 3.25 to 3.60; ♀, 3.50 inches.

DESCRIPTION: “Allied to *E. core* (which is also found in the same locality), but distinguished by the two elongated silky impressed marks in the male, the male of *E. core* having but a single short narrow mark. MALE and FEMALE, dark velvety olive brown, palest externally. MALE: UPPERSIDE: *Forewing*, with a prominent submarginal and marginal series of small white spots, two elongated silky impressed marks between first median nervule and submedian nervure. *Hindwing*, with broader series of white oval and rounded submarginal and smaller rounded marginal spots. UNDERSIDE paler, marginal spots as above; both wings with a small white spot at the end of the cell, and contiguous series beyond. FEMALE, with marginal spots as in male, the submarginal series on *both wings* above, and the discal series on *forewing* beneath, being larger.” (Moore, l. c.)

The female of this species is so slightly different from the same sex of *E. core* that it is only by the following points they can be distinguished: First, by the outline of the forewing being more entire; in *E. core* it is slightly but perceptibly scalloped. Second, on the underside of the forewing having a complete series of six spots, one between each pair of nervules outside the cell, in *E. core* two of these spots, those above the discoidal nervules, are always wanting,

Third, the two bands on the interno-median area of the upperside of the forewing in the male are faintly, but still quite perceptibly, to be traced in the female in the same position. These three points of difference are constant in the three female specimens before us—one from Bangalore, one from Ootacamund, and the third from Trevandrum. It is just possible that with a larger series of females some might be found with one or more of the discal spots wanting, but the outline of the forewing is probably an unvarying character of this species, as it is very perceptible in all the males we have seen.

E. coroides appears to be confined to south India, and is not common. Mr H S Ferguson has sent us two specimens taken near Trevandrum on the 2nd May; and the Indian Museum has two specimens taken at Conoor in August, also specimens taken at Bangalore and Ootacamund. A Trevandrum female shows an approach to the Ceylon *E. montana* in the marginal series of spots on the forewing becoming obsolescent.

76 *Euploea montana*, Felder.

E. consimilis var *montana*, Felder, Reise Nov., Lep., vol. iii, p. 330, n. 454 (1865). *Euploea lankana*, Moore Ann. and Mag. Nat. Hist. fourth series, vol. xx, p. 44 (1877). *Stictoploea lankana*, Butler, Journ. Linn. Soc., Zoology, vol. xiv, p. 302 (1878). *Isarmada montana*, Moore, Lep. Cey., p. 13, pl. vi, fig. 1 (1880), male.

HABITAT Ceylon.

EXPANSE 3.0 to 3.95 inches.

DESCRIPTION. MALE "Allied to *E. consimilis* from Java, but larger, wings broader, and spots smaller, those before the margin of the forewing evanescent. FEMALE UPSIDE: Forewing, with the pale border broader, two subcostal violet spots, the interior depressed spots much narrower, more obsolete. Hindwing with larger spots. UNDERSIDE Both wings almost as in the male, but the forewing with the spot as on upperside before the middle of the costa, and another beyond the lowest disco-cellular nervule, minute" (Felder, l. c.).

The following more detailed description of this species is given by Moore in the "Lepidoptera of Ceylon"—

"MALE and FEMALE UPSIDE dark velvety olive brown, paler externally. Forewing with a submarginal and marginal row of very small indistinct ochreous white spots. MALK with two elongated sericeous streaks between the first median nervule and submedian nervure. Hindwing with a submarginal and marginal row of ochreous white spots, the former oval from the anal angle and duplex anteriorly, the latter smaller and round. UNDERSIDE paler, marginal white spots as above, those on forewing more prominent, both wings with a small white spot at end of the cell and a contiguous discal curved series beyond. Body blackish; thorax, head, palpi, and abdomen beneath, white spotted, forelegs white streaked beneath."

"Captured at Rambodde, Galle, and Kandy." A single specimen, the only one we have seen, sent to us by the Hon'ble F. Mackwood from Ceylon, has the spots of the forewing almost entirely obsolete on the upperside, the shape of the forewing, and its dark velvety almost entirely unspotted appearance, distinguish this species from the south Indian *E. coroides* at a glance.

77 *Euploea grotel*, Felder.

E. grotel, Felder, Reise Nov. Lep., vol. ii, p. 339, n. 470, pl. xli, fig. 7 (1865), female. *Euploea grotel*, Butler, Trans. Linn. Soc., Zoology, second series, vol. i, p. 535 (1870). *Stictoploea grotel*, id., Journ. Linn. Soc. Zoology, vol. xiv, p. 302 (1878).

HABITAT Ceylon, Meigui, Upper Tenasserim, Malacca.

EXPANSE 2.2 to 4.4 inches.

DESCRIPTION. "MALE UPSIDE. Forewing blackish-chestnut and, except on outer margin which is paler, vivid violet-blue in certain positions, a [two?] rather long interior silky

* *E. consimilis*, Felder. HABITAT Java. FEMALE not given. DESCRIPTION. "MALE UPSIDE. Forewing deep rufoescent swarthy, as d, except on the external border, which is widely and increasingly much paler, faintly tinted with violet in certain positions, the two usual silky internal spots, submarginal spots in a bent series, and dots before the margin, increasing, white. Hindwing paler, paling beyond the cell, the anterior area with the usual powdery appearance and with a costal vitta somewhat pearly white, submarginal spots rather large, increasing, and others before the margin smaller, white, powdered with brown. UNDERSIDE, much paler, the basal dots white, the marginal spots of the upperside but whiter and a little larger. Forewing darker about the median nervure, with two elevated interior spots as usual, the internal margin pearly hoary with a subcostal spot two beyond it and three in the disc, violet white. Hindwing with a spot in the cell, and seven others small around the end of the cell, violet white. (Felder, Reise Nov., Lep., vol. ii, p. 329, n. 454, 1865).

spot [s?] and some small chalky-white dots before the outer margin. *Hindwing* paler, in certain positions suffused with violet; the external margin broadly and increasingly much paler; the anterior area powdery, with the usual somewhat pearly costal band; external spots irregularly elongate-oval, and others before the margin smaller, increasing, chalky-white; the uppermost, except where obsolete, best defined, the lowest and last but one of the external row blending with the lowest and last but one of the marginal spots. **UNDERSIDE** much paler, with the usual basal dots. *Forewing* a little darker in the disc; a subcostal spot, and two discal (one in the cell) small, violet-white; an elongate median spot, and others before the lower outer margin, chalky-white; the usual interior elevated spot, and internal band somewhat pearly, pale at base. *Hindwing* with a spot in the cell, and six outside unequal (the second small), violet-white, encircled with swarthy; the marginal spots as on the upperside but larger, and all best defined on the underside. **FEMALE**: **UPPERSIDE**: *Forewing* almost to the margin in certain positions vivid violet-blue; small submarginal spots and dots before the margin pale violet-blue, powdered with white. *Hindwing* darker, and in certain positions more suffused with violet than in the male, the costal margin much paler, with a concealed somewhat pearly band; the submarginal spots rather large, and others before the margin smaller, white, purer than in the male. **UNDERSIDE** much paler, basal dots white. *Forewing* with a subcostal spot, two beyond it (the lower narrow, minute), and three rather large, discal (one in the cell) on a darker base, bluish-white, circled with blackish; small increasing submarginal dots, and others small before the margin, circled with swarthy, and a rather long violet-white interior linear spot; the inner margin pearly-hoary. *Hindwing* with a rounded spot in the cell, and six others in an angulated row beyond it, violet-white, small; the marginal spots as on upperside." (Felder, l. c.)

A single specimen of a *Stictoplaea*, which apparently belongs to this species, was sent by Captain C. H. E. Adamson, from Upper Tenasserim, where it was taken on the 11th February, 1881. It is a male, and differs somewhat from Felder's original description. The *forewing* is shining violet-purple over the whole area to the extreme outer margin, and bears a complete submarginal series of rather small, but prominent violet spots, with a series of smaller marginal spots of the same colour obsolete near the apex; in the *hindwing* the outer border is scarcely perceptibly paler, and the double series of white spots is complete, the outer being rounded or slightly angulate, the inner larger, oval. On the **UNDERSIDE** the markings correspond exactly with the description, but there is in addition a violet spot on the *forewing* beyond the cell, and above the upper discoidal nervule. It differs from *E. hopei* on the *forewing* in the entire absence of discal spots, and on the *hindwing* in the presence of the double complete series of white spots. Another specimen (male) was subsequently taken at Moulmein by Captain Adamson, feeding at a flowering tree in company with numerous other *Euplaeas*, including *E. godartii*, *E. crassa*, *E. masoni*, *E. alathoe*, and *E. margarita*; and subsequently numerous specimens were taken in the autumn in the Thoungyeen forests, by Captain C. T. Bingham, including one female. These specimens vary much in size, but all agree with the first specimen taken by Captain Adamson, and there can be no doubt that they are the *E. grotei* of Felder. Dr. J. Anderson took one male in January, and two in March in the Mergui archipelago.

The **FEMALE** only differs from the male in the absence of the sexual marks, and the straight inner margin of the *forewing*.

78. *Euplaea hopei*, Felder. (PLATE IX, FIG. 18 ♂ ♀).

E. hopei, Felder, Reise Nov. Lep., vol. ii, p. 328, n. 452 (1865); *Stictoplaea hopei*, Butler, Journ. Linn. Soc., Zoology, vol. xiv, p. 302 (1878).

HABITAT: N.-E. India, Sikkim, Naga Hills, Cachar.

EXpanse: 3·8 to 4·3 inches.

DESCRIPTION: "MALE: **UPPERSIDE**: *Forewing* chestnut-swarthy, and in certain positions vivid violet-blue; the two usual silky interior spots, a spot within the cell, two median, one subcostal, three beyond the cell, and seven or eight others, larger, submarginal, in a bent series, and from two to six dots before the outer margin, violet-bluish. *Hindwing* deep swarthy, and,

except on the paler border, suffused with violet in certain positions; the anterior area with a paler ground, and a concealed pearly whitish costal vitta; submarginal spots white, small, often evanescent, and others before the outer margin obsolete, most frequently entirely absent. **UNDERSIDE** pale swarthy. *Forewing* with an internal hoary streak, and the two usual internal elevated spots; the subcostal spots, and three discal of the upperside on a darker ground (the lower median one much larger), small submarginal spots in a bent series, and dots before the outer margin, violet-white, circled with blackish swarthy. *Hindwing*, with white basal dots, a spot within the cell, and five or six beyond around it, minute, violet-white, circled with swarthy; the submarginal spots, and dots more or less large before the lower outer margin, white." (Felder, l. c.)

Specimens from Sikkim in Colonel Lang's collection have the *forewing* on the upperside deep rufescent swarthy, shot throughout with bright violet-blue; a spot in the cell at end, a small subcostal spot, sometimes absent, an angulate row of four or five discal spots round end of cell, a submarginal row of seven spots, and a few marginal spots from hinder angle, pale violet-blue. The discal and submarginal spots large, especially the latter. *Hindwing* rufescent fuscous, paler than *forewing*, paling towards the margin, faintly shot with violet-blue at the base; the costal margin broadly whitish; a faint indication from the apex of an obsolete submarginal series of white dots. In some specimens this series of spots is very conspicuous, pure white, and not quite reaching the anal angle.

The male only differs from the female in having two long impressed silky streaks on the *forewing*, and the inner margin convex instead of straight; in the *hindwing* of the MALE the submarginal series of spots is almost altogether obsolete; in that of the FEMALE it is rather more prominent. **UNDERSIDE** paler, rufescent fuscous, darker in the middle of the *forewing*. *Forewing* with the inner margin broadly white; all the spots of the upperside are represented but smaller, especially in the submarginal row; in the discal series the second from the costa is minute, the third scarcely visible, the fourth large and square, the fifth large and oval. *Hindwing*, with small violet-white dots, a few at the base, one in the cell at end, five discal round the end of the cell smallest towards the costa, three or four submarginal from costal end, one between each pair of nervules, and nine marginal from anal angle, two between each pair of nervules. These two latter series of spots are very variable, in some specimens they are almost complete right round the outer margin of the wing. The female has a bluish-white streak on the interno-median area. In a female specimen from Cachar the submarginal row of spots is very large and white-centred, the discal series is also complete from costa to internal nervure. Mr. Wood-Mason took two pairs in Cachar in June.

The figure is taken from a male and female, showing the upperside, from Sikkim. The specimens are in the Indian Museum, Calcutta.

The two following species have recently been separated by Butler, but the characters on which he bases his distinctions are so excessively variable that it is doubtful whether the separation can ultimately be maintained.

79. *Euplea binotata*, Butler.

Stictoplaea binotata, Butler, Journ. Linn. Soc., Zoology, vol. xiv, p. 302, n. 7 (1878); *Euplea callithoe*, Butler, (nec Boisduval), Proc. Zool. Soc. Lond., 1886, p. 272, n. 10.

HABITAT: Sikkim, Sylhet, N. and E. India, Borneo.

EXPANS: 4½ inches.

DESCRIPTION: "MALE and FEMALE: *Forewing* quite as in [*E.*] *S. hopei*, Felder. *Hindwing* with only two white subapical points, all the other spots obsolete. This is the *E. callithoe* of my Monograph, but not of Boisduval." (Butler, l. c.)

This is recorded here on Butler's authority as a distinct species, but the single character given in his description as distinguishing it from *E. hopei* is one so variable in the latter species that a distinction based on it should only be accepted with caution, especially when, as in this case, both species occur in the same localities. These remarks apply equally to the following species, *E. microsticta*.

80. *Euplœa microsticta*, Butler.

Stictoplœa microsticta, Butler, Journ. Linn. Soc. Lond., Zoology, vol. xiv, p. 302, n. 6 (1876); id., Trans. Ent. Soc. Lond., 1879, p. 7.

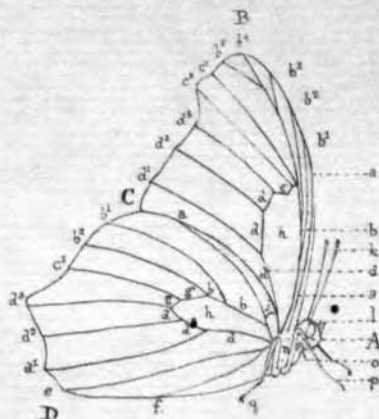
HABITAT: Cachar.

EXPANSE: 4.2 inches.

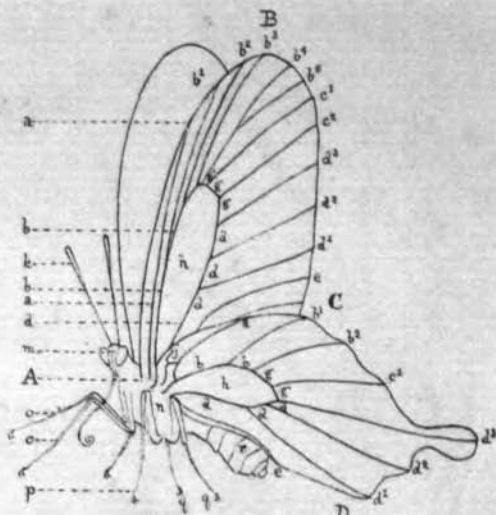
DESCRIPTION: "UPPERSIDE: *Forewing* like [*E.*] *S. hopei*, except that it is larger, all the spots are considerably smaller, and the purple shot is less vivid. *Hindwing* with only the three first of the discal series of white spots." (*Butler*, l. c.)

A species of *Euplœa*, *E. magnifica*,* has been described from Thibet. It is not clear to which group it should be referred, and Butler makes no mention of it in his revision of the genus *Euplœa*, subsequently published. The description is subjoined for reference.

* *E. magnifica*, Butler. HABITAT: Thibet. EXPANSE: 4 inches. DESCRIPTION: "Female? Wings above bright sepia brown. *Forewing* shot with vivid blue; subapical area densely irrorated with lilacine; a conspicuous subcostal white spot, a second within discoidal cell, and a third on second median interspace, forming together a triangle; a minute whitish point on lower discoidal interspace, and another on first median interspace. *Hindwing*, with a double series of ill-defined, disco-submarginal, pale-ochraceous spots from third median nervule to anal angle. *Body* black, white spotted in front. UNDERSIDE, rich chocolate-brown. *Forewing*, with three white spots as above, a fourth oval spot on first median interspace; a small point between lower discoidal, and third median nervules, a subapical point, one submarginal on second median interspace, five nearly marginal points from the third median nervule to the external angle, and some anal-marginal dots on the fringe, whitish. *Hindwing*, with a spot near end of cell, and five unequal spots in a semicircle round extremity of cell, pearly-white; a double submarginal series of yellowish white spots; fringe dotted with whitish. *Body* black, thorax white-spotted." (*Butler*, Trans. Ent. Soc. Lond., 1874, p. 423).



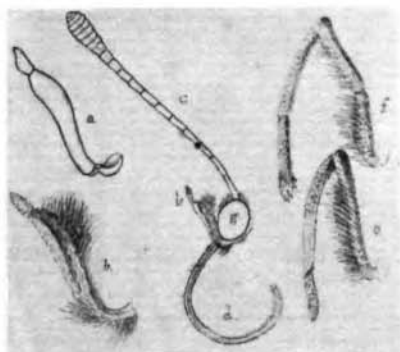
MELANITIS URBANE



PAPILIO ARISTOLOCHII

OUTLINE FIGURES.

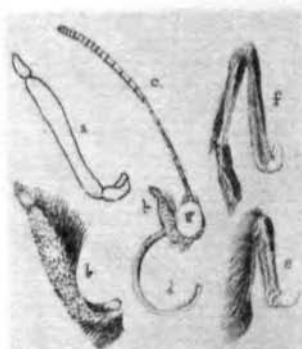
a, costal nerve. b, subcostal nerve. b, b, b, b, b, subcostal nervules. c, c, discoidal nerves. d, median nerve. d, d, d, median nervules. e, submedian nerve. f, internal nerve. g, discoocular nerves. h, discoidal cell. j, precostal nerve. k, antennae. l, labial palpi. m, eye. n, thorax. o, forelegs (minute in *Melanitis*). p, midlegs. q, hindlegs. A, base of wings. B, apex of forewing. C, hinder angle of forewing and apex of hindwing. D, anal angle of hindwing. A, B, costal margin of forewing or, costa. B, C, outer margin of forewing. A, C, inner margin of forewing or, costa of hindwing. C, D, outer margin of hindwing. D, A, inner margin of hindwing or, abdominal margin.



JUNONIA ASTERIS.



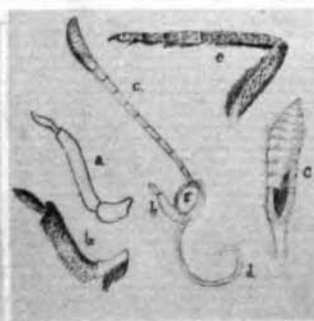
MYRINA JAFFRA.



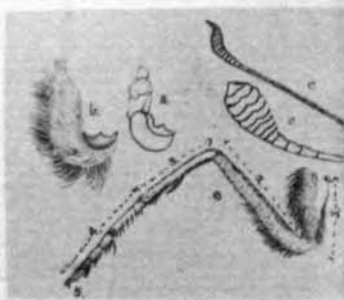
ELYMNIAS UNDEULARIS.



MELANITIS LEDA.



LAMPIDES ELIANUS.

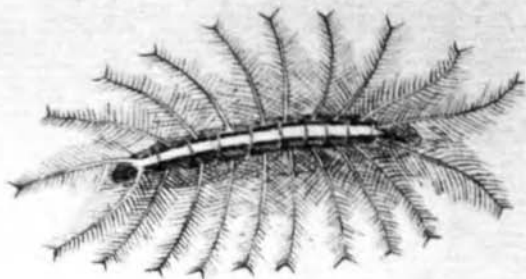


PAPILIO AGAMEMNON.

DISSECTIONS. a, palpi denuded of scales. b, palpi. c, antennae. d, proboscis. e, forelegs of male. f, forelegs of female. g, eye. 1, coxa. 2, femur. 3, tibia. 4, tarsus. 5, ungues or claws (highly magnified).



ATHYMA LEUCOTROCH



ADOLIAS GARUDA.



AMBLYPTODIA TIMOLEON



HERMONIA GLAUCIPPE



PAPILIO POLITES



ISMERE ORITHYIA

TYPICAL CATERFILLARS.



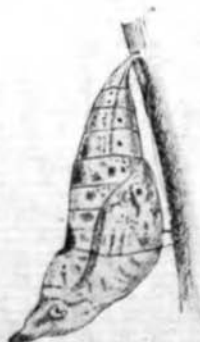
ATHYMA LEUCOTROCH



ADOLIAS LORENTINA.



AMBLYPTODIA TIMOLEON



HERMONIA GLAUCIPPE



PAPILIO POLITES



ISMERE ORITHYIA

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SUBFAMILY II.—SATYRINÆ, Bates. (PLATES X TO XVII INCLUSIVE.)

Satyrinae, Bates, Journ. Ent., vol. ii, p. 276 (1864); *Satyridae*, Swainson, Cab. Cycl., pp. 86, 93 (1840); id., Westwood, Gen. D. L., p. 352 (1850-52).

"BODY, generally small and weak. HEAD, small. *Eyes*, naked, or hairy. *Antennæ* generally short and slender, variable in the form of the club. *Labial palpi* very much compressed, more or less elongated and erect, and clothed in front [in the typical genera] with long porrected hairs. WINGS comparatively large, weak in structure, and generally ocellated on the underside. FOREWING, often with the nervures at the base swollen; the subcostal nervure with its branches free; the first and second emitted [except in *Ypthima* and *Ragadia*] before the anterior extremity of the discoidal cell, which is generally long and always closed. HINDWING with the discoidal cell closed, and not preceded by a prædiscoidal cell; the anal margin forming a gutter for the reception of the abdomen. FORELEGS, very small, those of the MALE brush-shaped, with exarticulate tarsi; and those of the FEMALE rather longer, more scaly, and with the tarsi articulated; claws of the HINDLEGS often bifid."

"LARVA, attenuated at the extremity of the body, and almost pisciform,* tomentose,† terminated by two more or less prominent anal points; the head rounded, sometimes emarginate or bifid, or sometimes surmounted by two spines. Generally graminivorous. PUPA, short, cylindric, not (or scarcely) angulated, and not girt; suspended by the tail." (Westwood, l. c.)

"The *Satyrinae* are found almost all over the globe, being very numerous in temperate climates; they are usually dull brown or blackish in colouration, occasionally with yellowish or white patches, and on the underside often ocellated and beautifully variegated. Their flight is usually weak and irregular, and they frequent low herbage; many species affect meadows and open grassy slopes, and a large number are found in woods and shady dells, often settling upon dead leaves, and in accordance with their sombre colouring seem less dependent on sunshine than the gaudy Butterflies are, being often seen on the wing on cloudy and even rainy days when no other Butterflies venture forth. They are distinguished typically by their elongate and very hairy palpi, but this feature is not constant throughout all the genera, as shown in the key which follows, and also by the want of a prædiscoidal cell in the hindwing; while the base of one or more of the nervures of the forewing is, in many genera, dilated. The caterpillars live almost entirely on grasses, and feed only during the night.

The *Satyrinae* are connected on the one hand with *Euplaea* through *Zethenia*, a very aberrant form; and on the other hand with *Elymnias* through *Melanitis* and *Purantirrhæa*. The arrangement of the genera here adopted differs from that in Kirby's *Synonymic Catalogue*, which appears to be founded on Horsfield's system published in 1857. It also differs from that of Butler's *Catalogue of the Satyridae* in the British Museum, published in 1868, and from that of his "Essay towards an arrangement of the genera" published the same year in the *Entomologist's Monthly Magazine*, (vol. iv, p. 193). The primary characters on which the arrangement should be based are not easy to determine; the clothing of the palpi is probably the most important; on it the present arrangement is based, and to meet it genera are grouped together which exhibit divergencies in other characters; but after careful study of all the Indian genera, the grouping adopted appears to be the best approximation to the natural order.

