

scarcely, half the length of the forewing, very slender; terminated by a slender gradually formed club, composed of very short joints. *Thorax* very short, thick, and hairy. *Abdomen* small. *FOREWING* triangular-ovate; costal margin strongly curved; apex rounded; outer margin straight, or but little emarginate, about three-fifths of the length of the anterior margin; inner margin nearly straight, about as long as the outer margin. *Costal* nervure dilated at the base, extending rather beyond the middle of the costa. *Subcostal* nervure with its first and second branches arising before the anterior extremity of the discoidal cell, the third and fourth beyond it, about the same distance apart as between the origin of the second and third branches, and of the fourth branch and the tip of the wing. *Upper disco-cellular* very minute, oblique; *middle disco-cellular* much longer, curved at the extremity, being directed rather outwards; *lower disco-cellular* longer than the middle one, nearly straight, also directed obliquely outwards, uniting with the third branch of the median nervure at about the same distance from its origin as exists between the first and second branches; the third branch being considerably angulated at the point of junction, whereby the discoidal cell is closed somewhat acutely rather beyond the middle of the wing. *HINDWING* subovate, more or less scalloped along the outer margin, which is generally deeply angulated, or rather shortly tailed at the extremity of the third branch of the median nervure. *Precostal* nervure curved, the tip directed outwards. *Costal* nervure extending to about two-thirds of the length of the costa. First branch of the subcostal nervure arising at a moderate distance from its base, the extremity extending to the outer angle of the wing. *Upper and lower disco-cellular* nervules oblique, curved, of nearly equal length; the upper one arising at a short distance from the origin of the first branch of the subcostal nervure; the lower one uniting with the median nervure close to, or exactly at, the origin of the third branch, closing the discoidal cell in an acute point. *FORELEGS* very minute, and thickly clothed with long silky hairs. The tarsus slender, as long as the tibia, and destitute of joints or claws. *Forelegs* of the FEMALE rather longer than those of the male, slender, scaly, destitute of hairs, of nearly equal thickness throughout; the tarsal articulations concealed by scales; obliquely truncate at the tip, where are a few short spines, indicating the very short terminal joints. *MIDDLE and HINDLEGS* rather short, slender, scaly; *tibia* but very slightly furnished with a few short spines; *tibial spurs* rather long; *tarsi* nearly cylindrical; basal joint half the length of the tarsus, with but a few very short spines on the under side. *CLAWS* very much curved; *paronychii* very slender."

"The hairy eyes, slender elongated palpi, dilated base of the costal nervure of the forewing, the middle and lower disco-cellular nervules of nearly equal length; and the acute termination of the discoidal cell of the hindwing are the chief characters of this genus." (Westwood, l.c.)

This is an Indo-Malayan genus. The species are very numerous, and are widely spread, though, except in East and South India, they seem entirely confined to the hilly regions. They are for the most part brown on the upperside, often with a prominent white bar on the forewing; the underside being always ocellated, often richly variegated, though as a rule not so richly as in *Zophessa*; and are of rather small size, seldom exceeding three inches in expanse. They are chiefly found in forests and shady places amongst the undergrowth, settling on or near the ground, or upon dead leaves.

There are thirty-five species recorded from India. By far the largest number are found in the Eastern Himalayas and Assam. One species only, *L. euryopa*, seems very widely spread, as it occurs throughout India, Malaya, Java and China. *L. tobria* also has a wide range, as it is found all along the Himalayas and on our eastern frontier, in Burma, Tenasserim and again in Java. The others are local and many of them rare. The genus requires revision, but the material at our command is not yet sufficient for the purpose; of the thirty-five species recorded we have specimens of only twenty-five, and even of these we have in many instances only one or two, representing a single sex.

The genus is divisible into two main groups, in the first of which the male insects possess sexual glands, and tufts of hair on the wings, showing affinity in this point with *Calites* and *Mycalesis*; in the second group the male insects lack these characters, showing affinity with *Zophessa* and *Neope*. The second group is further divisible into two subgroups, by the shape of the discoidal cell in the hindwing.

Key to the Groups of Lethe.

- A. Males with a long narrow patch of differently formed scales from those of the rest of the wing, placed on the upperside of the forewing below the median nervule.
- B. Males without sexual glands and tufts on either wing.
 - a. The apex of the cell in the hindwing at the origin of the second median nervule.
 - b. The apex of the cell in the hindwing beyond the origin of the second median nervule.
- C. White with rufous brown markings.*

The differentiation of the sexes in this genus, as regards colour and markings, is considerable and varied, but in most cases the general pattern and style of colouration of the underside of the hindwing is identical in both sexes. The usual difference consists in the presence in the female of a conspicuous white bar or series of spots in the forewing, which in the male is absent; but this is not universal; in some the colouration of the upperside also differs, while in three at least, *L. rohria*, *L. verma* and *L. masoni*, the white bar is found in both sexes. In the first species, *L. scanda*, the sexes are of totally different colours on the upperside, the male being indigo-blue, and the female dark brown, neither sex having white markings. In *L. latiaris*, the female has a narrow pale ochreous fascia on the forewing, which is wanting in the male; and in the other four species of the first group, the female has white markings, which are altogether absent in the males.