* PISCIFORM, fish-shaped.

† TOMENTOSE, woolly.

Key to the Indian Genera of SATYRINÆ.

A. With the apex of the cell of the *hindwing* at, or close to, the origin of the second median branch, usually appearing as if the latter were a continuation of the lower disco-cellular nervule.*

a. With the palpi clothed in front with short dense *appressed* hairs.

a¹. With the costal nervule only of forewing scarcely perceptibly swollen at base ; the eyes naked.

a². The hindwing short ; rounded, without ocelli.

V.—ZETHERA.

δ². The hindwing rather elongate, rounded, with ocelli on both sides.

VI.—ANADEBIS.

δ¹. With the costal nervule of forewing perceptibly, the subcostal and median scarcely perceptibly swollen at the base ; the eyes naked.

VII.—COELITES.

δ. With the palpi clothed in front with moderate or rather short *perrect* hairs.

a¹. With the median and submedian nervures usually much swollen at base in addition to the costal nervure, but variable ; eyes of *Orsotriana* naked, of all others hairy ; males with one or more scent-pouches on the wings.

VIII.—MYCALESIS.*

δ¹. With the costal nervule of forewing perceptibly, the subcostal and median scarcely perceptibly swollen at base.

a². The eyes naked ; the hindwing caudate ; of large size.

IX.—NEORINA.

δ². The eyes hairy.

a². The hindwing usually angulate, often caudate ; the underside much variegated.

X.—LETHE.*

XI.—ZOPHOESSA.

XII.—NEOPE.

δ². The hindwing rounded or slightly quadrate ; the markings of the underside much the same as on the upperside.

XIII.—ORINOMA.

XIV.—RHAPHICERA.

c¹. With the costal nervule of forewing greatly, and the median slightly swollen at base. The eyes hairy.

XV.—PARARGÆ.

XVI.—AMECERA.†

B. With the apex of the cell of the *hindwing* considerably beyond the origin of the second median branch, except in *Ragadis* ; the eyes in all naked.

a. With the palpi clothed in front with long *perrect* hairs.

a¹. With the *costal* and *median* nervures of the forewing swollen at the base, except in *Aulocera*, and in many species of *Ypthima*, in which the swelling is scarcely perceptible in the median nervure.

a². With the abdominal margin of hindwing not incised, the outer margin scalloped.

XVII.—HIPFARCHIA.

δ². With the nervures scarcely swollen at base ; otherwise as in *Hipparchia*.

XVIII.—AULOCERA.

c². With the abdominal margin of hindwing incised ; the outer margin scalloped near anal angle.

XIX.—EPINEPHELE.

a². With the abdominal margin slightly incised ; the outer margin even. The second subcostal branch in the *forewing* originating beyond the cell.

XX.—YPTHIMA.

δ¹. With only the costal nervule swollen at the base.

a². With the wings rather elongate, somewhat denuded of scales.

* See separate keys to the subgenera of *Mycalesis* and *Lethe*, in which the variations which occur in the position of the apex of the cell in the hindwing are pointed out.

† The form of the cell in the hindwing of *Amecera* is almost identical with that of *Nistanga*, a subgenus of *Mycalesis* ; in both the origin of the second median nervule is beyond the apex of the cell.

- ♂². With the lower disco-cellular nervule in the hindwing close to the base of the wing; the second subcostal branch in the forewing originating beyond the cell.
XXI.—RAGADIA.
- ♂². Outer margin of forewing concave, of hindwing dentate and slightly caudate.
XXII.—ERITES.
- ♂². Outer margin even or but slightly scalloped; discoidal cell narrow and elongate in both wings.
XXIII.—CENEIS.
- ♂². With the wings broad and rounded; outer margin even or very slightly sinuate in hindwing.
a². The costa of forewing much arched from the base.
XXIV.—EREBIA.
- ♂². With no ocelli visible on the upperside, except by transparency; those of the underside prominent; inner margin of forewing shorter than in *Erebia*.
XXV.—CALLERBIA.
- ♂. With the palpi clothed in front with short dense appressed scaly hairs, and perceptibly tufted behind; the hindwing caudate; the nervures of forewing not swollen at base.
a¹. With the submedian nervure of forewing reaching the hinder angle, and the first median branch reaching the outer margin considerably above it.
XXVII.—MELANITIS.
XXVIII.—HIPPIO.
- ♂¹. With the submedian nervure of forewing short and curved, the first median branch terminating at the hinder angle.
XXIX.—CYLLOGENES.
- XXX.—PARANTIRRHÆA.

The genera of the *Satyrinae* are structurally very closely related to each other; but in addition to the structural distinctions noted above each genus exhibits a distinctive style of colouration and markings, which, though sometimes difficult to define, is generally unmistakable to the experienced eye; thus in *Mycalesis* the underside almost invariably has a straight transverse band across the middle of both wings, with a more or less prominent series of ocelli beyond it; in *Lethe* the basal area on the underside is usually either irregularly or not at all variegated; while in *Zophoessa* it is usually ornamented with straighter transverse lines; in *Hipparchia* and the allied groups the upper surface is usually brown, variegated with yellowish brown; in *Aulocera* the upper surface is black with a white transverse common stripe; in *Erebia* the upperside is dark brown, sometimes with ferruginous patches and an ocellus at apex of forewing; in *Ypthima* the upper surface is more uniform lighter brown, and the ocellus at the apex in it and in *Callerebia* is always bipupilled; and so on. Many of the genera comprise but a single species, such as *Anadebis*, *Orinoma*, *Cyllogenes* and *Parantirrhæa*; others again have only one representative within Indian limits, such as *Zethera*, *Pararge*, *Erites*, *Ceneis* and *Ragadia*, or only two or three, such as *Calites*, *Neorina*, *Rhaphicera* and *Zipetes*; the genera which contain the greatest number of species, such as *Mycalesis*, *Lethe*, and *Melanitis*, have been recently divided off into several groups, some of which depend, as in the case of the divisions of *Danais* and *Euplexis*, on the presence and position of scent-pouches and tufts of hair on the wings of the male insect. Some few of the genera are purely Indian; others are Asiatic and Malayan; and again others belong only to the Palearctic region, and occur within our limits only in the mountains on the north and west.

Genus 5.—ZETHERA, Felder. (PLATE XIV.)

Zethera, Felder, Neues Lep., p. 26, n. 61 (June, 1861); *Amecania*, Hewitson, Ex. Butt., vol. ii, pl. i (July, 1861).

"BODY rather large, quadrate; abdomen small and slender. Eyes small, smooth. Palpi long, densely clothed with scales throughout, pressed closely to the head, where they are clothed with long white hair. ANTENNÆ of moderate length, slender, very slightly

thickened towards the point, the articulations distinctly seen. FOREWING large; the costal margin arched, apex rounded, outer margin sinuated at the middle. *Costal nervure* reaching to beyond the middle of the wing; *subcostal nervure* with four branches, the first and second near together before the end of the discoidal cell, the third and fourth at a distance from the other two, equidistant from each other and the apex; *discoidal cell* short; *upper disco-cellular nervure* very short, inclining outwards; *middle disco-cellular* also short, somewhat longer than the upper, forming an obtuse angle with it; *lower disco-cellular* long, curved inwardly [in *Z. diademoides* it is nearly straight], four times the length of the other two together, united to the third branch of the median nervure at a distance from its base. HINDWING oblong circular; *precostal nervure* curved inwardly; *costal nervure* joining the costal margin at half its length; *subcostal nervure* with its first branch arising at less than a third of the length of the wing; the *discoidal cell* short and broad; the *upper disco-cellular nervure* arising a little below the first branch from the subcostal nervure, short, inclining outwards, the lower three times its length, curved, joining the third median nervure [at or] a very little beyond its base. FORELEGS, short, robust; the *tibiae* and *tarsi* equally thick, clothed with bristles. HINDLEGS long and slender; the *tibiae* and *tarsi* slightly spined." (Hewitson, l. c.)

Zethera is a Malayan genus; only six species are known, of which four inhabit the Philippine islands, one the Celebes group, and one only is found within Indian limits, where it appears to be a local insect occurring only in Tenasserim, for it is not included in Butler's List of the Butterflies of Malacca (Trans. Linn. Soc., Zool. gy, second series, vol. i, p. 533, 1876), nor in Distant's "Rhopalocera Malayana." The species from the Celebes, *Z. incerta*, Hewitson, seems to mimic a *Danais*, but the Indian species, which is of a blackish-brown colour with white border spots, appears to mimic some *Euphaea*; it is distinguished by the large and very sharply defined character of the inner row of oval spots on the hindwing; and by having a double marginal series of spots as in many *Danais*. The genus is a very aberrant one, and though clearly belonging to the *Satyrinae*, it lacks most of the prominent characteristics of that subfamily; none of the nervures are perceptibly swollen at the base, the palpi are not clothed with long perfect hairs, and there is no trace of ocellation on the under surface.

81. *Zethera diademoides*, Moore. (PLATE XIV, FIG. 33 ♂).

Z. diademoides, Moore, Proc. Zool. Soc. Lond., 1878, p. 824, pl. li, fig. 3.

HABITAT: Upper Tenasserim; Taoo, 3,000 to 5,000 feet; Moulai, 3,000 to 6,000 feet; Thoungyen Forests.

EXPANSE: ♂, 3'0 to 3'2; ♀, 3'25 inches.

DESCRIPTION: "MALE and FEMALE: UPPERSIDE dark brown. Forewing, with a sub-marginal series of seven small bluish-white spots, which decrease in size to the costa; a marginal series of smaller less distinct spots, two between each nervule. Hindwing, with a series of six large broad oval spots, [that nearest the costa small, round, the next three rapidly increasing to the fourth, which is largest, the fifth and sixth decreasingly smaller, but still very large]; a submarginal series of small reversely triangular spots, and a marginal series of smaller narrow spots, the two latter series with two of these spots disposed between the nervules. UNDERSIDE, as above." (Moore, l. c.)

The type was described from a specimen taken by Limborg in the Expedition of 1876-77. Since then numerous specimens have been taken by Captain C. T. Bingham in the Thoungyen forests, upper and lower, in March, April and May, and again in the autumn; the spots in these specimens are of a chalky-white, with no trace of bluish in the forewing; and on that wing there is usually a trace, sometimes very distinct, of the inner marginal row of spots completing the three series on both wings. The underside is paler and brighter brown, but the markings are identical. The oval spots on the hindwing vary much in size and shape.

The figure is drawn from a male specimen in Major Marshall's collection taken by Captain C. T. Bingham in April, 1880, in the Upper Thoungyen forests in Upper Tenasserim, and shows both upper and undersides.

Genus 8.—**ANADEBIS**, Butler. (PLATE XIV).

Thope, Moore, Horsfield and Moore, Cat. Lep. E. & C., vol. i, p. 234 (1857), (name preoccupied); *Anadebis*, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 50 (1867).

"BODY, with the *thorax* short, hairy; the *head* hairy; the *antennæ* very slender, with scarcely perceptible club, about half the length of the forewing; the *palpi* elongate, erect; the *eyes* projecting, naked. FOREWING large, subtriangular; *costa* strongly arched; *apical angle* rounded; *outer margin* nearly straight; *anal angle* rounded; *inner margin* nearly straight. HINDWING broadly ovate; *costa* nearly straight; *apical angle* rounded; *outer margin* slightly scalloped; *anal angle* slightly rounded. *Nervures* of wing scarcely swollen at base; *neuration* almost identical with that of *Lethe*." (Butler, l. c.)

Moore, in his Catalogue of the Lepidoptera in the East India Museum, placed the type species as *Mycalesis*?, stating that it "may be separated under the generic name of *Thope*." Butler, in redescribing the genus, notes as follows: "This genus must be placed next to *Neorina*, Westwood, from which it principally differs in the form of the antennæ and the disco-cellular nervules [p. 51]. Although it has somewhat of the appearance of *Mycalesis*, it is totally distinct from it, and is much more nearly allied to *Debis* [= *Lethe*]; in fact the *neuration* is almost identical with that of the latter genus; but the great size of the typical species, its clubless antennæ, naked eyes, and erect palpi at once distinguish it. In some respects this form seems to be nearly allied to *Amachania*, Hewitson [= *Zethenia*, Felder] which should, I think, be placed between it and the genus *Orinoma*, Doubleday." (Butler, l. c., p. 50). There is apparently no structural feature by which it can be separated from *Zethenia*, except the form of the wings, and as the clothing of the palpi differs from that of *Mycalesis*, *Neorina* and *Lethe*, being further removed from the typical genera of *Satyrina* in this feature, its proper place would be, as we have placed it, next to *Zethenia*, and before *Mycalesis*, especially as in style of markings, both it and the following genus *Calites* present more of the appearance of *Mycalesis* than do either *Neorina* or *Lethe*.

Only a single species is comprised in this genus, which inhabits the north-east corner of India.

82. **Anadebis himachala**, Moore. (PLATE XIV, FIG. 35?).

Mycalesis (?) *himachala*, Moore, Horsfield and Moore, Cat. Lep. E. & C., vol. i, p. 234, n. 501 (1857); *Neorina* nta, Felder, Wien Ent. Monatsch., vol. iii, p. 403, n. 45 (1859); *Ethope himachala*, Moore, Proc. Zool. Soc. Lond., 1865, p. 770; *Anadebis himachala*, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 51, pl. ii, fig. 1 (1867).

HABITAT: North-East India.

EXTENSION: 2.75 to 3.6 inches.

DESCRIPTION: "UPPERSIDE deep brown, broadly paler along outer margins. Forewing with six, and hindwing with five ocelli; marginal line deep brown. UNDERSIDE as above, but the hindwing with six ocelli, the anterior ocellus large, and the posterior with two white dots." (Moore, l. c.). The ocelli are large and contiguous, black with a prominent white pupil ringed with yellowish, then with dark brown, then with yellowish again; beyond them is a narrow edging of the dark brown ground, and beyond that a dark brown submarginal line, bordered on either side with yellowish, the extreme margin being again dark brown. The posterior ocellus of the hindwing is bipupilled both on the upper and undersides. On the UNDERSIDE the yellowish exterior lines are replaced by whitish lines, and the anterior ocellus of the hindwing is placed back out of line and is much larger than any of the others. The FEMALE is slightly larger than the male, paler, especially towards the apex of the forewing, where there is, in some specimens, an additional small ocellus between the last subcostal nervule and the termination of the costal nervure; and distinctly shows the anterior ocellus of the hindwing on the upperside.

A. himachala is found in Sikkim, Assam, the Khasi Hills, Sylhet, and Cachar; but we have no record as yet of its capture in Burma. It is common in the autumn, and probably at other seasons. Mr. Wood-Mason took it commonly in Cachar in May, July, and August.

The figure is taken from a female specimen in the Indian Museum, Calcutta, from Sibsagar, and shows both the upper and undersides.

Genus 7.—CÆLITES, Westwood. (PLATE XIII).

Celites, Westwood, Gen. D.L., p. 367 (1851); id., Distant, Rhop. Malay., p. 45 (1882).

"BODY slender, finely hairy. WINGS large. FOREWING subconcave. HINDWING regularly oval, ocellated beneath, both wings very slightly scalloped. HEAD moderate-sized, finely hairy; eyes naked; palpi rather small, very compressed, clothed with short scaly hairs, elevated obliquely, but not reaching the level of the top of the eyes, and projected to a little distance in front of the face; middle joint without a dorsal tuft; terminal joint minute, oval; antennæ scarcely more than one-third of the length of the forewing, slightly curved, very slender; gradually, but very slightly, thickened to the tip, forming a very long club but little thicker than the rest of the antennæ, composed of short, scarcely distinct joints, of nearly equal length throughout; thorax oval, finely hairy. FOREWING large, triangular-ovate; costal margin moderately curved; apical angle rounded; outer margin more than two-thirds the length of the costal, slightly emarginate, and very slightly scalloped; hinder angle rounded; inner margin about equal to the costal, nearly straight; costal nervure strongly swollen for some distance at the base, extending to the costa opposite the extremity of the discoidal cell; subcostal nervure with its first and second branches arising at some distance before the anterior extremity of the cell; third branch arising at about one-fourth of the distance between the cell and the tip of the wing; fourth branch arising about half way between the cell and the tip, uniting with the costa before the tip, the terminal part of the nervure extending to the tip; upper disco-cellular arising rather beyond the middle of the wing, very short, transverse; middle disco-cellular much longer, slightly curved, and directed obliquely towards the base of the wing; lower disco-cellular longer than the middle one, rather angulated at the base, the lower part slightly oblique and directed to the outer margin, uniting with the third branch of the median nervure at a considerable distance from its origin; this third branch being slightly angulated at the place of junction, beyond which it is regularly curved. First branch of the median nervure arising nearer the base of the wing than usual. HINDWING regularly oval; costal margin curved; outer margin slightly scalloped; subcostal nervure branching at a considerable distance from the base; upper disco-cellular short, curved, forming the base of the discoidal nervure; lower disco-cellular much longer, straight, oblique, terminating the narrow discoidal cell at the middle of the wing in an acute angle by its union with the median nervure exactly at the origin of its third branch, which is slightly curved. FORELEGS of the MALE very minute, feathered; coxa elongated; femur shorter than the coxa, rather thickened at the tip; tibia much shorter than the femur, very hairy; tarsus extremely short, almost continuous with the tibia, apparently two-jointed; the terminal joint being scarcely visible under a lens."

"The elongate form, the somewhat concave outer margin of the forewing, and the very slightly scalloped margins of both wings are the most evident distinctions of this genus." (Westwood, l. c.)

Celites is an Indo-Malayan genus, of which only four species and one local subspecies have been described—one is supposed to be confined to north-east India, but the locality is doubtful; another inhabits Burma, extending to Sumatra and Borneo; a third is found in Borneo, with a local subspecies in Malacca; and the fourth in the Celebes group. The two Indian species are very rare, and are both distinguished by a brilliant purple gloss on the basal area of the upperside of both wings.

Key to the Indian species of *Celites*.

- A. Both wings elongate, with the basal area of the upperside glossed with brilliant shining purple.
 - a. Forewing with the outer margin slightly concave, hindwing with the outer margin almost even.
 83. *C. KOTNIS*, N.-E. India.
 - β. Forewing with the apex more falcate, the outer margin more concave; hindwing angulated at the middle of the outer margin.
 84. *C. SPINISTHIA*, Burma.

The arrangement of the ocelli in this genus is analogous to that in *Mycalesis*, but the elongate wings and the brilliant purple gloss on the upperside distinguish the species from

all other Indian *Satyrinae* at a glance; the only approach to this colouration being in the male of *Lethe scanda*. Some of the species of *Lethe*, including *L. scanda*, have in the males a tuft of hairs on the upperside of the hindwing below the median nervule at the origin of the second median nervule; a similar tuft is also present in the male of *Celites epiminthia*, but it is placed on the submedian nervule; thus showing a further analogy between these genera.

83. *Celites nothis*, Doubleday and Hewitson.

C. nothis, Doubleday and Hewitson, Gen. D L., p. 368, pl. lxxi, fig. 2 (1851).

HABITAT: East India.

EXpanse: 3 inches.

DESCRIPTION. **UPPERSIDE** *Both wings* rich brown, the costa of *forewing* and the outer margins of *both wings* paler, the basal two-thirds brilliantly shot with purple. *Forewing* with two marginal dark brown lines, *hindwing* with two similar lines, but wider apart, and enclosing a band of a lighter colour than the ground. (Described from the figure in the Gen. D L.) "On the **UNDERSIDE** the basal half of the wings is dark brown, the apical [outer] half paler, with a pinkish gloss, with several slender brown streaks, parallel with the apical [outer] margin. The *hindwing* is much darker brown than the *forewing*, and is marked with five ocelli varying in size, the second and the outer one being the largest, they are black, with a minute white pupil, and a fulvous iris surrounded by a narrow brown circle." (Westwood, l c)

Westwood founded the genus *Celites* upon "a single male, not in the best condition" In his figure, however, and also in the description no mention is made of the very conspicuous patch of black hairs and scales on the abdominal margin of the upperside of the hindwing which is present in the male specimen of *C. epiminthia* we possess, and which is probably a male sexual character of insects of this genus, if this be the case the specimen of *C. nothis*, figured and described by him, is a female and not a male as stated. We have never seen a specimen of this rare Butterfly; and it is possible that it may not be Indian after all. "East India," the locality given in the original description, embraces a very large area, and might possibly have included Maljuna and the Malay archipelago.

84. *Celites epiminthia*, Westwood (PLATE XIII, FIG. 31 ♂).

C. epiminthia, Westwood, Gen. D L., p. 368, n. 2 (1851)

HABITAT. Moulmein, Meplat Valley, Upper Tenasserim, Sumatra; Borneo.

EXpanse 3 inches

DESCRIPTION. "Coloured similarly to the preceding [*C. nothis*], *forewing* more falcate; *hindwing* angulated in the middle of the outer margin" (Westwood, l c)

The male and female specimens of *C. epiminthia* which we have seen differ from the description and figure of *C. nothis* in the *forewing* being less broad, the apex more produced and falcate, and the outer margin more concave; the *hindwing* is also produced into a very short tail at the third median nervule. There is only one marginal line on the **UPPERSIDE** of *both wings* (in *C. nothis* there are two), which is nearer the margin than in the latter species, and on the *hindwing* it is not bordered on both sides with dull ferruginous. The *hindwing* also bears on the submedian nervule a conspicuous elongate patch of deep black hairs and scales. **UNDERSIDE** dark brown; *both wings* crossed by a pale violet band, commencing near the costa on the *forewing*, and crossing the wing beyond the cell; on the *hindwing* it passes through the outer extremity of the cell, and does not reach the abdominal margin. The outer margin of both wings is defined by a dark fine line, within which are two similar equidistant lines. On the *forewing* within the marginal lines there is a broad band of pale violet. *Hindwing* with five equal-sized submarginal ocelli placed on a pale violet band. The ocelli are black, with white oblique linear pupils surrounded with a ferruginous, and then a brown ring. **FEMALE**: **UPPERSIDE** similar to the male, but having a conspicuous subapical lavender band on the *forewing* curving from the costa to the outer margin, along which it is continued till it gradually disappears on the outer margin of the *hindwing*.

The patch of black hairs on the upperside of the forewing near the abdominal margin in the male is of course absent. UNDERSIDE similar to the male, but the outer violet band extends to the margin beyond the marginal lines, and the third ocellus on the hindwing is decidedly smaller than the others.

Butler in the Cat. Lep. B. M., *Satyridæ*, p. 111 (1868), referring to *C. ricinus*, Felder, from the Celebes, says: "In *C. epiminthæ* there are five ocelli in the forewing, the second and fifth largest, the third smallest; in the hindwing there are also five, the first and last larger. None of the ocelli could, strictly speaking, be described as black, they are olivaceous, with a yellow iris, edged outwardly with dark brown, and they have a diagonal white pupil irrorated with black atoms; these ocelli, moreover, all stand upon a pale violet ground." In making these remarks Butler has evidently misapplied the name *C. epiminthæ*, for, as described by Westwood, neither that species nor *C. nothus* have any trace of ocelli on the underside of the forewing; and we have specimens of *C. epiminthæ* agreeing with the original description.

Several males of this rare Butterfly were taken by Captain C. H. E. Adamson in the neighbourhood of Moulmein in October, one of which has been sent to us, and Captain C. T. Bingham took a single female in the Meplay valley, also in Upper Tenasserim, in October. Besides these we have no other records of its capture.

The figure is taken from a male specimen from Moulmein, in the collection of Major Marshall, and shows both the upper and undersides.

An allied species, which is considered to be a local subspecies of *C. euptychioides*, Felder (from Borneo), has been described from Malacca by Butler under the name of *C. humilis*,* it differs from both the Indian species in the absence of the purple shot on the upperside, and in the presence of an ocellus on the forewing on the underside.

Genus 8.—MYCALESIS, Hubner (PLATE XVI).

Mycalesis, Hubner, Verz. bek. Schmett., p. 54 (1816), id., Westwood, Gen. D. L., p. 392 (1851).

"BODY slender, finely hairy. WINGS rather large, plainly and uniformly coloured, those of the MALE generally with a tuft of hairs on the upperside. HEAD rather small, with a small conical tuft of hairs in front. EYES naked [or hairy?] prominent. Antennæ scarcely half the length of the forewing, very slender, joints scarcely distinct, terminated by a long but very slender club. Palpi porrected obliquely; the tip elevated rather above the level of the top of the eyes, and advanced in front rather farther than the length of the head, very slender; the first and middle joints sparingly clothed beneath with long, porrect, delicate bristles; the middle of the second joint also clothed on the back with a tuft of short hairs, terminal joint very slender, acute at the tip, short, and scarcely setose. Thorax rather small, rather compressed, and very convex. Abdomen slender. FOREWING with the costal margin strongly arched; apex rounded, outer margin varying from slightly convex to slightly concave, entire, about three-fifths of the length of the costal, inner margin about one-fourth longer than the outer, rather dilated in the MALE. Costal nervure strongly dilated at the base; subcostal nervure with the first and second branches arising before the anterior extremity of the discoidal cell, which extends to the middle of the wing; upper disco-cellular very minute, middle one longer, curved, rather obliquely directed towards the base of the wing, outer disco-cellular much longer, strongly arched, united with the third branch of the median nervure at a short distance from its origin. In the species in which the base of the median nervure is not swollen, the space between its first and second branches is much longer than usual, the

* *Calites humilis*, Butler Ann and Mag. of Nat. Hist. third series, vol. xx, p. 403, pl. viii, fig. 8, and pl. ix, fig. 2 (1867), female, *C. euptychioides*, var. *humilis*, Distant, Rep. Malay, p. 45, fig. 75 (1882), female. HABITAT: Ayeerpanas, Malacca. EXpanse, 3.06 inches. DESCRIPTION. FEMALE. UPPERSIDE swarthy, the external arch of the forewing a little darker of the hindwing paler, with an obscure marginal line. Hindwing with a very indistinct subanal hind ocellus, curled with pale ochreous; the inner margin paler. Body swarthy; Antennæ ferruginous. UNDERSIDE paler ochraceous, with a wide median band, and another submarginal bearing ocelli, violet, a cloudy discal band swarthy, two distinct irregular marginal lines, swarthy, forewing with a small subapical ocellus, hindwing with five, the third and fourth small, the fifth large, all black, banded with yellow and beyond that with swarthy and minutely pupilled with white; body ochraceous." (Butler, l.c.)

† The eyes of the typical African species of *Mycalesis* are naked, but they are hairy in most of the Indian species: see key to the groups.

space between the base of the wing and the first branch being proportionately shortened; in others the base of this nervure is swollen, and the space between the first and second branches as short as usual; *submedian* nervure simple, and curved at the base in some species, which have a slit enclosing a tuft of hairs opposite the origin of the first median nervule, but greatly swollen at the base in other species which have not this slit,* the tuft of hairs in these being placed on the upper surface of the hindwing. **HINDWING** with the costal nervure extending about two-thirds of the length of the costa; *subcostal* nervure arising opposite the origin of the precostal, its branch arising at a considerable distance from its base; the *disco-cellular* nervules forming a nearly continuous, rather obliquely transverse, termination to the discoidal cell, uniting with the median nervure exactly at, or a little beyond, the origin of its third branch; the *discoidal cell* in some species bears along its outer edge a tuft of long pale hairs, whilst in others it is more generally clothed with numerous shorter hairs, *outer margin* slightly scalloped. **FORELEGS of the MALE** small; *femur* clothed with scaly hairs, slender, as long as the tibia and tarsus, which are thickly clothed with short hairs. **FORELEGS of the FEMALE** much longer, slender; *tibia* rather shorter than the femur or tarsus, which latter is articulated, the articulations armed with short spines beneath, the tips destitute of claws. *Four hindlegs* rather long and slender, scaly, destitute of hairs, and with only a few very small spines on the sides of the tibiae beneath; the tarsi almost destitute of spines, and thickly squamose, the scales hiding the terminal claws."

"The species of *Mycalesis* are distinguished by their uniform dull colours, being generally either black or brown, occasionally varied by a single large eye like spot on the forewing, with a few ocelli near the outer margin of the hindwing. On the underside they are often marked with a pale slender oblique bar running across both wings, with the ocelli larger, and often elegantly tinged with silver" (*Doubleday*, l c)

LARVA and PUPA unknown.

The species present numerous structural differences though maintaining the same general type and style of markings. The African species appear to form a distinct group, and recently Mr F Moore (*Trans Ent Soc Lond*, 1880, p 155), has divided the Asiatic species into no less than twenty three distinct genera, of which twelve are represented in India, these divisions, if accepted, must be carried still further as will be seen further on, but as some of the structural features common to both sexes on which reliance is placed in separating the groups, vary in aspect in the sexes of the same species, it is clear that they can only be accepted as generic differences with reservation. The divisions as usual rest chiefly on the structure of the male insect, and especially on the presence and position of the sexual scent-pouches or glands, and the tufts of hair which usually accompany them, and so far as these features go the divisions are more satisfactory. The Indian species of *Mycalesis* come under the following groups —

Key to the Indian Groups of *Mycalesis*.

A Males with a glandular pouch and tuft on both wings.

a Males with the pouch and tuft on *hindwing* near to the subcostal nervure, and overlapped by the forewing. The eyes hairy. The costal, median, and submedian nervures of forewing much swollen at base.

a¹. With a glandular patch of raised scales on the middle of the submedian nervure of the *fore wing* partly covered by a tuft of long fine hairs.

a² With the first subcostal nervule of *hindwing* of male much curved upwards at base, then straight. the second very concave from base of first to end of cell.

I VIRAPA

β¹. With the first subcostal nervule of hindwing of male swollen at base, and covered on upperside by a tuft of hairs.

II GARRIS

β With a slight tuft, but no perceptible patch of raised scales on the submedian nervure of *forewing* beyond the swollen base. The first subcostal nervule of hindwing in male not curved at base. the second concave at base and much swollen beneath between base of first and end of cell.

III SADARGA

* And in some also which have it, see VIRAPA, GARRIS and SADARGA.

- ♂. Males with no erectile tuft on *hindwing* near subcostal nervure, but with two recumbent tufts along median nervure on either side. Eyes naked. The costal nervure only swollen at base in forewing.

IV ORSOTRIENA.

- B. Males with a glandular pouch and tuft on *hindwing* only, near to the subcostal nervure and overlapped by the forewing

- a. With the first subcostal nervure in *hindwing* emitted some distance before end of the cell

- a¹. With the second median nervure in *hindwing* emitted at end of the cell

- a². The disco-cellular nervures of forewing very concave forewing with a tuft of hairs at base of costa overlaying the swollen costal nervure

V CALYPSOME.

- ♂². The disco-cellular nervures of forewing straight, with the hairs at base of costa short, and not overlaying the swollen costal nervure.

VI TRINCA.

- ♂². The forewing broad and short, the outer margin convex.

VII PACHAMA.

- ♂¹. With the second median nervure in *hindwing* emitted some distance before end of the cell

- a¹. The forewing elongate, the outer margin concave.

VIII CLEIA.

- B. With the first subcostal nervure in *hindwing* emitted immediately before the end of the cell; the second median from *before* the end of the cell.

IX KABANDA.

- a. With the first subcostal nervure in *hindwing* emitted at the end of the cell

- a¹. With the second median nervure in *hindwing* emitted at the end of the cell.

X. SAMANTA.

- ♂¹. With the second median nervure emitted from some distance *beyond* the end of the cell

XI. NISSANGA.

- C. Males with two glandular patches and tufts on the *hindwing*, placed one near the subcostal nervure and overlapped by the forewing, the other on the submedian nervure

XII LOESA.

The foregoing table represents the structural features which define the groups. *Orsotriena* is very distinct and perhaps worthy of separate generic rank, so also to a lesser degree are *Virapa*, *Nissanga*, and *Loesa*, but the structural distinctions among the others are comparatively unimportant. In addition to the structural features there are also in many cases different types of colouration which run through the groups, and which are detailed further on.

These are in their habits perhaps the most sedentary of all the diurnal Lepidoptera. They frequent thick herbage in shady places, and rest frequently on the undersides of leaves, seldom taking flight unless disturbed except towards evening, so much so that to secure specimens it is often necessary to beat the bushes to discover them. Upwards of a hundred species have been described, of which some are African and the remainder are spread through Eastern Asia and the Malay Archipelago, extending to Japan, New Guinea, and Australia; a few are found in the valleys of the North-West Himalaya, extending into the mountains of Kashmir and throughout peninsular India and Ceylon in suitable localities, but to the westward of Kashmir they are unknown or unrecorded as yet, in Asia or Europe.

First Group—*Virapa*: "Forewing, with costa arched in the middle, apex convex, exterior margin oblique and even, posterior angle acute; costal, subcostal, and median nervures swollen at the base, first subcostal branch emitted immediately before end of the cell, disco-cellulars bent inward at their middle, radials from upper near the cell. MALE with a glandular patch of raised scales on the middle of submedian nervure, the patch being partially covered by a tuft of long fine hairs exerted outward from each side of the nervure. *Hindwing*

oval, exterior margin convex; first subcostal in MALE much curved upward at the base and thence straight to apex, emitted at more than half distance before end of the cell, second very concave from base of first to end of the cell, upper disco cellular outwardly convex, lower straight and oblique, radial from their middle; two upper median branches emitted at some distance beyond end of the cell. MALE with a tuft of fine long hairs exerted over a glandular patch at end of subcostal nervure. Antennæ with a well formed slender club. Palpi uniformly pilose beneath to tip. Eyes very slightly hairy" (Moore, Trans. Ent. Soc. Lond., 1880, p. 155)

This group contains only two species, both Indian—the one confined to the Andaman islands, the other inhabiting South India and reappearing in a somewhat modified form in North-east India and Burma. Both species are dark brown above, with a conspicuous white subapical bar on the forewing; this latter character distinguishes them at once from the other groups.

Key to the Species of *Virapa*.

A. Males with a glandular pouch and tuft on both wings

a. a¹ a² With a white subapical bar on the forewing

a² With a large ocellus on the upperside of the forewing

♂ M. (*Virapa*) *kanaka*, South Andamans

b² With no ocellus on the upperside except faint indications in some specimens of the ocelli of the underside showing through

♂ M. (*Virapa*) *ANAXIAS* South and North East India Burma.

In describing *M. anaxias* Hewitson noted as follows: "I have returned this species in the genus *Mycalesis*, although the first disco cellular nervule of the hindwing is very singularly placed, taking its rise from the subcostal nervule near the base of the wing, and, instead of crossing the wing transversely or obliquely, running down longitudinally, until it meets the second disco cellular nervule at the usual place." The type specimen was from the Nilgiris, but no specimen that we have examined from that or any other locality presents this feature, nor does Moore in the description of his genus *Virapa* notice it, the nearest approach to it is in the species described further on as *M. anxietus*, though even in this the first disco cellular nervule takes its rise, not from near the base of the wing but from immediately beyond the first subcostal branch. It is the subcostal nervule in the male only of *M. anaxias* which, immediately after giving off its first branch, suddenly bows inwards, and then runs "down longitudinally until it meets the first, not second disco cellular nervule."

85 *Mycalesis radza*, Moore

M. radza, Moore, Proc. Zool. Soc. Lond., 1877 p. 583, pl. lxxv, fig. 2, male *Virapa radza*, id., Trans. Ent. Soc. Lond. 1880 p. 156

HABITAT: South Andamans (Port Blair)

EXPANSE: ♂, 19, ♀, 21 inches.

DESCRIPTION: "MALE UPSIDE dark brown. Forewing with a narrow, oblique, subapical white band, below which is a large black ocellus with ochreous outer ring and a white central spot. Hindwing with a smaller and less distinct ocellus near middle of outer margin. UNDERSIDE brown. Forewing with a more prominent white oblique band and lower ocellus, two small geminate ocelli between the white band and apex. Hindwing with an outer series of seven prominent ocelli, enclosed within a narrow purple wavy line the three upper and seventh ocelli small, fourth and sixth larger, the fifth largest. Nearest allied to *M. anaxias*" (Moore, l.c.) FEMALE: Larger, and lighter coloured above and below. The subapical band of the forewing twice as wide and a purer white, with the posterior subapical ocellus of the forewing and the fifth ocellus from the apex of the hindwing showing through indistinctly by transparency. UNDERSIDE with a prominent white continuous irregular band commencing at the seventh minute anal ocellus of the hindwing, and joining the subapical band on the forewing, this band being placed behind the series of ocelli on both wings, its inner margin sharply defined, its outer much diffused, widest above the third median nervule of the hindwing, very narrow on the forewing. There is a slight indication of this band in the male,

This species has only as yet been taken in the vicinity of Port Blair in the South Andamans in May, July and August. Though closely allied to *M. anaxias*, it appears to be a distinct species, differing in its smaller size and in the narrower, better defined character of the white subapical band, especially on the underside, where in *M. anaxias* the band extends towards the apex by suffusion with the brown ground.

86. *Mycalesis anaxias*, Hewitson. (PLATE XVI, FIG. 54 ♂).

M. anaxias, Hewitson, Ex. Butt., vol. iii, *Mycalesis* pl. iv, figs. 25, 26 (1862), male; *Virapa anaxias*, Moore, Trans. Ent. Soc. Lond., 1880, p. 136.

HABITAT: Nilgiris, Trevandrum, Travancore, Sikkim, Assam, Naga Hills, Khasi Hills, Upper Tenasserim.

EXPANSE: ♂, 2'1; ♀, 2'4 inches.

DESCRIPTION: "MALE: UPSIDE: dark brown from the base to beyond the middle (its border on the forewing angular), followed by a broad margin clouded with lilac and grey, and rufous brown; traversed by three lines of dark brown: the *cilia* lilac. Forewing with the white band as above, and three small ocelli, two above, one below the band. Hindwing with five ocelli, all black, with white pupils, the iris rufous and indistinct." (Hewitson, l. c.). The FEMALE differs from the male in its larger size, broader and more rounded forewing and paler colouration, in consequence of which the ocelli of the underside not unfrequently show through on the upperside. The ocellation of the underside varies greatly in this species, being most developed in Nilgiri specimens, in some of which the hindwing bears seven ocelli, as in *M. radza*, the fifth ocellus is considerably the largest, the first and sixth about half the size, the rest smaller; the fourth ocellus has the largest white pupil, which remains as a white dot in specimens where some of the ocelli are obsolete. In specimens from Tenasserim the white subapical band is as narrow on the upperside as in *M. radza*, but on the underside only appearing as a cloudy white border to the sharply defined deep brown ground; the ocelli too are almost entirely obsolete in the male, the first, fifth, sixth and seventh being visible on the hindwing as minute ocelli; the rest including those on the forewing only as very small whitish dots. In the female the ocelli are prominent, but differ somewhat in their proportions from those of Nilgiri specimens, those on the hindwing increasing regularly from the second to the fifth and decreasing to the seventh.

M. anaxias was taken by Linborg in Upper Tenasserim at 3,000 to 6,000 feet elevation. Captain C. T. Bingham took it in the Donat Range in the same locality in January and October, and Mr. Harold Fergusson has taken it in the Ashambo Hills, Travancore, not uncommonly in March and May at 3,000 to 4,000 feet elevation. It is apparently found only in hilly country.

The figure shows the upper and undersides of a male specimen from Sikkim taken by Mr. de Nicéville in October at 2,000 feet elevation, and now in the Indian Museum, Calcutta.

The next species should, if these groups are to be recognised as generically separate, form the type of a new genus; in colouring it is almost identical with Tenasserim specimens of *M. anaxias*, but the wings are altogether broader and more rounded; in the forewing the costa is comparatively shorter and much more arched, the apex is much more obtuse with a tendency to become acuminate, the exterior margin is convex and nearly erect instead of being straight and oblique, the tuft of hairs over the glandular pouch on the upperside of the forewing is light brown and placed above the submedian nervure, whereas in *M. anaxias* it is black and placed on the nervure lying along it. Further the neuration of the hindwing is widely different; in *M. anaxias* the upper disco-cellular nervule is short, connecting the radial at once with the subcostal at a considerable distance beyond the origin of the first subcostal branch, while in *M. anaxioides* the upper disco-cellular is projected backwards from the base of the radial for some distance, then curving sharply round upwards it joins the subcostal just in advance of the origin of the first branch.

87. *Mycalesis anaxioides*, Marshall, n. sp.

HABITAT : Upper Tenasserim.

EXPANSE : ♂, 2 1 to 2 4; ♀, 2·5 inches.

DESCRIPTION : MALE almost identical in colour and markings with Tenasserim specimens of *M. anaxias*, but with the border on the UNDERSIDE duller, lacking the decided lilac and yellowish tints. The seven ocelli of the *hindwing* present, but all minute; a single, very small, ocellus on the *forewing* above the second median nervule, and above that a series of three or four equally small black dots representing obsolete ocelli; in *M. anaxias* these dots are white, not black. The FEMALE differs from the male in being paler coloured above and below, and the subapical band on the upperside of the *forewing* twice as wide. UNDERSIDE with the ocelli of the *hindwing* twice as large as in the male, though they are still small, those on the *forewing* also are more numerous and larger.

Captain C. T. Bingham took two males of this new species in the lower Thoungyeen forests in Upper Tenasserim in May, and one male and a female in March. It appears to affect lower elevations than does *M. anaxias*, but nothing beyond the record of these captures is known of it.

Second Group.—GARERIS. "Wings broader than in *Virapa*. *Forewing* more angular at apex, the costa much more arched, venation of MALE and the glandular patch of raised scales and tuft similar. *Hindwing* with the first subcostal branch in the MALE swollen beneath at its base above the cell, and covered on the upperside by a tuft of hair; the two upper median branches emitted from end of the cell. Eyes hairy" (Moore, Trans Ent Soc Lond, 1880, p. 156).

Key to the Indian Species of *Gareris*.

- A a a¹, b². Upperside of *forewing* with 1 large lower and one or three smaller upper ocelli.
 - a¹. Underside of both wings with complete series of perfect submarginal ocelli.
 - 88. *M. (Gareris) COXA*, Sikkim.
 - b². Underside of both wings with incomplete series of rudimentary ocelli.
 - 89. *M. (Gareris) BANATANA*, Kulu Sikkim Upper Burma Tenasserim.

This group contains four species only; one (*M. francisca*, Cramer) occurs in China, another (*M. perdicus*, Hewitson) is found in Shanghai and Japan. In both the Indian species the median band on the underside is outwardly bordered with pale violet.

88. *Mycalesis gopa*, Felder

M. gopa, Felder. Revis. Nov., Lep. vol. II, p. 511, n. 863 (1867), Butler, Cat. Lep. B. M., *Satyridæ*, p. 149, n. 57 (1868). *Gareris gopa*, Moore, Trans Ent. Soc. Lond., 1880, p. 157.

HABITAT : Sikkim.

EXPANSE 2 2 inches.

DESCRIPTION "MALE UPPERSIDE fuscous. *Forewing* with a tuft of fuscous hairs above an internal black tuft, a small subapical ocellus [sometimes with a smaller one above and below it and touching], and another rather large between the first median branches, black, pupilled with white, obsoletely encircled more purely than the ground-colour. *Hindwing* with the external margin paler and divided by a [two] wavy fuscous streak [s]. UNDERSIDE paler, powdered with ochraceous, especially on the paler external margin, which is divided by two fuscous streaks (the inner of which in the *forewing* is well drawn back), a fuscous basal streak twice bent in the *hindwing*, a streak beyond the middle slender, deeply fuscous, margined outwardly with lilac. *Forewing* with five [or six] black white-pupilled ocelli, circled with ochraceous brown and widely bordered with fuscous, the uppermost, third and fourth minute, the second larger the lowest large. *Hindwing* with seven ocelli of the same colour in a series nearly parallel to the margin, the second and third smallest of all, the uppermost, fourth and sixth medium sized, the fifth rather large" (Felder, l. c.). The female is coloured and marked like the male, differing only in the presence occasionally (not always) of a subanal ocellus on the upperside of the *hindwing*; and also in lacking the glandular pouches and tufts.

M. gopa is a rare Butterfly; it has only hitherto been found in Sikkim. Col. Lang's collection contains several specimens of both sexes taken by Dr. Jerdon, Mr. de Nicéville took a single male specimen at about 3,000 feet elevation in October, and Mr. Otto Möller has recently taken several specimens in the neighbourhood of Darjiling in the same month.

89. *Mycalesis sanatana*, Moore.

M. sanatana, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 231, n. 469 (1857); *Gareis sanatana*, Moore, Trans. Ent. Soc. Lond., 1880, p. 156.

HABITAT: Kulu, Sikkim, Khasi Hills, Upper Burma, Tenasserim.

EXPANSR: 2 to 2·3 inches.

DESCRIPTION: "UPPERSIDE brown. Forewing with a large lower and a smaller upper eye-spot, the latter with a minute one above and below it. UNDERSIDE ochreous-brown; the series of spots white" (Moore, l. c.)

In the Indian Museum, Calcutta, are numerous specimens of a *Mycalesis* of this group from Kulu, Sikkim, Upper Burma (Yunan Expedition), and Tenasserim, which agree as far as it goes with the meagre description above. DESCRIPTION: UPPERSIDE brown, with the outer margin of both wings paler and slightly greenish; Forewing with one, and hindwing with two, darker anteciliary lines. Forewing with a large black ocellus filling the first median interspace, white-pupilled and with a fulvous iris. A smaller similar ocellus filling the interspace between the subcostal nervure and upper discoidal nervule, in some specimens with two slightly smaller contiguous ocelli in the interspaces immediately above and below it. Hindwing unspotted. UNDERSIDE: Both wings of an obscure greenish-brown colour, crossed beyond their middle by a common dark brown band, not quite reaching the costa in the forewing, and in which wing it is slightly bent inwards near the costa, nor the abdominal margin in the hindwing. This band is outwardly margined with pale violet. A dark anteciliary line to both wings, within which and rather less than midway between the margin and the median band is a very wavy narrow dark line. Forewing with two pairs of dark lines crossing the cell, one near its base the other at its middle. A more or less complete submarginal series of white dots, being the pupils of rudimentary ocelli. Hindwing with a similar series of white dots, but the series complete, one between each pair of nervules. A subbasal sinuous dark line. The male differs from the female only in having the sexual characters detailed in the generic diagnosis of *Gareis*.

Mr. A. Graham Young took several specimens in the Kulu valley at the end of May and in June, Mr. Otto Möller has taken it in Sikkim at about 3,000 feet elevation in October, and Captain C. T. Bingham took one female in the Donat range in January; we have no other precise records of its capture. It seems a constant, well-marked species; all the specimens we have seen shew hardly any variation, except in the colour of the median fascia, which varies from almost white to pale violet. The female from the Donat range has moreover the lower ocellus of the upperside very large, and the general colour is paler, especially on the underside, where it has a decided ochraceous tinge.