The first group contains six Indian species, and is further divisible into three subgroups based on the different nature and position of these sexual tufts, and these subgroups correspond exactly with the geographical distribution of the insects; three species from North-East India have a conspicuous tuft of hairs on the hindwing, in addition to the narrow raised patch near the inner margin of the forewing; one species from Burma and Malaya has the conspicuous tuft of hairs on the hindwing, but in a different position; and, lastly, two species from Ceylon lack the tuft on the hindwing altogether. The principal characters of the species of the first group, found within Indian limits, are given in the key below.

Key to the Indian species of Lethe.*First Group.*

- A. Males with a long narrow patch of differently formed scales from those of the rest of the wing, placed on the upperside of the forewing below the median nervule.
 - a. The narrow patch of raised scales placed on either side of the middle of the submedian nervule.
 - a¹. Males with a conspicuous tuft of long black hairs placed upon a glandular patch on the upperside of the hindwing immediately below the cell, and on the base of the second median nervule; the apex of the cell beyond the origin of the second median nervule. The ocelli on underside of hindwing not disintegrated, but some of the ocelli bearing several white dots besides the pupil.
 - a². Male, upperside rich deep indigo-blue, paler on the margins. Female dark brown, with only two indistinct yellowish sub-apical marks on the upperside of the forewing.
 - 119. *L. SCANDA*, Sikkim.
 - a³. Male, upperside rich rufous brown, crossed at the middle of the forewing by a band of darker brown. Female, with the darker brown band outwardly margined by a series of pure white spots.
 - 120. *L. BHAIRAVA*, Sikkim.
 - a⁴. Male, upperside pale dull brown; forewing without markings. Female, similar in colouration, but the forewing crossed by a transverse oblique ochreous band.
 - 121. *L. LATIARIS*, N.-E. India, Burma.
 - a⁵. Males with the tuft of hairs on the hindwing placed between the first and second median nervules. The apex of the cell at the origin of the second median nervule. Ocelli on underside of hindwing disintegrated.
 - 122. *L. MINERVA*, Tenasserim, Malaya.

* The proper position of this species cannot be ascertained in the absence of specimens for examination.

♂. Males with the tuft of hairs on the forewing placed between the first median nervule and submedian nervure. Ocelli on underside of hindwing not disintegrated.

♂¹. Male, upperside dark brown, with a few indistinct markings. Female still dark brown, with a conspicuous white band across the forewing.

123. *L. (Hanipta) SIALA*, Ceylon.

♂². Male unknown. Female, upperside ferruginous-brown, with markings somewhat as in *L. siala*.

124. *L. (Hanipta) DYNASTE*, Ceylon.

The glandular patch of scales on the forewing of the North-Indian species is not very conspicuous, but can easily be detected by careful examination.

119. *Letho scanda*, Moore.

Debis scanda, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 218, n. 451 (1857), male; *Debis nada*, idem, id., n. 452, female.

HABITAT : Sikkim.

EXPANSE : ♂, 2'5 ; ♀, 2'62 inches.

DESCRIPTION : "MALE : UPPERSIDE blackish, glossed with blue ; along the margins pale purplish-blue. *Hindwing* with indistinct submarginal black spots. [There is a conspicuous tuft of black hairs placed on the second median nervule from its origin at the median nervure.] UNDERSIDE deep ferruginous-brown. *Forewing* with a transverse paler band across the discoidal cell, and another across the disc ; a submarginal row of [four] pale ocelli. *Hindwing* with two transverse darker lines, and a submarginal series of six, and a geminated seventh ocellus ; margins pale, with a narrow darker line." "FEMALE : UPPERSIDE dark brown, *Forewing* with two indistinct yellowish subapical marks. *Hindwing* with a row of four small black submarginal spots. UNDERSIDE deep bright ferruginous. *Forewing* with transverse band across discoidal cell, and another across the disc, yellowish ; a submarginal row of pale ocelli. *Hindwing* with two transverse darker lines and a row of submarginal ocelli ; margins pale, with a darker narrow line. *Cilia* white. *Remarks*.—This may possibly be only the female of the preceding species [*L. scanda*]." (Moore, l. c.)

L. scanda is a rare insect, and we have never seen the female. The male is at once distinguished from all the other species of the genus known to us by the upperside being most beautifully glossed with indigo-blue. It has as yet only been found in Sikkim.

120. *Letho bhairava*, Moore.

Debis bhairava, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, n. 217, n. 450 (1857), female; *Debis anyus*, Hewitson, Ex. Butt., vol. iii, *Debis* pl. i, fig. 1 (1862), male.

HABITAT : Sikkim.

EXPANSE : ♂, 2'62 to 2'80 ; ♀, 2'6 inches.