A species of *Mycalesis* occurs in the Malay peninsula and Borneo, which has been separated by Moore as the type of a distinct genus characterised as follows under the name of *Satona*, and placed between *Gareis* and *Sadana*. Genus SATONA. "Male—Wings short; forewing more arched than in *Virapa*, apex more rounded; exterior margin less oblique; second subcostal branch emitted before end of the cell; a tuft of fine hair covering a glandular patch below submedian nervure; hindwing subconical, exterior margin oblique, anal angle convex, abdominal margin short; a tuft of fine hair covering a glandular subcostal patch; cell short, broad at its end; subcostal deeply recurved at its end, first branch emitted near end of the cell, the second bent downward; disco-cellulars straight, slightly oblique; middle median emitted before end of the cell. Antennæ with a slender club; palpi somewhat stout; eyes hairy." (Moore, Trans. Ent. Soc. Lond., 1880, p. 157). This genus or subgenus contains but a single species, *Mycalesis maianear*, Hewitson."

* *Mycalesis maianear*, Hewitson. HABITAT: Malacca, Sumatra, Borneo. EXPANSR: Male, 1·9; female, 2·3 inches. DESCRIPTION: "MALE: UPPERSIDE dark brown; the outer half nearly of the forewing, and the outer margin of the hindwing, rufous-brown. Forewing with a tuft of hair near the inner margin; the margins of both wings where they meet silvery white. UNDERSIDE dark brown, to the middle, rufous brown beyond, the outer margin and two submarginal lines dark brown. Forewing with three ocelli, two near the apex minute and touching, the third below the middle, large. Hindwing with seven, the first (touching the costal margin), the fourth and fifth, large, the rest smaller, all black, with white pupil and rufous orange iris. FEMALE, like the male, except that it has an orange band on both sides of the forewing, and has but one ocellus near the apex on the underside of the forewing." (Hewitson, Ex. Butt., vol. iii, p. 27, *Mycalesis* pl. v, fig. 27, 28, (1864), female; id., Distant, Rhop. Malay., p. 48, pl. vii, fig. 4 (1882), female; *Satona maianear*, Moore, Trans. Ent. Soc. Lond., 1880, p. 157).

Third Group.—**SADARGA:** "*Forewing* shorter, with more rounded and less oblique exterior margin than in *Virapa*, venation similar, but the veins more curved. MALE with a slight tuft (but no perceptible glandular patch of raised scales) on submedian nervure before the swollen base. *Hindwing* very convex externally, first subcostal in MALE not curved at the base; second concave at base and much swollen beneath between first and end of the cell, and with a slight tuft of hairs above; two upper median branches emitted from angle before end of the cell. *Eyes hairy.*" (Moore, Trans Ent Soc Lond, 1880, p. 157).

Only four species of this group are known, of which two are found in India; both of them inhabit Sylhet in N.-E. Bengal.

* **Key to the Indian Species of Sadarga.**

A. a. ♂. Forewing with a very large lower and large upper ocellus on the upperside.

♂. With the ocelli of the underside of both wings small.

90. *M. (Sadarga) CHARAKA*, Sylhet

♂. With the ocelli of the underside of both wings large.

91. *M. (Sadarga) OCLATA*, Sylhet

90. ***Mycalesis charaka*, Moore.**

M. charaka, Moore, Proc Zool Soc Lond 1874, p. 566, *Sadarga charaka*, id, Trans Ent Soc. Lond, 1880, p. 155

HABITAT: Sylhet, N.-E. Bengal.

EXPANSE: 1.75 inches.

DESCRIPTION: "MALE and FEMALE: UPPERSIDE yellowish olive-brown, outer margins paler. *Forewing* with two very prominent bright coloured ocelli, the upper one the smaller; and sometimes with two white pupils, the lower ocellus fully a quarter of an inch in diameter. UNDERSIDE pale olive-brown basally, greyish brown externally, divided by a nearly straight transverse distal brown line; two subbasal short zig zag brown lines on forewing, and one on hindwing. Both wings with a narrow black submarginal line, and a brown fascia or cloud passing through the ocelli. *Forewing* with a linear series of four minute subapical ocelli, and a small, very larger, lower ocellus, the white pupil of which is a half-circle, and occupies nearly the whole of the black portion. *Hindwing* with seven ocelli, the first three subapical, minute, and disposed in a linear oblique series, fourth very minute, fifth the largest (though small); sixth and seventh minute."

"This species is very similar in appearance to *M. gotama* [from China], but may be distinguished by the very considerable difference in the size of the ocelli beneath."

"Note—The specimens of this species in the British Museum collection stand as the representatives of Hubner's *M. otea* (Lutige, figs. 79-80), which name Professor Westwood altered in the 'Genera of Diurnal Lepidoptera' (p. 394) to *ostrea*, believing Hubner's figure to represent a species distinct from Cramer's *otea*, but I find, after a careful examination of a lengthened series of specimens in the British Museum and others in my own collection, that Hubner's figure well represents a male of Cramer's species (*otea*), whose figures (pl. cccxiv, figs. A, B) are those of a female. The name *ostrea*, therefore, cannot be retained, as it was applied to Hubner's figure, and not to the specimens which Professor Westwood erroneously determined as representing it." (Moore, l. c.)

91. ***Mycalesis oculata*, Moore.**

Sadarga oculata, Moore, Trans. Ent. Soc. Lond., 1880, p. 158.

HABITAT: Sylhet.

EXPANSE: ♂, 1.8; ♀, 2.1 inches.

DESCRIPTION: "MALE and FEMALE. Similar on the UPPERSIDE to *S. charaka*, the ocelli of the same large size, but the lower somewhat laterally bulged. On the UNDERSIDE

the basal area is paler, being of a pale purplish ochreous, the discal transverse line having a much broader yellowish border; the ocelli on both wings are very prominent, and slightly larger than those in *S. gotama*." (Moore, l. c.)

There are four males and three females of this species in the Indian Museum, Calcutta, and a single female specimen of the preceding species, *M. charnka*. They were all received at the same time in the same box from Sylhet. The specimens of *M. oculata* shew considerable variation in the size of the ocelli on the underside, and it seems probable that the two species, which occur in exactly the same locality, are really only one variable species.

Between *Sadarga* and the next subgenus *Orsotriena* are placed two species, *M. sudra*, Felder, from Java and Sumatra, and *M. orsis*, Hewitson, from the Malay Peninsula, Sumatra and Borneo, each of which has been taken by Moore as the type of a new subgenus, of which in each case it is the sole representative. The subgenera are characterised as follows: Distant. "Type, *D. sudra* * Forewing more triangular than in *Garnus*, costa less arched, the exterior margin oblique. MALE with a similar glandular patch of raised scales and tuft on the submedian nerve, but less prominent. Hindwing not so broad, somewhat quadrate in form; exterior margin and anal angle more convex, and waved; first subcostal slightly swollen at the base beneath, tufted above; second branch with a slightly raised fold on the upperside extending from first branch to near the end. Club of antennæ thicker. Eyes hairy." SURALAYA. "Type, *S. orsis* § Forewing comparatively long and narrow; costa slightly arched, exterior margin oblique, almost straight and even. MALE with a very slight glandular patch (more distinct beneath) sparsely covered with delicate short hairs. Hindwing small, oval, exterior margin convex, waved, first subcostal branch slightly swollen at its base, second very concave at its base; cell narrow, disco cellulars very oblique. MALE with a long tuft of hair covering a glandular patch above base of first subcostal branch. Club of antennæ slender. Eyes almost naked." (Moore, Trans. Ent. Soc. Lond., 1880, pp. 158, 159).

* *Mycalesis sudra*, Felder, Reise Nov., Lep., vol. iii, p. 500, n. 868, pl. lxxv fig. 10 (1867), female; *Dalapa sudra*, Moore, Trans. Ent. Soc. Lond., 1880, p. 159. HABITAT Java, Buitenzorg. SUMATRA. EXPANSE. 2.3 inches. DESCRIPTION. FEMALE. UPPERSIDE almost as in *M. nala* but darker as far as the line seen through from the underside beyond that the two ocelli of the forewing very distinct, the submarginal line drawn back but conspicuous. Hindwing with two posterior, very distinct, ocelli, the two lines on the margin more wavy wider, on the paler ground the inner one broadly palely defined within. UNDERSIDE darker than in *M. nala*, much darker on the disc within the line, which is more distant from the cell than in that species, outwardly defined with diffused whitish almost straight in the hindwing the ochraceous border broader than in *M. nala*, the submarginal line more drawn back. Forewing with two almost similar ocelli. Hindwing with the upper ones smaller than in *M. nala*. (Felder, l. c.)

† *Mycalesis nala*, Felder, Wien Ent. Monatsch., vol. iii, p. 403, n. 46 (1859). HABITAT Java. EXPANSE: Not given. DESCRIPTION. Wings suopellucid. UPPERSIDE (darker in the male), with an anterior curved line, and three obscure marginal wavy lines. Forewing with two exterior fuscous ocelli (in the male tinted more distinctly with yellow) included in a white patch, in the female with two others between them obsolete. Hindwing with a posterior ocellus circled with bluish yellow, marked with a white spot and some others minute, obsolete. UNDERSIDE brownish fuscous (darker in the male), with a swarthy flexuous basal streak (obsolete in the female), the outer border pale yellowish brown sprinkled with fuscous dots towards the margin, the exterior fuscous line of the upperside, another adjacent angulate obsolete, a third very angulate beyond, and two others marginal undulate, fuscous. Forewing of the male with the two ocelli of the upperside smaller and more distinct, of the female with six unequal exterior black ocelli (pupilled with white and circled with yellow and brown (the first, third and fourth obsolete the fifth larger). Hindwing in both sexes with seven exterior black ocelli, circled with yellow and brown (the fifth largest, the first three and the sixth obsolete in the male. (Felder, l. c.)

It is not clear to what group *M. nala* belongs in the absence of specimens for examination.

§ *Mycalesis orsis*, Hewitson, Ex. Butt., vol. iii, p. 89, *Mycalesis* pl. vi figs. 36, 37 (1864), male, id., Distant, Phop Malay, p. 49 pl. v, fig. 4 (1882), male, *Suralaya orsis*, Moore, Trans. Ent. Soc. Lond., 1880, p. 159. HABITAT Singapore, Sumatra, Borneo. EXPANSE 2.1 inches. DESCRIPTION. MALE. UPPERSIDE rufous brown, tinted with lilac. Both wings crossed beyond the middle by an indistinct band of lilac (scarcely seen on the hindwing), and with two submarginal lines of rufous brown. Forewing with two or three very indistinct ocelli. UNDERSIDE. Both wings with the basal half rufous, crossed by a line of darker brown, also crossed at the middle by a broad common band of lilac white, beyond the band yellow (lilac near the apex), with the outer margin and two submarginal lines (the inner line zig-zag) brown. Forewing with six ocelli the first four of equal size, the fifth large, the sixth minute, blind. Hindwing with seven ocelli, the fourth and sixth (the fifth) largest, the sides bright orange. (Hewitson, l. c.)

Distant remarks:—"This species appears to possess the usual variation in macular markings, and is included among the Butterflies of the Malay Peninsula on the authority of the Singapore specimen in the Hewitsonian collection. I have not seen it myself in any other collection from the Malay Peninsula, nor have I been able to examine a female specimen." (Distant, l. c.)

Fourth Group.—*ORSOTRIÆNA*, Wallengren, Kongl. Vet.-Akad. Förh., vol. xv, p. 79 (1858); Moore, Trans. Ent. Soc. Lond., 1880, p. 159. "Forewing comparatively shorter, exterior margin less oblique, apex and posterior angle convex; costal nervure only, in both sexes, swollen at the base. MALE with a tuft of fine hairs covering a glandular patch above the base of submedian nervure. Hindwing less arched at the base, anal angle convex; first subcostal branch emitted immediately before end of the cell, middle median also emitted before lower end of the cell. MALE with no erectile tuft at the base of subcostal, being replaced by a slight tuft of more delicate and recumbent hairs above and below the median nervure. Eyes naked." (Moore, l. c.)

The species of this group may be easily identified by several features, in them alone of all the species of *Mycalesis*, the costal nervure only of the forewing is swollen at the base, the median and submedian nervures being simple, in the MALES the tufts of hair on the hindwing are placed by the median nervure instead of by the subcostal, and in both sexes the white band of the underside is on a uniform ground, while in most of the other species the ground-colour is darkest along the inner edge of the line. In this group alone of all the Indian *Mycalesis* the eyes are naked, and the tuft of hairs on the hindwing of the males overlapped by the inner margin of the forewing is absent. It is apparently well worthy of generic separation. Six species are known, and the group extends through the Malay Archipelago to the New Hebrides, New Ireland, and also to Hauman.

Key to the Indian species of *Orsotriæna*.

A Males, with a glandular pouch and tuft on both wing

♂, a¹ With the white band of the underside narrow and nearly uniform in width throughout

a² With the ocelli very large, prominent

92 M (*Orsotriæna*) *MEDIUS*, North India, Burma, Orissa, Nicobars

♂, a² With the ocelli small, obsolescent

93 M (*Orsotriæna*) *RUNAKA*, North India, Burma.

♂, With the white band very wide, widest at the middle

a² With all the ocelli large, prominent

94 M (*Orsotriæna*) *MANDATA*, South India, Ceylon.

♂, With the ocelli smaller than those of the foregoing obsolescent

95 M (*Orsotriæna*) *MANU*, South India

92 *Mycalesis medus*, Fabricius

Papilio medus, Fabricius, Syst. Ent. p. 488, n. 198 (1775). *P. hesione*, Cramer Pap. Ex. vol. 1, pl. xi, figs. C, D (1775). *id.*, Herbst, Pap., pl. cxciii, figs. 4, 5 (1781). *Mycalesis hesione*, Muhner Ver. bek. Schmett., p. 55, n. 525 (1816). *id.*, Butler, Cat. Fish. & B. M., p. 34, n. 11 (1858). *Orsotriæna hesione*, Wallengren Kongl. Vet. Akad. Förh., vol. xv, p. 80 (1858). *Papilio doris*, Cramer Pap. Ex. vol. iv, pl. cccix, fig. C (1781). *P. hamelcar*, Herbst, Pap., pl. cxciii, fig. 3 (1781). *Orsotriæna medus*, Moore, Trans. Ent. Soc. Lond., 1880, p. 160. *Mycalesis medus*, Distant, Rhop. Malay., p. 49, pl. iv, fig. 6 (1882), *mal.*

HABITAT: Plains of North India, Sikkim, Assam, Cachar, Sylhet, Burma, Upper Tenasserim, Orissa, Nicobars, Malayana

EXPANSE: 1.8 to 2.3 inches.

DESCRIPTION: "UPPERSIDE, both wings fuscous, unmarked. UNDERSIDE fuscous, with a common white streak which reaches neither to the costa of the forewing nor to the inner margin of the hindwing. Forewing with two black ocelli, with yellow disc and white pupil. Hindwing with three; the third smaller." (Fabricius, l. c.)

The above is translated from the original description of *M. medus*. The following is Godart's description of *M. hesione*, Cramer: "UPPERSIDE obscure brown without markings. UNDERSIDE with a common white streak and some ocelli, each surrounded with a plumbeous circle, two on the forewing, and three on the hindwing, of which one is small." (Godart, Enc. Méth., vol. ix, pp. 468 and 510 (1819).

The Indian specimens correspond best with *M. hesione*, as in all the species of this group in India there are indications more or less prominent of a plumbeous band round each

ocellus, except perhaps in *M. runeka*; but there can be little doubt that the two descriptions indicate the same species, which stands as *M. medus*, Fabricius.

On the **UPPERSIDE** the median white bar of the underside is usually faintly visible on both wings, which are otherwise without markings, except two marginal whitish fine lines, the inner one less distinct and more waved than the other. On the **UNDERSIDE** of the *forewing* there is a subapical ocellus, and a larger one below it placed between the two lower median nervules, and extending beyond them. The *hindwing* has a small ocellus placed between the subcostal branches, a larger contiguous ocellus placed below it, and a third sub-equal with the second, between the two lower median nervules and extending beyond them; all these ocelli are black with a white pupil, rufous iris, then a ring of the brown ground-colour, and lastly surrounded with an outer plumbeous ring. This latter ring does not extend completely round the two upper ocelli of the *hindwing*, but forms one common margin to both, constricted where the two ocelli join. The median white band does not quite reach the costa on the *forewing*, nor the abdominal margin in the *hindwing*, and is widest at the costal margin of the *hindwing*. The **FEMALE** is somewhat paler coloured above and below; the ocelli are rather larger, the marginal lines more distinct, and the sexual tufts of hair, &c., are of course absent.

Some specimens from Sib-sagai, Assam, have the margin of both wings on the underside, but more especially on the *hindwing*, thickly irrorated with white scales between the ocelli and the two fine marginal whitish lines.

M. medus is common in the Nicobars from August to November, and probably throughout the year. Mr Wood-Mason took it in Cachar in May, Mr Oates at Pegu in the same month, and Dr Anderson in the Meigu archipelago in December and March. Colonel Lang's collection contains specimens from Oudh and also from Unhalia; the latter is probably its most westerly limit of distribution. Mr Otto Møller has taken it in the Sikkim tarai in August and September, and Mr. Taylor at Khurdah, Orissa, in November.

A closely allied species which appears to be distinct, though placed as a synonym of *M. medus* by Moore and Distant, has been described by Butler under the name of *M. cinerea*.* It inhabits the Malay peninsula.

93 *Mycalesis runeka*, Moore (PLATE XVI, FIG 56 ♂).

M. runeka, Moore, Horsfield and Moore, Cat Lep E I C., vol i, p 234, n. 501 (1857); *Orsotriana runeka*, Moore, Trans Ent Soc Lond, 1880, p 160.

HABITAT: Plains and hills of N.-E. India, British Burma.

EXPANSE: 2 1 to 2 3 inches.

DESCRIPTION: "UPPERSIDE uniform dark brown. UNDERSIDE dark brown, paler along the exterior margins; a transverse yellowish-white band crossing both wings. *Forewing* with two, *hindwing* with three pale-brown ocelli." (Moore, l c, in Cat Lep E I C.) The **FEMALE** is similar in colour and markings, but lacks the sexual pouches and tufts of hair.

M. runeka is similar in colour to *M. medus* on the upperside, but the small obsolescent ocelli of the underside, especially of the *forewing*, serve to distinguish it from the latter. Some specimens from Sikkim and Sibsagar, Assam, have the outer margin of both wings, and especially the *hindwing*, between the ocelli and the two fine marginal dark-brown lines, thickly irrorated with greyish scales. There is a male specimen in the Indian Museum, Calcutta, two from Shillong in Mr de Nicéville's collection, and others from Tenasserim in Major Marshall's collection, in which the median band of the underside has almost entirely disappeared, leaving hardly

* *Mycalesis cinerea*, Butler **HABITAT** Singapore **EXPANSE** 1.94 inches **DESCRIPTION**. "MALE: UPPER-SIDE obscure brown, marbled with silky whitish all over, but especially on the *forewing*; a very indistinct oblique median band of the same colour. BODY cinereous. UNDERSIDE coloured almost as in *M. assone*, [= *M. medus*] but ashy fuscous, the white band shortened, the marginal line cinereous not white, the marginal band wider, dilated at the anal angle, the submarginal line more whitish, the ocelli smaller; the irides brownish and more slender with all the cinctures more conspicuous and partly snow white."

"Nearly allied to *M. assone*, [= *M. medus*] but grey, not brown, and with paler markings above, and different marginal lines below; the ocellus-zones also brighter and varied with white." (Butler, Ann. and Mag. of Nat. Hist., third series, vol 22, p. 401, pl. viii, fig. 9 (1867), male.

anything but its dark inner margin; the ocelli are also almost rudimentary. In Burma it is not uncommon from January to May, and possibly in other months. Captain C. T. Bingham has taken it in the Donat range, and at Meplay and various places in the Thoungyee valley; Mr. C. T. Hill took it at Tavoy in March, Mr. Wood-Mason took it in Cachar in April; and Dr. Anderson in the Mergui Archipelago in December. In the neighbourhood of Calcutta it is not uncommon in November; and it is also recorded from the Khasi hills, Sikkim, where Mr. de Nicéville has taken it in October, and the Dehr Doon, but it appears to be unknown in the south.

The figure shows the upper and undersides of a male specimen in Major Marshall's collection taken in the Barrackpore Park near Calcutta.

94 *Mycalesis mandata*, Moore.

M. mandata, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 4, p. 233 n. 499 (1857), *id.*, Butler, Cat. Lep. B. M., *Satyridæ*, p. 139, n. 51 (1868) *M. gamaliba*, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, pl. 11, figs. 3, 3a, 3b (1867), *Orsotruena mandata*, Moore, Trans. Ent. Soc. Lond., 1880, p. 160, *idem*, *id.*, Lep. Ceyl., p. 22, pl. 11, figs. 1, 1a (1880).

HABITAT: Malabar, Canara, Wynad, Travancore, Ceylon.

EXPANSE: 1.5 to 2.1 inches.

DESCRIPTION: "UPPERSIDE brown, with transverse band of underside indistinctly seen through the wing. UNDERSIDE with broad transverse very white band crossing both wings. *Forewing* with two small ocelli, *hindwing* with three ocelli, the anterior being small, and all encircled with a silvery line."

"*Remark*.—Differs from *Mycalesis hesione* [= *M. medus*], on the underside in having the transverse band three times the width that it is in that species" (Moore, *l.c.* in Cat. Lep. E. I. C.) The FEMALE only differs in lacking the sexual pouches and tufts of hair.

The UPSIDE has also the two marginal dark lines bordered inwardly with a whitish line as in *M. medus*; and on the UNDERSIDE the same lines but rather more conspicuous, the ocelli are similar in number, size and position, but the yellow iris is narrower and darker, and the external silvery suture considerably more prominent.

M. mandata is found in Ceylon and in the south of peninsular India. In Ceylon it "frequents open ground at edges of forests. It is found in the plains and up to about 3,000 feet in the Western and Central Provinces from May to September. Flight slow and for short distances, it settles down among long grass and is easily captured" (Hutchinson). Mr. Harold Ferguson has taken it in May at Eridge in the Asambho hills in Travancore.

95 *Mycalesis mandosa*, Butler

M. mandosa, Butler, Cat. Lep. B. M., *Satyridæ*, p. 139, pl. 11, fig. 9 (1868) *Orsotruena mandosa*, Moore, Trans. Ent. Soc. Lond., 1880, p. 160.

HABITAT: South India, Malabar.

EXPANSE: 1.85 to 2.06 inches.

DESCRIPTION: "The largest of the *M. hesione* [= *M. medus*] group. UPSIDE coloured as in *M. mandata* *Forewing* more elongate *Hindwing* with the margin more sinuate. UNDERSIDE darker brown, the external margin sprinkled with whitish scales; the ocelli placed as in *M. hesione* not as in *M. mandata*, a broad snow-white median band, gradually narrowing towards the costa of the *forewing*, but on the *hindwing* exactly as in *M. mandata*, the ocelli of the *forewing* brown, very indistinct, of the *hindwing*, black, banded with fuscous and inwardly bounded with a plumbeous lunule." (Butler, *l.c.*) The FEMALE only differs in lacking the sexual pouches and tufts of hair.

A pair, male and female, of this species has been sent to us by Mr. G. Vidal, which were taken at Malwan in the South Concan in March. These are only 1.85 inches in expanse, and though larger than average specimens of *M. mandata* are not so large as *M. runckia*, they have the same marginal lines on the upper and undersides, and the form of the white band is the same, the only distinctions between them and *M. mandata* being in the small size of the ocelli, especially on the forewing, where they are obsolete; there is no perceptible difference in the position of the ocelli in any of the species of this group.

Fifth Group.—**CALYSISME**: "Wings short, broad. *Forewing* with the costa arched at base, apex acute in male, less so in female, exterior margin oblique and curved, posterior angle acute; costal, median, and submedian nervures swollen at the base; second subcostal branch emitted immediately before end of the cell; cell broad; disco-cellulars very concave, radials from two angles in upper near subcostal *Hindwing* oval; costa arched at base; exterior margin convex, dentate; first subcostal branch emitted and swollen before end of the cell; disco-cellulars slightly concave, radial from their middle; two upper median branches from end of the cell. *Male* with a tuft of long hairs at base of subcostal covering a glandular patch of scales. *Body* slender; *palpi* porrect, slender, finely pilose beneath; *legs* slender. *Antenna* slender at tip. *Eyes* hairy" (*Moore*, Trans. Ent. Soc. Lond., 1880, p. 161.)

This group comprises about twenty supposed species, some of which are very closely allied if not inseparable; fourteen have been described from India, but of these we can only admit four as clearly distinct, and the ten under are found in the Malayan region extending to China on the East and to Australia. There are two distinct types of colouration and markings—first the "*mineus*" type, in which the basal area of the underside is uniformly coloured, many of the ocelli are always prominent, and they are enclosed in groups by fine sinuous lines; second the "*perseus*" type, in which the basal area of the underside is always more or less speckled or striated, the ocelli are usually minute, often replaced by white or black dots, and sometimes quite obsolete, always well separated in all cases; the transverse band too is less distinct, sometimes barely traceable. Both types present variations in the outline of the forewing, some species having the apex angled, and others having it rounded, with the outer margin more convex.

Key to the Indian species of Calysisme.

B Males with a glandular pouch and tuft on hindwing only

a, a¹, a², a³ With the basal area of the underside uniformly coloured, the single median pale fascia prominent, most of the ocelli prominent, and enclosed in groups by sinuous lines, five to seven ocelli on the hindwing

a¹ *Forewing* with the ocellus on the upperside small, rudimentary, or entirely absent

96 M (*Calysisme*) *blasius*, India, Burma, Ceylon

M (*Calysisme*) *samba*, North India, S. Andamans?

M (*Calysisme*) *lalatus*, North India?, Gilolo.

M (*Calysisme*) *lurida*, Cacher.

a² *Forewing* with the ocellus on the upperside prominent

a³ *Forewing* with two prominent ocelli on the underside, and often from one to three additional smaller ocelli generally attached to the larger ones above and below

97. M (*Calysisme*) *mineus*, India, Burma, Ceylon, S. Andamans and Nicobars

M (*Calysisme*) *drusid*, Ceylon, S. Andamans?

M (*Calysisme*) *justina*, Malabar

M (*Calysisme*) *cepheus*, Penang

a³ *Forewing* with four small equal sized distinct ocelli on the underside.

98 M (*Calysisme*) *polydecta*, S. India? China

M (*Calysisme*) *nautilus*, Malacca

b³ With the basal area of the underside more or less speckled or striated, the ocelli usually minute or obsolete, and all well separated from each other, the median fascia narrow and often inconspicuous.

99 M (*Calysisme*) *perseus*

M (*Calysisme*) *usala*

M (*Calysisme*) *subfasciata*

M. (*Calysisme*) *indistans*

The first species of this group, *M. blasius*, is chiefly to be distinguished from *M. mineus*, which follows, by its usually smaller size and by its having the ocellus on the upperside of the forewing very small, rudimentary, or altogether wanting; the median fascia on the underside is also narrower and usually tinged with purplish. The ocellation of the forewing on the

underside varies in much the same way as in *M. minus*. We include under the name *blasius* the *M. samba* of Moore, *M. lalassus*, Hewitson, and *M. lurida*, Butler. *M. samba* much more closely resembles the typical *M. blasius* of Fabricius, than do the forms described by Moore in the Lepidoptera of Ceylon and by Distant in the Rhopalocera Malayana under the name of *M. blasius*; in fact these latter forms are indistinguishable from *M. lalassus*, Hewitson. *M. lalassus* is perhaps the most distinct form of all, but Hewitson himself admitted later on that *M. lalassus* was inseparable from *M. samba*, and it is therefore *à fortiori* inseparable from *M. blasius*. The claims of *M. lurida* to specific separation do not seem to have ever been admitted. The various forms do not even appear to be geographical races, *M. lalassus* was described from Gilolo, but that form is the commonest in Burma and Ceylon also, as well as in Northern India. Butler remarks with reference to *Mycalesis blasius* (Proc Zool Soc. Lond., 1867, p. 720):—"This seems to be identical with the *M. samba* of Moore; it differs from *M. lalassus*, Hewitson, in having smaller and less distinct ocelli, and not so many in the forewing; it is also rather smaller." He also states (Cat Lep B M., *Satyridæ*, p. 135) — "*M. blasius* is a distinct species closely allied to, if not identical with, *M. samba*, Moore. Westwood, however, makes it a synonym of *M. minus*."

96 *Mycalesis blasius*, Fabricius (PLATE XVI, Fig. 55 ♂)

Papilio blasius, Fabricius Ent Syst., Suppl., p. 426 nn. 483, 487 (1798), *Mycalesis blasius*, Butler, Proc. Zool Soc. Lond., 1867, p. 720, p. 718, fig. 4, male idem id., Cat Lep B M., *Satyridæ*, p. 137 n. 40 (1868), idem id., Cat Fabr Lep., p. 34 n. 10 (1869), idem, Distant, Rhop. Malay., p. 52 pl. vii fig. 7 (1880), male, *Calymene blasius* Moore Trans Ent Soc. Lond., 1880, p. 162, idem id., Lep Cey., p. 21, pl. xi figs. 2, 2a (1880), male *Mycalesis samba* Moore Horsfield and Moore, Cat Lep F I C., vol. 1, p. 233 n. 498 (1887) *Calymene samba*, id. Trans Ent Soc. Lond., 1887, p. 163 *Mycalesis lalassus*, Hewitson Ex Butt., vol. iii, p. 89 *Mycalesis* pl. xi fig. 35 (1864) male *Calymene blasius* Moore, Trans Ent. Soc. Lond., 1880, p. 163, *Mycalesis lurida*, Butler Trans Ent Soc. Lond., 1879, p. 3 male

HABITAT Northern, Eastern and Southern India, Ceylon, Burma, Malayana.

EXPANSION 1.5 to 1.9 inches

DESCRIPTION "UPPERSIDE *spotless fuscous* UNDERSIDE scarcely paler, with an oblique med. in white fuscus, *forewing* with *three ocelli* beyond the fuscus, black, with yellowish iris and white pupil, the middle one minute, the ocelli included in a common kidney-shaped band, marginal line slender *Hindwing* with seven unequal ocelli enclosed between two wavy ashy marginal lines, meeting on both sides, the marginal line slender." (*Fabricius*, 1 c in Ent Syst.)

Var. *samba* "UPPERSIDE dark brown exterior margins paler, narrow marginal line black. UNDERSIDE with transverse white line, *forewing* with *two ocelli*, *hindwing* with seven ocelli, the anterior second and third very small, exterior margins pale, with narrow marginal lines" (*Moore*, 1 c, in Cat Lep L I C.)

Var. *lalassus* "MALE UPPERSIDE rufous brown, paler at the outer margins, which have near them a line of brown. *Forewing* with a minute white spot opposite the lowest ocellus of the underside. UNDERSIDE rufous brown; *both wings* crossed at the middle by a narrow band of lilac-white; *both* with two submarginal lines and a very fine line which borders the ocelli (not singly but all together), lilac white. *Forewing* with *four ocelli*, the first two touching, the fourth the largest. *Hindwing* with seven, the second, third and sixth [? seventh] minute" (*Hewitson*, 1 c, in Ex Butt.)

Var. *lurida* "MALE allied to *M. lalassus*, but the basal half of the *forewing* both on upper and undersides suffused with lurid ochraceous, the white stripe of the UNDERSIDE reduced to a slender brown edged squamous white line, the third of the four ocelli of the *forewing* reduced in size, and only the two first united" (*Butler*, 1 c, in Trans. Ent. Soc. Lond.)

The commonest form of the species is well described as follows by Moore in the Lep. Ceylon:—

DESCRIPTION "MALE AND FEMALE UPPERSIDE dark brown glossed with olive-brown. *Forewing* with or without a discal small white-pupilled black spot. UNDERSIDE dark

uniform vinous-brown, with a narrow purple-white discal band crossing both wings, and two marginal lunular lines. Forewing with four ocelli, the three upper ones small, all encircled by a single purple band, some specimens having a small lower fifth ocellus, which is also encompassed within the single purple band. Hindwing with seven ocelli, the second and third upper and the seventh the smallest, all being encircled by a single purple band."

The ocellation of the forewing on the underside exhibits in this country in addition to the variations above noted, many of those detailed in the description of *M. mineus*. The form in which the upper ocellus has a smaller one below it, and the lower ocellus a smaller one above it, and either all four enclosed in one band or enclosed in pairs by two bands, is very common in Northern India. There are also sometimes five ocelli, owing to the appearance of a minute ocellus beneath the fourth ocellus. The presence of the small ocellus on the upperside of the forewing does not accompany any particular disposition of the ocelli of the underside, but is common to all, and the gradations from a spotless upper surface, to a distinct though small ocellus on the forewing are regular and complete.

M. blasius has a slightly different geographical distribution from that of *M. mineus*. It is common in Burma and North-East India, but has not been found in the Andamans or Nicobar Islands, though it was included, apparently erroneously, in Moore's list of the Butterflies of the South Andamans under the name of *M. sauba* *. On the other hand it has a more westerly range in continental India, being common in Oudh as far as Lucknow at any rate, and we have a single specimen from the Punjab. It is also found in Ceylon and in the extreme south of the peninsula, but we are unable to say yet whether it, like *M. mineus*, is found along the Eastern Coast. Mr. de Nicéville has taken it commonly in Calcutta throughout the warm months, and Mr. Wood-Mason took it in Cachar in May and June. In Ceylon it is "found at all times in the western and central provinces; plains and up to 2,000 feet elevation on grassy land. Flight short and slow, along edges of forest-paths and grass land, settling on tufts of grass."—(*Hutchinson*)

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

In the next species under the name *M. mineus*, Linnæus, we have included three forms that have been named as distinct species—*M. drusia*, Cramer, *M. justina*, Cramer, and the original *M. mineus*. Regarding the distinctions between these supposed species great differences of opinion have been shown by various writers. In 1851, Westwood, in the Gen. D. L. (vol. II, p. 393) placed both *drusia* and *justina* as probable varieties of *M. mineus*; in 1857 Horsfield and Moore in the Cat. Lep. Mus. E. I. C. (p. 231) placed *M. drusia* as a distinct species, giving *M. justina* as a variety, and *M. mineus* as a synonym of the latter, with a mark of interrogation; in 1868, Butler in the Cat. Lep. B. M., *Satyridæ* (p. 135) placed *M. justina* as a variety of *M. mineus*, and *M. drusia* as a distinct species with the following remark (p. 134): "It seems improbable that this is a variety of *M. mineus* as the position of the central band and the ocelli of the underside are quite different. It is just possible that Cramer's figure is from a broken specimen, which might account for these differences; but there is still a distinctive character in the dark colour of the ocellus-irides and the different form of the marginal lines. Mr. Moore has considered some specimens of *M. mineus* to represent *M. drusia*." In 1871 Kirby, in his Synonymic Catalogue of Diurnal Lepidoptera (p. 89) also retains *M. drusia* as distinct, giving *M. justina* as a variety of *M. mineus*; and again in 1880 Moore, in his Lepidoptera of Ceylon, keeps *M. mineus* and *M. drusia* as distinct species, and describes and figures both; but as he figures *M. drusia* with a yellow fascia on the underside and only four ocelli on the hindwing, while he describes it as having a greyish-white fascia and the hindwing with seven ocelli; and as he figures *M. mineus* with a narrow bluish-white fascia, and describes it as having a prominent broad yellowish-white transverse discal band, his work only adds to the obscurity in which the point is involved.

The description of *M. mineus* which we extract in full from the newly published "*Rhopalocera Malayanæ*," by Mr. W. L. Distant, is the first detailed description of the species that has been published authoritatively; it was taken after careful comparison of the specimens figured, with the Linnean typical specimens in the possession of the Linnean Society of London, and may be accepted as conclusively settling the question as to what *M. mineus* really is.

The only authority for identifying *M. justina* is Cramér's figure, a detailed description taken from which is appended for reference*; the only point in which this figure appears to differ from typical *M. mineus* is in having the median fascia of the underside ochreous instead of white.

Similarly the only authority for identifying *M. drusia* is Cramér's figure, a description taken from which is also appended for reference†. This figure differs from typical *M. mineus* in having, like that of *M. justina*, the median fascia ochreous, and in the absence of the seventh (anal) ocellus in the hindwing on the underside, but neither of these characters can be here relied on as indicating specific differences. The great variation in the ocellation of the forewing on the underside which is detailed further on is not referred to in any of the three original descriptions or shown in the figures, and with these variations manifested in a long series of what are all undoubtedly the same species, we are unable to accept the absence of a single ocellus on the hindwing as a specific character; and as the white and ochreous fasciæ occur with the same distribution of the ocelli, and the gradations from white to ochreous and to greyish are numerous, we cannot arrive at any other conclusion than that the three belong to one and the same species which stands as *M. mineus*, Linnaeus.

97. *Mycalesis mineus*, Linnaeus.

Papilio mineus, Linnaeus, Syst. Nat. vol. 1, pt. 2, p. 768, n. 126 (1767), id., Fabricius, Syst. Ent., p. 488, n. 197 (1775), *Satyrus mineus*, Godart, Enc. Méth., vol. ix, p. 510, n. 97 (1819), *Mycalesis mineus*, Butler, Cat. Lep. B. M., *Satyrinae*, p. 135, n. 31 (1868), id., Cat. Fabr. Lep., p. 24, n. 8 (1869), id., Distant, Rhop. Malay., p. 50, pl. iv, figs. 13, male, 14, female, and var., pl. iv, fig. 7, male (1882), *Calysste mineus*, Moore, Trans. Ent. Soc. Lond., 1880, p. 162, idem, id., Lep. Cey., p. 22, pl. xi, figs. 4, 4b, male, 4a, female (1880), *Papilio drusia*, Cramér, Pap. Ex., vol. 1, pl. lxxxiv, figs. C, D (1775), *Mycalesis drusia*, Butler, Cat. Lep. B. M., *Satyrinae*, p. 133, n. 26 (1868), idem, id., Cat. Fabr. Lep., p. 33, n. 6 (1869), *Calysste drusia*, Moore, Trans. Ent. Soc. Lond., 1880, p. 161, idem, id., Lep. Cey., p. 20, pl. xi, figs. 3, 3a (1880), male, *Papilio justina*, Cramér, Pap. Ex., vol. 1, pl. cccxxvi, fig. C (1780), *Mycalesis justina*, Hübn., Verz. bek. Schmett., p. 55, n. 524 (1816), *Calysste justina*, Moore, Trans. Ent. Soc. Lond., 1880, p. 161.

HABITAT: Throughout North-East, and South India, Ceylon, Burma, Malay Peninsula, Andaman and Nicobar Isles, Sumatra, Java and China.

EXpanse: 1.8 to 2.2 inches.

DESCRIPTION: "MALE. UPSIDE fuliginous-brown. Forewing with a very faint, pale, straight fascia, which passes a little beyond end of cell, and from which to outer margin the colour is slightly paler; a black spot with a white centre and a faint ochraceous margin between first and second median nervules, and two marginal fuscous lines, the innermost of which becomes faint and obsolete towards apex; cilia smoky ochraceous. Hindwing with a tuft of long pale hairs situated near costal base of the wing. Two distinct marginal

* *Mycalesis justina*, Cramér. HABITAT: Coromandel Coast. EXpanse 2 inches. DESCRIPTION: UNDERSIDE rich brown. Both wings crossed beyond the middle by a narrow pale ochreous fascia, not quite reaching the costa in the forewing, and extending to the abdominal margin near the anal angle in the hindwing. The usual margins wavy dark lines the innermost bounded inwardly by a paler line than the ground-colour; on the hindwing the space between the dark lines is ochreous. Forewing with a subapical and a larger lower ocellus, black, pupilled with white, and surrounded with a rufous iris. Hindwing with seven similar ocelli the second, third and seventh the smallest and equal sized the first and sixth also equal sized and larger, the fourth and fifth the largest of all. (Cramér, Pap. Ex. pl. cccxxvi, fig. C (1780).)

† *Mycalesis drusia*, Cramér. HABITAT: Coromandel Coast and China. EXpanse 2.4 inches. DESCRIPTION: UPSIDE reddish brown, with two paler marginal lines. Forewing with an ocellus placed between the upper median nervules black pupilled with white and with a deep yellow iris. Hindwing unmarked. UNDERSIDE paler dull brown. Both wings crossed beyond the middle by a pale ochreous fascia, reaching the costa of the forewing and the abdominal margin of the hindwing. Two marginal pale lines, broader than on the upperside. Forewing with an upper and larger lower ocellus. Hindwing with six ocelli, the first and sixth equal-sized, the second and third smaller, the fourth and fifth largest. (Cramér, Pap. Ex., pl. lxxxiv, figs. C, D (1777).)

lines, on each side of which the colour is dull ochraceous (in some specimens a minute white-centred fuscous spot between second and third median nervules). **UNDERSIDE** with the colour brighter and paler; *both wings* crossed by a narrow fascia [pure white in the figures], on *forewing* passing somewhat beyond, and on *hindwing* about end of cell. *Forewing* with two submarginal ocellated spots, which are black, with white centres and yellow margins, the first and smallest situate on the discoidal nervules, and perfectly surrounded by a pale greyish line; the second and largest placed on the second and third median nervules, with a pale surrounding greyish line, which terminates inwardly on the transverse white fascia. Both these spots sometimes throw off a smaller one, the upper one generally posteriorly and the lower one usually anteriorly; two pale greyish marginal lines, the inner one waved, and the *cilia* also pale greyish. *Hindwing* with seven submarginal ocellated spots of a similar pattern and colour to those on *forewing*, of which the second and third are minute, the whole series being surrounded by a much waved pale greyish fascia, which in some specimens tends to coalesce and perfectly surround the sixth and seventh spots; two pale greyish marginal fasciæ, the inner one most strongly waved, and the marginal *cilia* also pale greyish. *Body* and *legs* concolorous with the wings. **FEMALE**, larger than male. **UPPERSIDE**, *forewing* with the ocellated spot larger and brighter; *hindwing* with two more obscure ocellated spots situate on the second and third median nervules (there are sometimes indications of the commencement of a third spot between the third median nervule and submedian nervure). **UNDERSIDE** as in male, but with all the spots and markings larger and brighter." (*Distant*, l. c.)

Distant also enumerates two varieties of *M. minus* as follows:—

Var. *a*. *Mycalesis cepheus*,^{*} Butler. "MALE: This variety differs on the **UNDERSIDE** of the *forewing* in having an additional spot in front of the lower ocellated spot, and enclosed by the same pale greyish line; and on the **UNDERSIDE** of the *hindwing* in having the second and third submarginal spots a little longer, which renders the series apparently a little more arched, as Butler describes."

"Var. *b*, Rhop. Malay., pl iv, fig 7. "MALE: Differs from typical specimens on the **UNDERSIDE** by the lower ocellated spot of the *forewing* having a smaller one attached or non-attached to it beneath, but which is also enclosed by the same surrounding pale greyish line. Mr. Moore (Lep. Cey., vol. i, p. 22) describes a like varietal form as not uncommon in Ceylon, and which is indicated in his figure, plate xi, fig 4b. *Hindwing* with the second and third small ocellated spots of typical specimens totally absent." (*Distant*, l. c.)

Distant remarks of *M. minus*: "This is a very variable species, but not more so than we might expect, when we remember analogous cases of Satyrid variation in Europe." This is quite borne out by the numerous specimens we have examined. On the **UPPERSIDE** it is very constant, there being invariably one median-sized ocellus between the two lower median nervules in the *forewing*; the *hindwing* in the female shews occasionally one or two subanal ocelli by transparency. The variations of the **UNDERSIDE** are as follows:—

(*a*) In the *forewing* with two ocelli, the upper one small, the lower twice the size, each encircled with an outer complete ring.

(*b*) The upper ocellus with a smaller one attached beneath it, both surrounded with a single outer complete ring; the large lower ocellus as in (*a*).

(*c*) The upper ocellus as in (*a*); the lower with a smaller one attached above it, and both surrounded with a single ring.

* *Mycalesis cepheus*, Butler. HABITAT: Penang. EXPANS: 1.87 inches. DESCRIPTION: "UPPERSIDE fuscous, with the external margin, the median fascia, and the 1/3 of the ocellus of the *forewing* paler. *Forewing* with a discal blind ocellus obscure fuscous; a marginal line of the same colour, the margin itself black. *Body* fuscous. **UNDERSIDE** almost as in *M. minus*, but with the median fascia more slender and duller; the series of ocelli on the *hindwing* more arched. Closely allied to *M. minus*, but paler on the upperside, with a brown blind ocellus in the *forewing*; below with a narrower and straighter central band, and the row of *hindwing* ocelli much more arched; the marginal lines also pale ochreous." (*Butler*, Ann and Mag of Nat Hist, third series, vol. xx, p. 409, pl. ix, figs 3, 4 (1867). Kirby has included *M. cepheus* as a variety of *M. blaxius*; but *Distant* confirms Butler's view as to its being closely allied to *M. minus*.

- (d.) As in (c), but with a second small ocellus attached beneath the large one.
 (e.) The upper ocellus with a smaller one attached beneath it; and the lower ocellus with a smaller one above it, all four encircled with one outer ring.
 (f.) As in (e), but with a small ocellus beneath the lower ocellus, making five in all.
 (g.) The median band is also variable in width and distinctness, and varies in colour from pure white to dull ochreous and in some specimens to greyish white.

In the *hindwing* the second and third ocelli are sometimes entirely wanting (usually in Andaman specimens, sometimes also in Nicobar and continental Indian examples); in some specimens they are rudimentary, in others distinct and equal to the seventh anal one in size. Occasionally, but very rarely, the seventh (anal) ocellus is obsolete. The Andaman specimens referred to above are the *M. drusia* of modern writers; some specimens agree fairly well with the figure of that species. They have the fascia always ochreous, and a male specimen sent to Mr. Moore for identification, with the second and third ocelli on the underside of the hindwing absent, has been named *M. justina* by him, but it does not agree with Cramer's figure of that species, as the latter has all the ocelli present.

M. minus has been taken in Naini Tal and Mussoorie in the North-West Himalayas, and is found throughout India, except in the dry North-West, extending through the Malay Peninsula in the regions of heavy rainfall. We have specimens from Tenasserim, Pegu, Sylhet, Cachar, the Naga Hills, Assam, Sikkim, Calcutta, Bombay, the Godavari districts, Travancore, Ceylon, the Andaman and Nicobar islands. The specimens from the Andamans are fairly constant having usually two ocelli on the forewing and the median fascia ochreous; the Nicobar specimens are more variable like those from Continental India. Mr. Otto Moller has taken numerous specimens in the Sikkim tarai from July to September, and in the Sikkim Hills in May and August; also Mr. Wood-Mason in Cachar between those months. We have specimens from the Godavari District, Travancore and Ceylon, which have the median fascia on the underside very narrow and pure white; they are also of very small size, 1·8 inches only in expanse. Typical specimens with a white fascia also occur in the Malay peninsula.

98. *Mycalesis polydecta*, Cramer.

Papilio polydecta, Cramer, Pap. Ex., vol. ii, pl. cxliv, figs. E, F (1777); *Mycalesis polydecta*, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xx, p. 402, pl. ix, figs. 5, 6 (1867), female; idem, id., Cat. Lep. B. M., Satyridæ, p. 135, n. 33 (1868); idem, id., Cat. Fabr. Lép. B. M., p. 34, n. 9 (1869); *Calysium polydecta*, Moore, Trans. Ent. Soc. Lond., 1880, p. 162.

HABITAT: Tranquebar? (Cramer), Burma, Sumatra, Borneo, Celebes.

EXPANSE: 2·2 inches.

DESCRIPTION: "UPPERSIDE fuscous, with the margins slightly paler; forewing with a large ocellus; hindwing with two smaller ocelli, the inner the larger of the two. UNDERSIDE paler, with a whitish median fascia, the outer area bearing ocelli, five on the forewing, seven on the hindwing; the outer margin pale with black lines."

"Cramer gives the locality of this species as Tranquebar; but I have a specimen, exactly agreeing with his figure, from Borneo. In the British Museum we have it from Celebes, and a variety from Sumatra without ocelli on the upperside of the hindwing." (Butler, l. c. in Ann. and Mag. of Nat. Hist.)

We have specimens from Burma which have been identified by Mr. Moore as varieties of *M. polydecta*; they agree fairly well with Cramer's figure, but better still with Butler's figure of this species, and they differ only from *M. minus* in having a separate ocellus between the second and third median nervules on the underside of the forewing; thus showing either four or five ocelli as follows:—a moderate-sized lower ocellus on the first median interspace, a rather smaller one on the second median interspace, and a subapical one the same size with a smaller one attached below it, and sometimes another attached above it.

With reference to the foregoing note by Butler regarding the British Museum specimens, Distant, in his "Rhopalocera Malayanæ," (p. 51) remarks:—"Mr. Butler has also included *M. polydecta* in his Malacoran species. The form he has figured (Ann. and Mag. of Nat. Hist., third series, vol. xx, pl. ix, figs. 5, 6, 1867), however, does not agree with Cramer's

figure of that species, and from an examination of the Malaccan specimens thus identified in the British Museum I certainly incline to the opinion that such are but varieties of *M. mineus*, and that the true *M. polydacta*, Cramer, cannot, as such, be at present included in this fauna." It is doubtful whether this species really occurs in India either. The specimens from Burma note I above appear to us to be varieties of *mineus* rather than of *polydacta*, and they confirm Distant's view.

A description of *M. polydacta* from Cramer's figure of that species is appended for reference *

An allied species, *M. nautilus*,† occurs in Malacca.

99 *Mycalesis perseus*, Fabricius.

Papilio perseus, Fabricius, Syst. Ent. p. 488, n. 199 (1775), female, id., Donovan, Ins. New Holland, pl. xxvi, fig. 3 (1805), *Mycalesis perseus*, Butler, Proc. Zool. Soc. Lond., 1867, p. 79, n. 2, p. 718, fig. 2, idem, id., Cat. Lep. B. M., *Satyrina*, p. 133 (1868), idem id., Cat. Fabr. Lep. B. M., p. 33, n. 5 (1869), *Papilio oltea*, Cramer, Pap. Lx., vol. iv, pl. ccciv, figs. A, B (1780), female, *Papilio tabitha*, Fabricius, Ent. Syst., vol. iii, pt. 1, p. 243, n. 756 (1793), *Satyrus coryrus*, Koellr., in Hugel's Kashmir, vol. iv, pt. 2, p. 450, n. 8 (1844), *Calymene perseus*, Moore, Trans. Ent. Soc. Lond., 1880, p. 163, idem, id., Lep. Cey. p. 21, pl. xii, figs. 1, 2a (1880), male *Mycalesis visala*, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 230, n. 488 (1857), *Calymene visala*, Moore, Trans. Ent. Soc. Lond., 1880, p. 164, *Calymene subfasciata*, Moore, Proc. Zool. Soc. Lond., 1882, p. 237, pl. xii, fig. 8, *Calymene indistans*, Moore, Trans. Ent. Soc. Lond., 1880, p. 164.

HABITAT India, Burma, Ceylon, Andamans.

EXPANSE ♂, 1.75 to 2.0; ♀, 2.0 to 2.4 inches.

DESCRIPTION "*Papilio danas festivi* Wing most entire, fuscous. UNDERSIDE with ocellular dots; forewing with three, hindwing with seven. Body fuscous immaculate. Forewing fuscous, sometimes immaculate, sometimes with a small ocellus with white pupil before the outer margin. Hindwing fuscous immaculate. UNDERSIDE Both wings fuscous at the base, paler outwardly. Forewing with three dots. Hindwing with seven, white, subcellular. HABITAT In Nova Hollandia. Mus. Brinks" (Fabricius, l. c. in Syst. Ent.)

M. perseus is the commonest of all the *Mycalesis* in India, and has a wider range than even *M. mineus*, being found in the north from Burma to Kashmir, and with the exception of the hot dry plains of the Punjab, it is found throughout continental and also peninsular India extending to Ceylon. It is even more variable than *M. mineus*, showing great divergencies in form and size, as well as in colour and markings. There are three well-marked varieties, *M. visala*, *M. subfasciata*, and *M. indistans*, which are usually accepted as distinct species, and which, in certain localities, are widely distinct from the typical *M. perseus* as it there co-exists with them; but an examination of large series of specimens from different parts of the empire leads us to the conclusion that these specific separations cannot be maintained and pending the discovery of the earlier stages of each form, they must all be considered for the present as varieties more or less specialised of *M. perseus*.

Typical *M. perseus* is a small insect, with the apex of the forewing rounded, not sharply angled. The ocellus of the forewing on the upperside is placed between the first and second

* *Mycalesis polydacta*, Cramer. HABITAT Tranquebar. EXPANSE 2.2 inches. DESCRIPTION. UPPERSIDE deep brown, outwardly somewhat paler. the margins ochreous with the usual various dark fine lines. Forewing with a medium sized ocellus between the second and third median nervules. Hindwing with two smaller ocelli between the median nervules the upper the smaller of the two. All these ocelli black with white pupil and ochreous iris. UNDERSIDE with the basal area as dark as on the upperside, and bounded by a wide medium fascia on both wings. the ground colour much paler beyond. The margin ochreous with two sinuous darker lines. Forewing with four equal sized small ocelli. Hindwing with seven ocelli, all but the fourth and fifth, which are a little larger, equal in size to those on the forewing. The ground colour of the outer border is pale brown thickly irrorated with darker brown within the row of ocelli, and beyond it whitish, as far as the inner dark line on the forewing, and extending to the outer dark line on the hindwing. (Cramer, Pap., Lx., pl. cxvi, figs. E, F (1777).)

† *Mycalesis nautilus*, Butler. HABITAT Malacca. EXPANSE 1.87 to 2.12 inches. DESCRIPTION: "UPPERSIDE dilute fuscous, forewing with three blackish ocelli with scarcely perceptible iris, pupilled with white, of which two are small, subapical, and the third discal, hindwing with wavy marginal fuscous lines, and a small blackish subanal ocellus with silvous iris. the body achy fuscous. UNDERSIDE paler, with the margins as in *M. mineus*, a silvery median fascia, defined with fuscous inwardly and diffused outwardly, a fuscous sub-basal line almost entire, forewing with five distinct ocelli, the fifth much the larger, arranged in a straight series; hindwing with seven ocelli, the first and fourth larger, the fifth largest, the seventh smallest, arranged in an arched series, the body ochreous fuscous. The sexes differ only in size. Closely allied to *M. janardana*, but differing in many essential characters." (Butler, Ann. and Mag. of Nat. Hist., third series, vol. xx, p. 402, pl. 12, fig. 2 (1867), *Calymene nautilus*, Moore, Trans. Ent. Soc. Lond., 1880, p. 163.)

median nervules; it is small, and lacks the outer yellowish ring, but is prominently white pupilled. The variations of the **UPPERSIDE** consist on the *forewing* in the occasional presence of a yellow iris to the ocellus, sometimes very prominent, and sometimes placed on a square lighter patch of the ground-colour; the occasional appearance of a minute subapical ocellus, and the presence of a transverse dark line more or less sharply defining the darker basal area; and on the *hindwing*, in the occasional appearance of one or more blackish spots, sometimes faintly pupilled with white, and placed between the median nervules; these spots are more frequent and more numerous in the females than in the males, but occur in both sexes.

On the **UNDERSIDE**, the variations are far greater. Typically the colour is dusky grey, speckled with dark brown, darkest at the base, and palest near the outer margin; there is scarcely a trace of the subbasal line, and the discal transverse line consists of a series of fine blackish dentate marks, slightly margined outwardly with ochreous, the submarginal dots on the forewing are minute, white, those on the hindwing also minute, but distinctly ocellular, especially the three nearest to the anal angle. In some specimens the ground-colour is paler throughout; the subbasal line is distinct, and the dark colour is distributed in patches on the base of the wings, and in the forewing between the two lines, there being scarcely any trace of the ochreous edging to the discal line. In others, the discal line is complete and prominently bordered with ochreous sharply defining the basal area which is uniformly dark in strong contrast to the outer area, which is ochreous brown, more or less completely clouded with earth-brown inwardly and grey outwardly, but the variations in this respect are too numerous to define. In others, again, the subbasal line is distinct, and the entire space between the two lines is conspicuously darker than the rest of the wings. Finally in some specimens the ocelli are well-developed, being even large on the hindwing, very black and minutely pupilled with white, but in all cases well separated, and not enclosed in groups by sinuous lines, as are those of *M. minus*.

Typical *M. persus* is common in the neighbourhood of Calcutta, in Orissa, and throughout the plants of Northern and Central India where there is sufficient moisture. It is found almost throughout the year, and there are certainly numerous broods.

In the Andamans *M. persus* is very rare, the only three specimens as yet received and which are in the Indian Museum, are considerably larger than the typical Indian ones, the ocellus of the upperside is very large, with a narrow iris, the underside is brown with an ochreous tinge, the basal half being slightly, but perceptibly darker, and the fifth ocellus is prominent on the hindwing, and very black.

Specimens from Burma, where it is common, agree pretty closely with the continental Indian specimens, and show much the same variations, but many have the discal line straighter, narrowly, but distinctly bordered with ochreous, the subbasal line being indistinct and very irregular, the tone of the underside paler grey, with a more distinctly ochreous tinge throughout, in some much more ochreous than in others.

In Travancore there is a variety which has been taken by Mr H. S. Fergusson, with the striae and subbasal line almost obsolete, the discal line nearly straight, and narrowly edged outwardly with whitish, not ochreous, the outer area being distinctly and abruptly paler than the basal area, but almost equally uniform in colouration. There is also a specimen in the Indian Museum from the Wynad, which is larger than typical specimens, has the apex of the forewing more pointed, and in which the underside approximates to the variety *indistans* (described further on) more closely than any specimens do which we have seen from North-India.

The **FEMALE** is similar to the male in colouration, but has the ocelli often more prominent; and the wings more rounded. It of course lacks the sexual pouch and tuft on the hindwing.

Var. *visala*. (PLATE XVI, FIG 52 ♂) — "With the apex of the forewing sharply angulated; the **UNDERSIDE** with two transverse lines across both wings, the outer line across the middle, the inner towards the base of the wing, the row of dots minute,

white, the third from anal angle being black. Expanse - 2.25 inches." (Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 230, n. 488 (1857).

M. visala is typically considerably larger than *M. persens* (♂, 2.1 to 2.2; ♀, 2.4 inches), and has the ocellus on the upperside of the forewing larger. The apex of the forewing is sharply angulated in the male, but sometimes less prominently so in the female; it also presents considerable variation on the UNDERSIDE, the most distinctly specialised form having the underside uniform pale greyish brown, scantily and indistinctly irrorated with dark brown scales; the two transverse lines prominent, brown; and all the nervures of both wings dark brown, contrasting strongly with the greyish brown ground-colour. Then come specimens in which the discal line is outwardly, and the subbasal line inwardly, margined with suffused ochreous; then in others a clouded brown band appears beyond on the line of the obsolete ocelli. Again in others the space between the two transverse lines is darker than the rest of the wing, forming a broad transverse bar darkest at its edges. Again, in others, the discal line is broad, dark brown, and suffused, while the subbasal line is evanescent. And lastly in some specimens both the transverse lines are evanescent, and the nervures are concolorous with the rest of the wing. In all these latter forms the tone of the ground colour is subject to great variation, being suffused in some entirely, in others more or less, with various shades of ochreous, in others clouded here and there with chestnut, and in others again more or less profusely irrorated with grey. The third spot from the anal angle of the hindwing is usually black, but this is by no means universal, nor is it confined to any particular variety. In many specimens the spot between the lower median nervures on the forewing is somewhat large and pure white. *M. visala* is the commonest form in the Sikkim tarai and hills where typical *M. persens* is comparatively very rare. It is also found in Bhutan and Upper Assam, and specimens inseparable from it have been sent from Burma, Bombay and Travancore. In the neighbourhood of Calcutta it gives place to the variety *indistans*, but the two forms appear to us to be inseparable, except by selecting typical representatives of each.

Mr. de Niceville took the male specimen figured, and which shows the upper and undersides, in Sikkim in October. It is now in the Indian Museum, Calcutta.

Var *subfasciata*. "Nearest allied to *visala*. UPPERSIDE of both sexes with a greyer marginal border, and the ocellus on the forewing only half the size. UNDERSIDE of both sexes much greyer, more densely covered with black-speckled strige, the two transverse lines comparatively nearer each other, and the outer line bordered by a broad chestnut-brown suffused fascia. EXPANSE ♂, 1.88, ♀, 2.0 inches" — (Moore, Proc. Zool. Soc. Lond., 1882, p. 237, pl. xii, fig. 8).

This variety was described from Dharmasali in the N.-W. Himalayas. We have not seen the types, but we have specimens, fairly answering to the description, from Sikkim. It is evidently intermediate between *visala* and typical *persens*, both from its size and from the shape of the forewing which, in the plate, is shown as having the apex rounded.

Var *indistans*. "Differs from *persens* in having a more distinctly pointed apex, and straighter exterior margin, resembling in these respects *visala*. The colour is uniformly much paler above. The UNDERSIDE is especially paler, the transverse discal pale-bordered line more even, and that on the forewing is slightly curved inward, the marginal spots are less prominent, or only visible as white spaces, and sometimes are quite obsolete. EXPANSE: ♂, 1.75; ♀, 2.0 inches" — (Moore, Trans. Ent. Soc. Lond., 1880, p. 164).

This variety is developed in the plains of North East India, examples of it from Calcutta (from whence the type was described) being most distinctly specialised, and there it is easily separable from the typical *M. persens* which co-exists commonly with it. The FEMALE has the apex of the forewing almost as angulate as in the male, the most prominent characteristic of this form is the very pale, almost uniform colouration of the underside, the transverse lines being almost entirely obsolete in typical specimens. It is found in Tenasserim, also in the plains of N.-E. India as far north as Upper Assam, and as far south as Orissa; but in these localities it is far less distinct, specimens from Assam being almost if not

quite inseparable from *vialis*, and one from Orissa in the Indian Museum being almost inseparable from *persens*, except that the apex of the forewing is pointed not rounded.

Sixth Group.—**TELINGA, Moore.** "*Forewing* comparatively long and narrow, apex slightly convex, exterior margin oblique, nearly straight, posterior margin convex near the base; cell long. *Hindwing* broad, somewhat quadrate; costa arched at base, and thence straight to apex; exterior margin waved, convexly angular in the middle; anal angle convex; cell broad, triangular; disco-cellulars very long and oblique; second subcostal emitted just before end of the cell; upper and middle median branches from lower end of the cell. **MALE** with a small subcostal tuft and glandular patch. *Palpi* stout at tip. Club of *antenna* well formed. *Eyes hairy.*" (Moore, Trans. Ent. Soc. Lond., 1880, p. 167).

Telinga differs but little structurally from *Calysime*; the *forewing* is rather more elongate, and the lower disco-cellular nervule in that wing is straight not concave; the *hindwing* is also more quadrate and more distinctly waved; but the colouration is far richer and darker, or more rufous; the ocelli of the underside are all well separated as in the *persens* type. Only two species are known, both from the hills of South India.

Key to the species of *Telinga*.

B. Males with a glandular patch and tuft on the hindwing only.

a, a¹, b², a³. Upperside rich dark rufous brown, darkest at the apex of the forewing

a⁴. The medium-sized lower ocellus on the upperside of the forewing not placed on a rufous patch.

100 M. (*Telinga*) *ADOLPHEI*, Nilgiris.

a⁵. The large lower ocellus on the upperside of the forewing placed on a rufous patch

101 M. (*Telinga*) *OCULUS*, Travancore.

100. *Mycalesis adolphi*, Guérin.

Satyris adolphe, Guérin, Deless. Souv. Voy. Inde, pt. 2, p. 76 (1843); *Mycalesis adolphi*, Butler, Cat. Lep. B. M., *Satyridæ*, p. 139, n. 54 (1868); *M. onatas*, Hewitson, Ex. Butt., vol. III, p. 90, *Mycalesis* pl. vi, fig. 40 (1864) male; *Telinga adolphi*, Moore, Trans. Ent. Soc. Lond., 1880, p. 168.

HABITAT: Nilgiris, South India.

EXPANSE: 2.2 to 2.3 inches.

DESCRIPTION: "*UPPERSIDE* blackish brown, darker towards the costa of the *forewing*, which has near the apex, and a little below the middle, near the outer margin, two very small scarcely visible white points. *Hindwing* with two small ocelli, not prominent, of a tawny yellow, pupilled with black, equally near the outer margin. *UNDERSIDE*, both wings paler brown than the upperside; the *forewing* showing the two small white points of the upperside. The *hindwing* with two oblique transverse brown bands, the first near the base rather sinuous and not reaching the outer margin; the other beyond the middle, starting from the costa at two-thirds the length of the wing, and terminating at the anal angle. This latter band is straight, clearly defined exteriorly, and diffused interiorly. Between this band and the margin is a series of four small white points, of which the second from the anal angle is circled with black." (Guérin, l.c.)

Hewitson described *Mycalesis onatas* as a distinct species with the following remarks:— "This species is very near to *Satyris adolphi*, of which it is probably only a variety, but since his descriptions are always so full and accurate, and he does not mention the undulations of the underside, I have come to the conclusion that it is distinct." Guérin certainly does not mention these, nor the rufous tinge of the upperside, nor the presence of the transverse lines on the underside of the forewing; but as these latter are an unvarying character of all the species in the genus, they can hardly have been absent from *M. adolphi*, but were probably overlooked. We prefer, therefore, to follow Mr. Moore in uniting these two species under the older name. Hewitson's description of *M. onatas* is appended for reference.

* *Mycalesis onatas*, Hewitson. HABITAT: Nilgiris. EXPANSE: 2 inches. **DESCRIPTION:** "**MALE:** *UPPERSIDE* rufous brown. *Forewing* with the apical half dark brown, one ocellus below the middle, the anal apical ocellus represented on both sides by a minute white spot. *Hindwing* with two blind ocelli. *UNDERSIDE* rufous brown, undulated with darker colour. *Both wings* crossed beyond the middle by a straight rufous brown line. *Forewing* with the ocellus as above, but smaller. *Hindwing* with six ocelli, five minute, the sixth [1 fifth] the largest." (Hewitson, Ex. Butt., vol. III, *Mycalesis* pl. vi, fig. 40, 1864) male.

The Indian Museum, Calcutta, has received male specimens from Conoor, taken in July. The FEMALE is unknown.

101. *Mycalesis oculus*, Marshall. (PLATE XVI, FIG. 53 ♀).

M. oculus, Marshall, Journ. A. S. B., vol. xlix, pt. 2, p. 247 (1880).

HABITAT: Ashambo Hills, Travancore.

EXPANSE: ♂, 2.1; ♀, 2.4 inches.

DESCRIPTION: MALE: UPPERSIDE rufous brown, darker on the outer half of the forewing. Forewing with an indistinct small black subapical ocellus, pupilled with white, and a large lower black ocellus also white pupilled, and broadly surrounded with ferruginous-yellow; this patch almost reaching the inner margin, and almost connected with the costa by a band of the same colour. Hindwing with four increasing black ocelli, white pupilled and with yellow rings, the yellow rings sometimes coalescing. In some specimens these ocelli are blind. UNDERSIDE rich rufous, abruptly paler beyond the discal line; the basal area undulated with darker colour; the discal line slightly sinuous, edged outwardly with a yellow band prominent at the costa of forewing, and obsolete on the hindwing. Forewing with the ocelli as on upperside, but smaller, and with much more prominent white pupils; occasionally a third minute ocellus is present between them. Hindwing with six ocelli, the fifth from the apex largest, but all varying much in size in different specimens. The FEMALE is larger, and has the yellow edging to the discal band on the underside prominent on both wings. All the ocelli larger, and the markings more distinct. It of course lacks the glandular patch and tuft of hairs of the male.

M. oculus occurs only in the extreme south of the peninsula; it was taken in the Ashambo Hills in Travancore in May, by Mr. Harold Ferguson.

The figure shows the upper and undersides of a female specimen in the Indian Museum, taken by Mr. Harold S. Ferguson at Eridge, Travandrum, South India.

Seventh Group.—PACHAMA, Moore. "Wings large and broad, but comparatively shorter than in *Samanta*. Forewing with costa arched in the middle, apex rounded, exterior margin slightly oblique and convex; *cilia* prominent. Hindwing somewhat bluntly conical; exterior [anterior] margin slightly arched, apex somewhat angled; exterior margin very oblique and scarcely convex; *cilia* prominent; first subcostal emitted at some distance before end of the cell; cell longer, end much pointed; disco-cellulars very oblique, radial from a slight angle near subcostal. MALE with a subcostal tuft and glandular patch, as in *Samanta*. Palpi slender at tip. Club of *antenna* gradually formed. Eyes hairy." (Moore, Trans. Ent. Soc. Lond., 1880, p. 165).

This group contains only two species, which are distinguished chiefly by the prominence of the white *cilia* to both wings, and by the very much arched costa of the forewing. So far as there is any certain record both these species are confined to North-East India.

Key to the species of *Pachama*.

B. Males with a glandular patch and tuft on the hindwing only.

a, a¹, c², a³. Underside crossed by a very prominent white band showing through on the upperside.

a⁴. Basal two-thirds of underside densely striated with short dark lines.

102. *M. (Pachama) MESTRA*, Deccan? Khasi Hills.

♂⁴. Basal two-thirds of underside not striated but uniformly coloured.

103. *M. (Pachama) SUAVOLENS*, Carhar.

102. *Mycalesis mestra*, Hewitson.

M. mestra, Hewitson, Ex. Butt., vol. iii, p. 79, *Mycalesis* pl. i, figs. 2, 3 (1862), female; *Pachama mestra*, Moore, Trans. Ent. Soc. Lond., 1880, p. 165.

HABITAT: Khasi Hills (Moore); Deccan (Hewitson).

EXPANSE: ♀, 2.8 inches.

DESCRIPTION: "FEMALE: UPPERSIDE dark brown. Forewing crossed beyond the middle by a narrow band of white, followed by two ocelli; one near the apex minute, the

other larger; two submarginal black lines, the margin white. *Hindwing* crossed beyond the middle by an indistinct band (seen through); followed by two ocelli towards the anal angle, the one nearest the angle minute, oval, and ill-formed: a submarginal line of rufous-white; the margin broadly white, traversed by a very fine black line. *UNDERSIDE* rufous, the basal half undulated with dark brown; crossed beyond the middle by a continuous band of white, followed by a broad band of purple-brown marked with several ocelli: on the *forewing* by three; the first (which is minute) and second near the apex; the third (larger) beyond the middle: on the *hindwing* by five, three of them near the apex (the third indistinct), two near the anal angle, large, all with white pupils and rufous border; *both wings* with white and rufous submarginal bands; the margins white." (Hewitson, l. c)

In the figure by Hewitson of the upperside, the ocellus of the hindwing between the first and second median branches is the largest of all; in that of the underside the anal ocellus of the hindwing is bipupilled, almost geminate. The large size and pure white marginal lines of this Butterfly distinguish it from all other Indian species of *Mycalesis*, as well as the large size of the anterior subanal ocellus of the hindwing on the upperside. The locality, "Deccan," given by Hewitson is probably erroneous, but it is a very rare Butterfly.

103. *Mycalesis suaveolens*, W.-M. and de N.

HABITAT: Cachar.

EXPANSE: ♂, 2.5 inches.

DESCRIPTION: *MALE*: Wings above and below dark sepia, tinged with ashy-white. *Forewing* with the costal and outer margins regularly arched. With a narrow and very indistinct light brownish discal band extending parallel to the outer margin from the subcostal nervure to the third median nervure; with two velvety-black, white-pupilled ocelli encircled by a slender iris of ochreous brown of almost the same shade as, but more distinctly expressed than, the discal band, with the first of these ocelli the smaller, triple (having a minute white-pupilled ocellule run together with it at either end), and so placed that its pupil lies in the fold between the discoidal nervules; with the second ocellus much the larger, circular, and placed in the middle of the first median interspace, whence it extends a short distance into the two adjoining interspaces; and with two obsolete anteciliary pale lines. *Hindwing* above with a single perfect and slightly elongated ocellus in the first median interspace, the bounding nervules of which it does not reach, with a minute rudimentary ocellus on the fold of the third median interspace on one side only; and with the pale anteciliary lines more distinct than in the forewing. *UNDERSIDE* darker and more richly coloured but not striated; with a narrow cretaceous-white common discal band extending from the subcostal nervure in the forewing to the submedian nervure in the hindwing, where it runs into the inner of the two pale anteciliary lines, which, equally distinct in both wings, are somewhat coarser in the forewing; and with a third pale line following the outer configuration of the ocelli. *Forewing* ocellated as above. *Hindwing* with seven ocelli arranged in two decreasing series, the first of which consists of four slightly decreasing ocelli, and the second of three more rapidly decreasing ones, of which the first corresponds to the one visible above, but is larger, extending beyond the limits of its interspace on both sides, so as to touch the second, which is united to the third or anal. *Antennæ* above concolourous with the wings and body, below lighter and indistinctly annulated, becoming orange towards the black orange-tipped club.

A single specimen was taken on *Nemotha*, N. Cachar, at an elevation of 3,300 feet, in September. Mr. Wood-Mason notes: "The scent-glands and fans, which are much as in *M. malsara*, Moore, emitted a powerful and delicious odour resembling that of vanilla for some hours after the death of the insect."

Between *Pachama* and *Samanta* Moore places a Javan species, *M. moorei*, Felder,* as the type of a distinct genus of which it is the sole representative, and which he characterises as

* *Mycalesis moorei*, Felder, Reue Nov., Lep., vol. iii, p. 502, n. 877, pl. lxxvi, fig. 9 (1866), male. *HABITAT*: Java. *EXPANSE*: 2 inches. *DESCRIPTION*: "MALE. *UPPERWING* fuscous, with an obsolete darker external line, beyond which the margin is paler. *Hindwing* with a very obsolete line before the margin,

follows: Genus *INDALASA* "MALE: *Forewing* somewhat narrow; costa arched at base; apex convex; exterior margin oblique, straight *Hindwing* narrow, conical; anterior margin arched at base; apex slightly produced; exterior margin oblique, slightly convex; cell long, fusiform; a tuft of fine hair at base of subcostal; first subcostal branch half way between the costal and second; disco-cellulars very oblique, two upper median branches from end of the cell. *Antennæ* with a moderately formed club *Palpi* pointed, and hairy to tip. *Eyes* slightly hairy." Type, *I. moorei* (Moore, Trans. Ent. Soc., Lond., 1880, p. 166).

Eighth Group—*CULAPA*, Moore "Forewing longer than in *Calyssus*; costa very slightly arched, apex produced; exterior margin very oblique and slightly convex below the apex; cell longer and narrower, third subcostal branch nearer the fourth *Hindwing* somewhat quadrate, apical angle slightly acute; exterior margin convex hindward and truncated at anal angle; abdominal margin long, cell triangular; disco-cellulars very oblique; middle median branch emitted at some distance before lower end of the cell MALE with a tuft of fine hair exerted from base of cell, and covering a small glandular patch above base of first subcostal branch *Antennæ* with a well formed, slightly stout club *Palpi* compactly clothed with shorter hair. *Eyes* hairy" (Moore, Proc. Zool. Soc. Lond., 1878, p. 825, id., Trans. Ent. Soc. Lond., 1880, p. 165).

Only a single species of this group is known, occurring in Sumatra, and reappearing in Upper Tenasserim. Its elongate forewing, and the great size of the lower ocellus on that wing, are its chief distinctive features.

Key to the species of *Culapa*.

B Males with a glandular patch and tuft on the hindwing only

a, b', a', a". Upside of forewing in female with one very large ocellus occupying the entire space between the third median nervule and submedian nervure, not quite so large in male

104 M (*Culapa*) *MNASICLES*, Upper Tenasserim, Sumatra.

104 *Mycalesis mnasicles*, Hewitson

M. mnasicles, Hewitson, Ex. Butt., vol. iii, *Mycalesis* pl. v, figs 32, 33 (1864), male, *Culapa mnasicles*, Moore, Proc. Zool. Soc., Lond., 1878, p. 825, idem, id., Trans. Ent. Soc. Lond., 1880, p. 165

HABITAT. Tenasserim, Sumatra

EXPANSE ♂, 2.5; ♀, 3.0 inches.

DESCRIPTION "MALE: UPPELSIDE rufous brown, both wings with a submarginal black line. *Forewing* with two ocelli, one at the apex minute, the other below the middle, very large. *Hindwing* with one indistinct ocellus and a submarginal band of indistinct lunular spots. UNDERSIDE with the basal half rufous, both wings crossed before the middle, and at the middle by common rufous brown narrow bands; both with two black lines near the outer margin, and a submarginal zigzag rufous band. *Forewing* with five ocelli, the first four minute, the fifth larger, and marked with a large white pupil. *Hindwing* with seven small ocelli, the first and fifth the largest. The FEMALE does not differ except in size [and of course in lacking the sexual tuft on the hindwing]" (Hewitson, l. c.)

M. mnasicles is a rare insect and has only as yet been taken in Upper Tenasserim within Indian limits. Limborg took it in April at Ahsown, 2,000 feet elevation, and Meetan, 3,000 feet elevation; and Captain C. T. Bingham took a single female also in April in the Thoungyen forests.

The figure shows the upper and undersides of the female specimen taken by Captain Bingham, and now in the Indian Museum, Calcutta

UNDERWING darker, the line of the upperside awarthy, unequally defined with white externally, the margin beyond is very dilute brown, with five ocelli in the forewing, seven in the hindwing, coloured as in *M. mnasicles*, and surrounded with fuscous dots, beyond them divided by a submarginal line, much drawn back in the forewing, another before the margin, and a third before the cilia slender fuscous" (Felder, l. c.)

* † Described on p. 110

Ninth Group—**KABANDA**, Moore. "Wings short, broad. *Forewing* very much arched from the base, apex and exterior margin slightly convex and even, cell short and broad. *Hindwing* bluntly conical, short, exterior margin almost even, anal angle very convex; costal nervure quite short and nearly straight; first subcostal branch emitted immediately before end of the cell, disco-cellulars almost erect, cell very short; middle median branch emitted before lower end of the cell. MALE with a slight subcostal tuft and glandular patch of scales, median branches dilated and grooved at their base on the upperside. *Antennæ* short, slender. *Palpi* slender at tip. *Eyes* hairy" (Moore, Trans Ent Soc Lond, 1880, p 168).

Only two species of this group are known, from North East Bengal and the Khasi Hills. The ocelli are very similar to those of the *M. minus* type in the group *Calymene*, but the immaculate upper surface and the vinous or rufous tinge of the colouration as well as the arrangement of the subcostal and median nervules of the hindwing serve to distinguish them.

Key to the Species of Kabanda.

B. Males with a glandular patch and tuft on hindwing only

b ^{a1}. The upperside without a cell on either wing

a ². The ground colour rufous fuscous, the ocelli of the underside prominent

105. M. (*A. l. da*) **MALSARIDA**, N. E. India

l ². The ground colour dark vinous brown, the ocelli of the underside minute

106. M. (*A. l. ind. s*) **KHASIANA**, Khasi Hills

105. *Mycalesis malsarida*, Butler

M. malsarida Butler Cat Lep B M. *Satyria* p 134 n 27 pl in fig 14 (1868), *Kabanda malsarida*, Moore, Trans Ent Soc Lond, 1880, p 178.

HABITAT. Khasi Hills, Cherra Panji, Sibsagar, Sylhet, Cachar.

EXPANSE. 1.9 to 2.4 inches.

DESCRIPTION. "UPPERSIDE rufous fuscous, the apical area of the *forewing* slightly paler, a submarginal line and the external margin darker and white, a marginal line and on the *hindwing*, inwardly another ochraceous not very distinct line, the costa of the *hindwing* ochraceous, the base scabrous. UNDERSIDE very little darker, the basal area smeared with fuscous. A median fuscous almost entire oblique, violet plumbeous, abbreviated in the *forewing*, another curving under the ocelli, and a thin submarginal, white, a submarginal line and the margin itself black, a fulvous marginal line all undulate. *For wing*, with three small subapical, obliquely placed ocelli (the middle one a little larger), and one rather large discal. *Hindwing* with seven ocelli, the second, third, sixth and seventh small, the fifth largest, all deep black, with white pupils and fulvous rings" (Butler, l c).

There is a male and a female from Sibsagar, Assam, in the Indian Museum, Calcutta. The FEMALE differs from the male only in the absence of the tuft of hairs on the costa of the upperside of the hindwing. Mr Wood Mason took a single male on Nemotha, Cachar, 3,300 feet, in September. In all these specimens the basal area of the hindwing on the underside is densely striated with darker colour.

106. *Mycalesis khasiana*, Moore

M. khasiana, Moore, Proc Zool Soc Lond, 1874 p 566, *Kabanda khasiana*, Moore, Trans Ent Soc Lond 1880, p 168.

HABITAT. Khasi Hills.

EXPANSE. 1.75 inches.

DESCRIPTION. "MALE. UPPERSIDE dark vinous brown, paler at the apex, and along exterior border, marginal lines black. UNDERSIDE bright vinous brown, purplish grey along exterior border, covered with minute black and grey strigæ. *both wings* with a transverse discal narrow purplish grey band, and a distinct yellow narrow marginal black-bordered band. *Forewing* with five, and *hindwing* with seven minute perfect ocelli." (Moore, l c.)

This species is apparently to be distinguished from the only other species in this group, *M. malsarida*, by the tone of the upper surface and the size of the ocelli on the underside.

An allied species, *M. janardana*, has been separated as the type of a distinct genus under the name of *Martanda**; the type species occurs in Malacca, and also in Java and Sumatra, and two other species belonging to the same group have been described, one from North China, *M. saugaica*, the other from Macassar, Gilolo, &c., *M. megomide*. This group is evidently closely allied to *Samanta* from the position of the subcostal nervules in the hindwing, both branches arising from the end of the cell, and it is intermediate between that group and *Abanda*. Probably *M. nautilus* (p. 120) belongs to this group.

Tenth Group—SAMANTA, Moore. "Forewing arched towards the apex, angle convex. Hindwing conical; exterior margin waved, first and second subcostal branches emitted together from end of the cell, base of the first straight, discocellulars straight and very slightly oblique; cell short. MALE with a small tuft covering a glandular patch of scales above base of subcostal branch. Eyes hairy" (Moore, Trans Ent Soc. Lond., 1880, p. 166.)

All the species of this group are found in Northern India only, most of them in the hills of N.-E. India extending to Burma.

Key to the Species of Samanta.

B. Males with a glandular patch and tuft on hindwing only

c, a¹, a² With the ocelli of the underside distinct and prominent

a³ With only two ocelli on the underside of forewing

107 M (*Samanta*) *heri*, Bhutan

b³ With five ocelli on the underside of forewing

a⁴ With the ocelli of the underside on a lilac ground in the middle of a broad, dark brown band, the ocelli blind on the upperside, more or less so on the underside

108 M (*Samanta*) *malgara* Mussoorie Sikkim Khasi Hills, Assam

b⁴ With the ocelli of the underside on a dark brown band with lilac-grey beyond, the ocelli distinctly pupilled above and below

109 M (*Samanta*) *nigrita*, Sikkim

b⁵ With the ocelli of the underside minute, indistinct or obsolete

a⁵ With the ocelli of the upperside blind

a⁶ The discal band of the underside broad

110 M (*Samanta*) *rudra*, Orissa, Manipur, Naga Hills, Tenasserim.

b⁶ The discal band of the underside narrow.

111 M (*Samanta*) *lepta*, Himalayas, Burma

b⁷ With the ocelli of the upperside pupilled

112 M (*Samanta*) *langi*, Mussoorie, Sikkim, Naga and Khasi Hills.

107. *Mycalesis heri*, Moore.

M. heri, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 233, n. 496 (1857); *Samanta heri*, Moore, Trans. Ent. Soc. Lond., 1880, p. 167.

HABITAT: Bhutan.

EXPANSE. 2.37 inches.

DESCRIPTION:—"MALE. UPPERSIDE brown. Forewing with large upper and larger lower ocellus. Hindwing with two larger and third smaller ocelli. UNDERSIDE paler, the base covered with short brown undulated stræ, transverse line, inner and outer border to the ocelli pale ochreous. Forewing with the two ocelli as above. Hindwing with six ocelli; marginal lines brown and pale ochreous" (Moore, l. c.)

* *Martanda*, Moore, Trans. Ent. Soc. Lond., 1880, p. 169. "Wings short. Forewing somewhat triangular, apex slightly pointed, exterior margin slightly oblique, nearly straight and even. Hindwing bluntly oval; costa very broadly convex at the base, exterior margin convex, slightly waved, cell long, very pointed at lower end, first and second subcostal branches from end of the cell discocellulars very oblique, MALE with a double subcostal tuft covering the glandular patch of scales. Antenna short, club stout. Palpi slender at tip. Eyes hairy" (Moore, l. c.)

Mycalesis janardana, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 234, n. 502 (1857). Idem, id., Distant, Rhop. Malay, p. 54, pl. v, fig. 2 (1882). *Martanda janardana*, Moore, Trans. Ent. Soc. Lond., 1880, p. 169. HABITAT: Malacca, Sumatra, Java. EXPANSE. Male, 1.5, female, 1.7 inches. DESCRIPTION: "MALE. UPPERSIDE dusky brown, palest on the hindwing, which has two rather indistinct black spots. UNDERSIDE brown, the basal parts being covered with small narrow stræ; two transverse lines, the outer margined exteriorly with white, forewing with six, and hindwing with seven small ocelli. FEMALE paler on the upper and undersides, the latter nearly covered with small dark stræ; the transverse lines paler; the ocelli somewhat larger than in the male" (Moore, l. c. in Cat. Lep. E. I. C.)

We have never seen a specimen of this species. The underside of the forewing bearing two ocelli only is a character not found in any other species of this group.

108. *Mycalesis malsara*, Moore.

M. malsara, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 231, n. 492 (1857); id., Hewitson, Ex. Butt., vol. iii, p. 80, *Mycalesis* pl. 1, figs. 5, 6 (1862); *Samantis malsara*, Moore, Trans. Ent. Soc. Lond., 1880, p. 166.

HABITAT: Mussoorie, Sikkim, Khasi Hills, Sibsagar, Cherra Punji.

EXPANSE: 1.90 to 2.25 inches.

DESCRIPTION: "UPPERSIDE dark brown. Forewing with a transverse brownish-white band, and upper and lower ocelli. Hindwing with very indistinct transverse brownish-white streak, and two small ocelli. UNDERSIDE with transverse yellowish-white band well defined across both wings. Forewing with five ocelli, the first and third minute. Hindwing with seven larger ocelli, the third and seventh smallest." (Moore, l. c.)

The above is the original description; the following is a more detailed description by Hewitson, who gives excellent figures of both upper and undersides in his "Exotic Butterflies":—

"UPPERSIDE rufous-brown; forewing crossed beyond the middle by a band of white, followed by three blind ocelli (the middle one minute); hindwing with one ocellus, indistinct; the outer margins of both wings rufous-white, traversed by two black lines. UNDERSIDE rufous, undulated; crossed beyond the middle by a band of yellowish-white, interrupted where the wings meet, followed by a broad band of dark brown with numerous ocelli; on the forewing five, the second and fifth largest, on the hindwing seven, the first, second and fifth largest, most of them with white pupils and rufous borders, the whole enclosed on each wing by a tortuous line of lilac; the margins broadly white [yellowish-white?] traversed by two dark lines." (Hewitson, l. c.)

In some specimens there are only two blind ocelli on the upperside of the forewing; sometimes no ocelli, sometimes two on the hindwing. The width of the discal band on the underside is also very variable; in some Sikkim, and in a Mussoorie specimen in the Indian Museum, Calcutta, it is less than half as wide as in other Sikkim and Sibsagar specimens. The FEMALE differs in being paler, all the markings more distinct, and in the absence of the male sexual secondary characters.

Mr de Nicéville took it commonly in Sikkim in October, both in the tarai and lower hills.

109. *Mycalesis nicotia*, Hewitson.

M. nicotia, Hewitson, Gen. D. L., p. 394, pl. lxvi, fig. 4 (1851), female. Id., Ex. Butt., vol. iii, *Mycalesis* pl. 1, fig. 1 male, *Samantis nicotia*, Moore, Trans. Ent. Soc. Lond., 1880, p. 167.

HABITAT: Sikkim; S. India (apud Butler.)

EXPANSE: 2.3 to 2.5 inches.

DESCRIPTION: "UPPERSIDE dark brown; the outer margin paler, traversed by two submarginal lines of dark brown. Forewing with two ocelli, one near the apex, small; the other below it large. Hindwing with one ocellus near the middle of the outer margin; all black with white pupils and rufous borders." (Hewitson, l. c. in Ex. Butt.) "UNDERSIDE rufous brown, undulated with numerous darker streaks, broadly margined with lilac [grey], on which are three black lines [the margin is rufous between the two marginal lines]; crossed beyond the middle by a narrow common band of yellow, followed by a broader band of dark brown in which are numerous ocelli; on the forewing five, the lowest much the largest; on the hindwing seven, the first oval, larger than the three following, which are small, the fifth largest, the sixth and seventh small, all deep black, with rufous margins and white pupils." (Hewitson, l. c. in Gen. D. L.)

In the Indian Museum, Calcutta, there is a single male specimen of this species from Sikkim, where it was taken in August. On the upperside of the forewing there is an ocellule attached to the upper ocellus posteriorly, and corresponding with the third ocellus of the

underside; and on the hindwing there are two small ocelli in the interspaces above and below that which bears the ocellus described above between the second and third median nervales.

110. *Mycalesis rudis*, Moore.

Samanta rudis, Moore, Trans. Ent. Soc. Lond., 1880, p. 166.

HABITAT: N. India, Manipur, Naga Hills, Orissa, Upper Tenasserim

EXPANSE: 1.75 to 2.10 inches.

DESCRIPTION: "MALE: UPPERSIDE similar to *S. malsara*, the pale band on the forewing being narrower. UNDERSIDE ochreous-brown, with darker brown strigæ, somewhat greyish-brown on external borders. Both wings with an ochreous-yellow transverse discal band, the inner margin of which is well defined, the outer suffused; a submarginal series of minute indistinct white-speckled spots, the two subanal being ringed with black; an indistinct ochreous-speckled pale streak crossing middle of the cell on both wings." (Moore, l. c.)

Captain C. T. Bingham took two males of this species in the Donat range in Upper Tenasserim in January, and a female in the Upper Thoungyeen forests in April. Mr. A. O. Hume took a single male specimen in the eastern hills of Manipur in May. In some specimens the whitish bar on the upperside of the forewing is as narrow and indistinct as in the following species *M. lepcha*; the two are very nearly allied, but the transverse bar of the underside appears to be constantly much broader in this species than in *M. lepcha*. The underside is irrorated with grey at the base and abdominal margin of hindwing, as well as on the outer margin. The ocelli of the upperside appear to vary; in all the Burman specimens there are three on the forewing, and two on the hindwing distinct; in the Manipur specimen those of the hindwing are indistinct and of the forewing almost entirely obsolete. A single male from Kurdah, Orissa, is a little aberrant. It is somewhat smaller; there are no ocelli on the upperside of the hindwing, and the discal band on the underside is yellow, not ochreous-white, and outwardly more diffused. The underside of this specimen closely resembles some varieties of *M. persus* from the same locality.

The FEMALE differs in its much paler colouration, the transverse band of the underside being almost white, and in lacking the sexual tuft.

111. *Mycalesis lepcha*, Moore.

Samanta lepcha, Moore, Trans. Ent. Soc. Lond., 1880, p. 167.

HABITAT: N.-W. Himalayas, Nepal, Burma.

EXPANSE: 2.0 to 2.1 inches.

DESCRIPTION: "MALE: UPPERSIDE brown. Forewing with an indistinct pale transverse discal narrow line, and two or three submarginal indistinct blind ocelli, the upper two minute. Hindwing with one or two similar subanal ocelli. UNDERSIDE brighter coloured, greyish externally, covered with numerous darker brown strigæ. Both wings with a prominent very narrow ochreous-yellow transverse discal band, and a submarginal series of indistinct minute black and white speckled spots; a pale speckled indistinct streak crossing both cells." (Moore, l. c.)

A single male of this species has been sent to us from Moulmein by Capt. C. H. E. Adamson, and another from Chamba in the N.-W. Himalayas by Major C. H. T. Marshall; in both these specimens the lower ocellus of the forewing alone is prominent on the upperside; the upper one and those of the hindwing being almost completely obsolete; the underside of the Moulmein specimen is irrorated with ochreous on the external margin.

Colonel Lang's collection contains four specimens from Mussoorie taken in May at 7,000 feet elevation.

112. *Mycalesis langi*, de N., n. sp.

HABITAT: Naga and Khasi Hills, Sikkim, Mussoorie.

EXPANSE: 2.10 to 2.35 inches.

DESCRIPTION: MALE: UPPERSIDE brown, with two marginal lines on both wings, more prominent on the hindwing; both inwardly defined with ochreous. Forewing with a median-

sized subapical ocellus, often with a smaller ocellule attached to it posteriorly, and a large lower ocellus placed in the first median interspace, and extending beyond it on both sides. *Hindwing* with one subanal ocellus placed in the first median interspace, variable in size, but usually subequal to the anterior ocellus of the forewing; sometimes with a minute ocellule in the next interspace posteriorly, and another in the interspace between the third median and discoidal nervules. All these ocelli black, pupilled with white, and with a yellow iris. *UNDERSIDE* brown with a greenish tinge. All but the area immediately interior to the median band profusely striated with darker, beyond the band the ground-colour is somewhat lighter than the rest of the wing. A prominent common wide ochreous median band, inwardly sharply defined, outwardly diffused; beyond this a series of more or less obsolete minute ocelli, in the forewing that in the first median interspace, and in the hindwing the three anal ones usually perfect. A submarginal wavy indistinct line, and the marginal lines as above. *FEMALE* paler above and below, and without the black-centred glandular patches on both wings, and the tuft of hairs to the hindwing present in the male.

Differs from *M. rufis* and *M. lepcha* chiefly in the large size of the posterior ocellus on the upperside of the forewing, and all the ocelli on the upperside of both wings being white pupilled. This is apparently a distinct species, as the eight specimens (six males and two females) from which this description has been made, show but little variation. Two of the specimens, those from Mussoorie, are in Colonel Lang's collection, one male from Sikkim is in Mr Otto Moller's collection, the others are in the Indian Museum, Calcutta.

Eleventh Group—*NISSANGA*, Moore. "Wing, short. *Forewing* slightly arched at the base, exterior margin long, slightly convex, and nearly erect, second subcostal emitted at end of the cell. *Hindwing* bluntly conical, costa broadly convex at the base, and thence oblique to the apex, exterior margin oblique, cell short, quadrate, broad at its end; subcostal not swollen, its first branch emitted immediately before end of the cell, discocellularis erect, equal in length, two upper median branches emitted at some distance beyond the cell. *MALE* with a tuft of fine hair covering a glandular patch at base of subcostal branches. *Antenna* gradually thickened to tip. Apical joint of *palpi* long and slender. *Eyes* hairy" (Moore, Trans. Ent. Soc. Lond., 1880, p. 169.)

Only two species of this group are known, both of small size, and distinguishable at once by the peculiar nature of the lower ocellus of the forewing which is placed eccentrically at the lower edge of a light coloured patch, giving it the appearance of a squinting eye. They are confined to South India and Ceylon.

Key to the Species of Nissanga.

- L. Males with a glandular patch and tuft of hairs on hindwing only**
 c. 61. a² With the lower ocellus of forewing at the lower edge of a light coloured patch.
 a¹ Upperside ochreous brown, the ocellular patch yellow
 113 M. (*Nissanga*) *PATNIA*, Ceylon
 b² Upperside dull brown, the ocellular patch ochreous white
 114 M. (*Nissanga*) *SIKONIA*, South India

113. *Mycalesis patnia*, Moore

M. patnia, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 272 n. 494 (1857), male. *Nissanga patnia*, id., Trans. Ent. Soc. Lond., 1860, p. 170, idem, id., Lep. Cey., p. 23, pl. xii, figs. 2, 2a (1880), male.

HABITAT. Ceylon.

EXPANSE: ♂, 1.62, ♀, 1.75 inches.

DESCRIPTION: "*MALE* and *FEMALE*. *UPPERSIDE* blackish ochreous-brown, a marginal double yellow line on both wings. *Forewing* with a subapical longitudinally-narrow white spot, a large lower black spot (or upper half of an ocellus) pupilled with white, and broadly bordered on the upper half with pale ochreous-yellow, a broad medial ochreous streak from thence to base of wing. *Hindwing* with the discal area suffused with ochreous, and in the

MALE with two minute discal ocelli. **UNDERSIDE** ochreous-yellow, marginal lines bright yellow. *Forewing* with an elongated subapical white spot and large prominent lower ocellus, the lower portion of which is suffused with black, five transverse lines commencing from the base, and circle round the subapical spot and lower ocellus ochreous-red; a silvery band across the middle of the wing, and another round the upper spot and lower ocellus. *Hindwing* with a subapical and two subanal white spots distantly encircled by a black line, and then by a red line, each again enclosed by a silvery band, a subbasal silvery band and two red lines. **BODY** brown, *pulpi* at the side and *legs* beneath greyish" (Moore, 1 c in Lep Cey).

"Very common, and easy to capture Taken at Galle and Kandy" (Captain Wade). It is apparently confined to the island of Ceylon.

114. *Mycalesis junonia*, Butler. (PLATE XVI, FIG 57♂)

M. junonia, Butler, Cat. Lep. B M., *Satyridæ*, p 146, pl iii, fig 4 (1868), *Nisanga junonia*, Moore, Trans Ent Soc Lond., 1880, p 170

HABITAT. Hills of South India

EXPANSE 1.6 to 1.8 inches

DESCRIPTION "MALE and FEMALE **UPPERSIDE** fuscous, with the margin pale, with a [two] black line [s] on it, the *costa* varied with greyish and fuscous. *Forewing*, with two black ocelli pupilled with white, the upper one circled with brown, the lower one much larger, circled above with an irregular whitish lunule. *Hindwing* with one or two minute indistinct discal ocelli [often absent]. **UNDERSIDE** olivaceous, otherwise marked almost as in *M. patnia*." (Butler, 1 c) The FEMALE is rather larger than the male, and lacks the secondary sexual characters.

Mr Harold Feigunson writes of this species that in Travancore it was not common in April, and only to be found in heavy forest at about 800 feet elevation, and later on in May that it was fairly common in the hills at the end of the month. There are specimens in the Indian Museum, Calcutta, taken at Koppa Anchee, Kadur District, Mysore.

The figure shows the upper and undersides of a male specimen in the Indian Museum, taken at Trevandrum, South India.

The remaining groups of this section are chiefly confined to the Austro-Malayan region; one species only, *M. fuscum*,* Felder, is found as far north as the Malay Peninsula. It belongs to a group separated by Moore as a new genus under the name of *Mydosama*†. The same group was previously characterised by Felder as *Dasyomma*, but that name was rejected owing to its having been previously used in the order *Diptera*.

Twelfth Group—LOESA, Moore. "MALE. *Forewing* somewhat elongate and narrow; costa arched at the base and apex; exterior margin oblique, slightly convex, second subcostal branch emitted at some distance beyond the cell. *Forewing* bluntly ovate, costa arched at base, apex, exterior margin and anal angle convex, a tuft of fine hair at base of subcostal, and a slender tuft covering a groove on middle of submedian nervure, cell short, broad in the middle, subcostal concave at its base, first branch emitted close to end of the cell,

* *Dasyomma fuscum*, Felder, Wien Ent. Monatsch., vol iv, p 401, n 87 (1860), *Mycalesis diniche*, Hewitson, Ex. Butt., vol. iii, p 85, *Mycalesis* pl. iv, fig 23 (1862), male, id., Journ. Linn. Soc., Zoology, vol viii, p 146 (1865), *M. margaritæ* id., Ex. Butt., vol v, *Mycalesis* pl. ix, fig 59 (1874), female, *Mydosama fuscum*, Moore, Trans. Ent. Soc. Lond., 1880 p 170, *Mycalesis fuscus*, Distant, Rhop. Malay., p 33, pl. v, fig 1 (1881), female. **HABITAT** Malay Peninsula, Singapore, Sumatra Borneo. **EXPLANES**: Male, 1.9, female, 2.3 inches (from Hewitson's figures). **DESCRIPTION** "MALE **UPPERSIDE** fuscous. *Forewing* with a blind ocellus. *Hindwing* with the disc slightly suffused with violet, with two ocelli scarcely distinct. **UNDERSIDE**. Both wings brown, powdered with fulvous with two ferruginous discal lines. *Forewing* with four ocelli. *Hindwing* with seven on a ferruginous ground." (Felder, 1 c)

† Genus *Mydosama*, Moore, Trans. Ent. Soc. Lond., 1880 p 170. "Wings short. *Forewing* regularly arched along the costa, exterior margin slightly convex and oblique, second subcostal branch emitted immediately before end of the cell, disco-cellulars very slightly concave. *Hindwing* bluntly conical, costa convex, exterior margin and angles convex, slightly waved, cell broadly triangular, first subcostal branch emitted close to end of the cell, and in the male swollen at its base, disco-cellulars oblique, slightly concave, two upper median branches emitted from end of the cell. MALE with a tuft of fine hair covering a glandular patch at base of first subcostal branch. Club of *antennæ* moderate. *Pulpi* less laxly clothed beneath than in *Nisanga*, and the terminal joint shorter. Eyes hairy" (Moore, 1 c)

second concave at its base; disco-cellulars long, oblique, straight; two upper median branches from end of the cell. *Antenna* with a well-formed terminal club; *palpi* pointed at tip. *Eyes* hairy." (Moore, Trans. Ent. Soc. Lond., 1880, p. 177.)

Only two species of this group are known: the type species *L. orontis** inhabits Java; the other, which is apparently very closely allied, and may be only the continental representative of the Javan species, was discovered in Upper Tenasserim by Captain C. T. Bingham. The bright rufous colouring of these species gradually darkening to the outer margin, distinguish them from all other Asiatic *Mycalesis*.

Key to the Indian Species of *Loesa*.

C. Males with two glandular pouches and tufts on hindwing.

a. Upperside rich bright rufous, darker towards the costal and outer margins.

115. *M. (Loesa) surkha*, Upper Tenasserim.

115. *Mycalesis surkha*, Marshall.

M. surkha, Marshall, Journ. A. S. B., vol. li, pt. 2, p. , pl. iv, fig. 1 (1882), male; *Loesa fervida*, Butler, Ann. and Mag. of Nat. Hist., 6th series, vol. x, p. 372 (1882)

HABITAT: Donat Range, Upper Tenasserim.

EXPANSE: 2.15 inches.

DESCRIPTION: MALE: UPPERSIDE rich bright fulvous; the costa, the apical area broadly, and thence decreasing to the inner angle of the forewing, and the outer margin of the hindwing suffused darker. Forewing with a minute black dot in the upper discoidal, and a larger spot in the first median interspace, black, surrounded with an indistinct lighter iris than the ground-colour. UNDERSIDE rich brown, with a common narrow discal purple band, beyond which the ground-colour is much lighter. An indistinct dark bar crosses the middle of the cell in the forewing, and a similar subbasal line in the hindwing. Forewing with the spots of the upperside replaced by two small equal-sized ocelli. Hindwing with a series of seven ocelli, the first three small, subequal, the fourth minute, the fifth the largest, the sixth and seventh in the same interspace equal in size to the three first. Two indistinct waved marginal lines to both wings. The sexual characters consist of a pale glandular patch on the underside of the inner margin of the forewing, and a similar patch on the upperside of the costal margin of the hindwing, with, on the latter, a tuft of hair at the base of the subcostal nervure, which tuft is dark brown at the base, and the tips of the hairs yellow. A similar tuft of hairs occupies a slit in the middle of the submedian nervure of the hindwing, with the opening above.

Differs from *M. orontis* in the smaller size of all the ocelli. In *M. orontis* the lower ocellus on the upperside of the forewing is large, perfect, and occupies the entire breadth of the interspace.

A single specimen was taken by Captain C. T. Bingham in the Donat Range in January, which is now in the Indian Museum, Calcutta; and another taken in the lower Thoungyeen forests has been deposited in the British Museum, where it now stands as *L. fervida*, Butler. The FEMALE is unknown.

Genus 9.—NEORINA, Westwood. (PLATE XIV).

Neorina, Westwood, Gen. D. L., p. 369 (1851).

"BODY robust; WINGS large, subtriangular. Forewing with a broad oblique pale fascia. Both wings with a large ocellus near the outer angle on the underside. HEAD large, hairy, not tufted in front. Eyes large, smooth. Antenna not more than two-fifths of the length of the forewing, very slender, much curved downwards at the tip; joints scarcely distinct, terminated by an elongated, very slender, and gradually formed club. Palpi broad, much compressed, very hairy in front, and with a small tuft of hairs in the middle of

* *Mycalesis orontis*, Hewitson, Ex. Butt., vol. iii, p. 90, *Mycalesis* pl. vi, figs. 38, 39 (1864) male; *Loesa orontis*, Moore, Trans. Ent. Soc. Lond., 1880, p. 177. HABITAT: Java. EXPANSE: 2.0 inches. DESCRIPTION: MALE: UPPERSIDE rufous. Forewing with the costal margin, and the apical half dark brown, with two ocelli, one near the apex small and indistinct (not shown in the figure), the other large. Hindwing with the outer margin broadly brown. UNDERSIDE dark brown, paler beyond the middle. Both wings crossed at the middle by a narrow common band of lilac; both with the outer margin, and two submarginal lines (the inner much curved [highly lunulate] brown. Forewing with two large ocelli. Hindwing with seven, the first four of equal size (the fourth immature), the fifth large." (Hewitson, l. c.)

the back of the middle joint; terminal joint very small, slender, and oval, obliquely porrected, but scarcely reaching to the level of the top of the eyes. *Thorax* robust, oval, hairy. *Abdomen* elongate, rather narrow. *Forewing* large, subtriangular; costal margin much arched, apex slightly rounded; outer margin five-ninths of the length of the costal margin, nearly straight, and very slightly scalloped; inner angle rounded; inner margin nearly straight in both sexes, considerably longer than the outer. *Costal nervure* but slightly swollen at the base, and extending only to the middle of the costa. *Subcostal nervure* with its branches free; the first and second arising close together before the anterior extremity of the discoidal cell, and uniting with the costa far beyond the extremity of the costal nervure; third branch arising half way between the cell and the tip; fourth branch arising at a little distance beyond the third, extending to the tip of the wing; the terminal part of the nervure extending below the tip. *Upper disco-cellular nervure* very short and oblique, arising at about two-fifths of the length of the wing (at the tip of the little dark brown tooth on the inside of the fulvous bar in *N. hilda*, which in fact forms the boundary of the discoidal cell). *Middle disco-cellular* rather longer, transverse. *Lower disco-cellular* much longer, more oblique, and slightly curved, uniting with the third branch of the median nervure; closing the discoidal cell almost in a right angle, this third branch being angulated at the point of junction, which is at the same distance from the origin of the third branch as exists between the first and second branches. *Hindwing* nearly semicircular, the outer angle rounded; costal margin much arched; outer margin slightly scalloped. The nervures arranged as in *Orinoma*, the discoidal cell not extending more than two-fifths of the length of the wing, and closed by a slightly curved lower disco-cellular nervure, united to the median nervure at the origin of its third branch. *Forelegs* of the *MALE* small, moderately feathered, the divisions being of nearly equal length and thickness. *Femur hindlegs* long and strong, scaly, with very few hairs, *tibia* nearly as long as the femur, with two rows of small spines beneath; *tibial spurs* long and very acute; *tarsus* with several rows of short spines beneath and at the sides. *Claws* strong, acute, simple, and very much curved. *Patencychia* minute, bifid."

"*N. hilda*, the type of the genus, might easily, from its general appearance and colouring, be mistaken for one of the *Mo phina*, but its hairy palpi and the arrangement of the nervures of the wings refer it to the present subfamily, from most of which it is distinguished by the slightly swollen base of the nervures of the forewing, its large size, and peculiar style of markings" (*Westwood*, l c)

Key to the Indian Species of *Neorina*.

- A. A prominent band crossing the forewing
- a. Of moderate size (under five inches in expanse) the band yellow, hindwing rounded
116 *N. HILDA*, Sikkim, Assam
 - b. Of large size (over five inches in expanse in Indian specimens), the band almost white, hindwing with a distinct tail
117 *N. KRISHNA*, Cackar, Assam, Java.
 - c. Of smaller size (about three inches in expanse); with a complete series of ocelli on both wings, on upper and undersides
118 *N. MARGARITA*, Sikkim.

The latter species, *N. margarita*, is only tentatively placed here; it was placed by the describer, Mr. H J Elwes, as *Lethe* (?), and it probably is generically distinct from both *Neorina* and *Lethe*, but in the absence of specimens we can give no positive opinion, nor can we assign to it a place among the *Lethes* for the same reason.

Only one other species in the genus has been described, *N. lowii*, from Sumatra and Borneo. This genus contains the largest and perhaps most striking species of the subfamily *Satyriinae* that occur in India.

116. *Neorina hilda*, Westwood.

N. hilda, Westwood, Gen D L, p. 370, pl. lxx, fig. 2 (1851), male.

HABITAT: N.-E. India (Sikkim and Sibsagat).

EXPANSE: 4.6 to 4.8 inches.

DESCRIPTION: MALE: UPPERSIDE, velvety blackish brown. *Forewing* with a transverse yellow macular band from before the middle of the costa to the hinder angle, and passing just at

the outer edge of the short discoidal cell; a large black round somewhat obscure subapical spot with a minute white pupil; a white spot on the upper edge of the large black spot (with a smaller one above it), and a smaller one on its lower edge, and two indistinct dark submarginal sinuous lines. *Cilia* dark brown, paler towards the inner angle. *Hindwing* with the apical margin yellow, in continuation of the transverse band of the forewing; the rest of the outer margin irrorated with yellow scales; two indistinct sinuous submarginal lines of a darker brown colour; the nervules and a spot between each pair along the margin brown, owing to the absence of the yellow irrorations. *Cilia* pale yellow. **UNDERSIDE** paler and brighter brown. *Forewing* with the yellow macula band of the upperside broader and paler; two dark sinuous submarginal lines, and irrorated with lilac within the inner one towards the apex; a prominent black ocellus between the discoidal nervules, minutely pupilled with white, and narrowly ringed with yellow and dark brown, with two prominent white spots above, and two below, sometimes narrowly ringed with dark brown. *Hindwing* with two dark irregular indistinct subbasal lines, a prominent ocellus between the subcostal nervules as on the forewing. The abdominal margin irrorated with yellow extending into and slightly beyond the cell, the irroration more dense at the anal angle; a submarginal band of lilac irrorations most pronounced towards the apex and anal angle, broadest and most diffused in the middle; four small bluish submarginal spots, the fourth developed as an ocellus, and two dark sinuous submarginal lines; the outer angle yellow as on upperside. The **FEMALE** differs only in the abdomen being shorter, and the forelegs clothed with short hairs. The markings of the wings are identical with those of the male.

Sikkim and Assam are the only localities from which we have received this species.

117 *Neorina crishna*, Westwood. (PLATE XIV, FIG 34 ♀).

Cylio crishna, Westwood, Gen D L, p 361 (1851), male, *Neorina crishna*, Butler, Cat Lep B M., Satyrda, p 111, n 2 (1868).

HABITAT: N-E India, Java.

EXPANSE: 3.75 (*Westwood*), 5.3 to 5.8 inches.

DESCRIPTION: "MALE; *Forewing* scarcely angulate below the apex. *Hindwing* caudate in the middle. **UPPERSIDE**, both wings fuscous. *Forewing* with a broad oblique yellowish white band from the middle of the costa to the hinder angle, including a black mark at the extremity of the discoidal cell; a large black subapical ocellus with a minute white pupil, and two white spots circled externally with yellowish [above it]. *Hindwing* with the apex whitish; two ocelli towards the anal angle; both wings with a submarginal wavy yellowish streak. **UNDERSIDE** similar, with the subapical ocellus of the *forewing* minute. *Hindwing* with an ocellus near the apex, and two minute ocelli towards the anal angle." (*Westwood*, l c)

The species which we have called *N. crishna* differs from the original description translated above in the following points. On the **UPPERSIDE** of the *hindwing* there is no trace of an ocellus in some specimens, and in others there is only one towards the anal angle, which shows through by transparency very indistinctly from the underside. On the **UNDERSIDE** of the *forewing* the subapical ocellus is large not minute, black, pupilled with white, with a yellow and then a narrow black ring. The *hindwing* has a subapical ocellus as in the forewing, but with the yellow iris dilated at that portion of its circumference directed towards the base of the wing; a somewhat smaller but still large subanal ocellus between the two lower median nervules, and between these two ocelli there are three other much smaller ones, one between each pair of the nervules, their violet centres somewhat blured; these ocelli are sometimes obsolescent, and only represented by suffused violet dots. Both wings with two submarginal dark wavy lines, the area within the inner one and along its outer margin irrorated with violet scales, which in the *hindwing* extend up the abdominal margin. There is also an irroration of yellowish scales just beyond and below the discoidal cell. The **FEMALE** is identical with the male in markings, but can be known by its shorter abdomen, and the forelegs clothed with short hairs.

The great difference in size between the species originally described by Westwood and those referred to above, as well as the notable differences in the ocellation, suggest a doubt as to whether the above identification is correct. Westwood's species is described from Java and

North India, but we know of nothing in North India that answers to it. If it should turn out that the *N. crissina* of Westwood is really confined to Java, a new name would have to be given to the Indian species here described.

Mr Wood-Mason took numerous specimens on Nemotha, 3,300 feet elevation, in Caccar, in September and October; and there are specimens in the Indian Museum, Calcutta, from Cherra Punji, Assam, and in Major Marshall's collection from Shillong. A female specimen from Cherra Punji is figured, and shews the upper and undersides.

118 *Neorina margarita*, Elwes.

Lethe (?) *margarita*, Elwes, Proc. Zool. Soc. Lond., 1882, p. 405, pl. xxv, fig. 1, male.

HABITAT: Sikkim.

EXPANSE: 3.1 [3.4 in the plate] inches.

DESCRIPTION: "MALE. Colour hair brown, paler on underside. [Forewing] with a transverse pale fawn-coloured band beyond the discoidal cell, well defined on underside and fainter above; a similar band near the margin of the wing at an acute angle to the first, enclosing five white-pupilled ocelli in a straight row, [distinct on underside, indistinct on upperside]; on the exterior margin are two narrow lines of similar colour to the bands [on both wings on both sides]. Pattern of hindwing on the underside somewhat similar, but the transverse band is rather curved outwards, and there is a large ocellus between the first and second subcostal nervules. The ocellus at anal angle has a double pupil. The bands on the hindwing do not show on the upperside, and the ocelli are indistinct. Antennæ in size and shape like those of *Neorina hilda*, rufous with reddish tip. Palpi longer, more pointed, and less hairy than in *N. hilda*. Abdomen and legs rather shorter." (Elwes, l. c.)

UPPERSIDE. Both wings hair brown, with two narrow pale fawn coloured bands on the outer margin. Forewing with a pale fawn coloured band beyond the cell, and a submarginal row of indistinct ocelli fading into fawn coloured spots near the costa. Hindwing with five submarginal black spots, the two lower pupilled with white and tinged with yellow, brightest on the outer edge, the three upper blind, and the iris disappearing towards the costa. UNDERSIDE paler, the fawn-coloured marginal lines as on upperside. Forewing with a submarginal fawn-coloured band bearing five perfect ocelli, and the transverse fawn coloured band of the upperside but wider and more distinct. Hindwing with a similar submarginal band, also bearing five perfect ocelli, the lowest bipupilled, a separate very large ocellus between the subcostal nervules, and a straight fawn coloured band from the costa crossing the end of the cell, but not passing the submedian nervure or reaching the lowest ocellus. (Described from the figure).

Captain Elwes, in describing this species, writes: "A single male specimen of this fine and distinct species was in the collection [from Sikkim], and appears very distinct from anything which has been described. At first sight it seems most nearly allied to *N. hilda*, but does not quite agree with that species in venation. Neither does it agree exactly with either *Zophoessa* or *Lethe*, though it somewhat resembles *L. lunaris*, Butler, in markings. Until we know more of the insect, it will be best to leave it in the genus *Lethe*, which requires careful revision, as the species at present comprised in it are very varied."

In the absence of specimens for examination we are unable to assign a place for this insect in the genus *Lethe*, which embraces forms showing several distinctive structural features. We have, therefore, provisionally placed it with *Neorina* immediately preceding *Lethe*.

Genus 10 — *LETHE*, Hübner (PLATES X AND XI).

Lethe Hübner, Verz. bek. Schmett., p. 56 (1816). *Debis*, Westwood, Gen. D. L., p. 358 (1851).

"BODY, rather small; WINGS large; hindwing generally angulated in the middle, with a row of large ocelli. HEAD, rather small, scarcely tufted in front. Eyes hairy, prominent, especially in the males. Palpi rather elongated, elevated obliquely as high as, or higher than, the level of the top of the eyes, and projected to a short distance in front of the face; the long middle joint without any tuft on the back, clothed in front with moderately short fine hairs, not forming a close mass; terminal joint very short and slender. Antennæ not, or