DESCRIPTION : "MALE : UPPERSIDE rufous-brown. *Forewing* crossed at the middle by a band of darker brown. *Hindwing* with a tuft of long hair in the middle, and half way between it and the outer margin, four ocelli, the lower two only with white pupils, the iris indistinct light brown. UNDERSIDE rufous. *Forewing* crossed by three bands of rufous-brown ; one near the base ; one a little beyond it, crossing the cell only ; the third beyond the middle, followed by four nearly blind ocelli, though pupilled with white, with a rufous border above and below. *Hindwing* crossed by two rufous bands, one near the base, the other near the middle (curved), followed by seven ocelli ; the first near the costal margin (largest), the seventh near the anal angle (minute, united to the sixth), all black with white pupils ; the iris rufous-orange, bordered with black, and again by rufous-yellow and rufous-brown ; the outer margin and a line near it brown." (Hewitson, l. c.) "FEMALE : UPPERSIDE olive-brown. *Forewing* with a transverse sharply-defined dusky line, bordered with a series of small white spots, disposed obliquely from beyond the middle of anterior to near posterior margin, one-fourth from the angle ; also a subapical row of four small yellow spots, parallel with exterior margin. *Hindwing* with four submarginal round black spots encircled with pale brown, and medially disposed from near anterior to near anal angle. UNDERSIDE luteous-brown. *Forewing* with

two transverse ferruginous-brown lines, the inner one bifid across discoidal cell, the outer straight, and bordered by the white spots; a submarginal row of four pale ocelli, also an anterior terminal yellow spot. *Hindwing* with two transverse ferruginous-brown lines, and a submarginal row of six ocelli; a narrow dark marginal line to both wings." (Moore, l. c.) "Except in the form of the hindwing, *L. anysis* seems identical with *L. bhattrava*. May it not be the male of that insect?" (Butler, Cat. Lep. B. M., *Satyridæ*, p. 117, n. 22 (1868))

Both sexes of this species appear to be rare.

The next species has somewhat the aspect of *L. hyanua*, especially on the underside, but is larger, and the male has a tuft of hair on the upperside of the hindwing.

121. *Lethe latialis*, Hewitson.

Debis latialis, Hewitson, Ex Butt., vol. iii, *Debis* pl. 1, fig. 4 (1862), female; *Lethe latialis*, Butler, Cat. Lep. B. M., *Satyridæ*, p. 217, n. 23 (1868)

HABITAT: Sylhet, Assam, Khasi Hills, Upper Tenasserim

EXPANSE: 2.0 to 2.7 inches.

DESCRIPTION: "FEMALE: UPPERSIDE yellow-brown. *Forewing* with an indistinct transverse band at the middle, and a small rufous spot near the apex. *Hindwing* with three indistinct blind ocelli [in one specimen all the ocelli of the underside show through indistinctly by transparency on the upperside], the outer margin and a line near it dark brown, the space between the lines yellow. *Cilia* grey. UNDERSIDE light grey or yellow-brown. *Both wings* with the outer margin and a line near it dark brown, with between them a line of yellow. *Forewing* crossed before the middle by two short rufous bands; at the middle by a band of white (its inner border rufous), forming a triangle with a broad grey band, which runs parallel to the outer margin, and incloses four small indistinct ocelli. *Hindwing* crossed before the middle by a straight rufous band; at the middle by a curved band of the same colour, followed by seven ocelli, the first apart from the rest, the sixth and seventh (at the anal angle) in one; all black with white pupils, the disc yellow, margined with dark brown, and again with lilac-white" (Hewitson, l. c.) "MALE, differs in several particulars from the female. *Hindwing* less angulated, with a discal hairy streak above, and the central bands on the UNDERSIDE are placed slightly nearer together." (Butler, l. c.) The *forewing* on the UPPERSIDE is unmarked.

Somewhat rare; it has been taken at Shillong in May.

The next species has the same general aspect as *L. mekasa*, and the female has a bent macular band of pure white spots, as in the females of *L. mekasa* and its allies.

122. *Lethe minerva*, Fabricius

Papilio minerva, Fabricius, Syst. Ent., p. 493 n. 216 (1775); *Papilio asiatica*, Cramer, Pap. Ex., vol. ii, pl. cxvi, figs. E, F (1777), female, *Satyris caunus*, Godart, Enc. Méth., vol. ix, p. 479, n. 7 (1819), *Lethe asiatica*, Butler, Cat. Lep. B. M., *Satyridæ*, p. 118, n. 24 (1868), id., Moore, Proc. Zool. Soc. Lond., 1878, n. 824.

HABITAT: Upper Tenasserim, Sumatra, Java.

EXPANSE: 2.5 inches.

DESCRIPTION: MALE: UPPERSIDE dark brown, with the extreme outer margins of *both wings* and the *cilia* pale brown. *Forewing* with the basal two-thirds thickly clothed with paler brown hairs than the ground-colour, especially on either side of the middle third of the submedian nervure; the ground colour on either side of this nervure, but especially behind it being black. Two or three subapical pale spots. *Hindwing* with the basal area and the costal margin dark brown; the cell and abdominal margin thickly clothed with long paler hairs. Outer margin and disc bright ferruginous. Three oval small black spots in the median and discoidal interspaces, a larger and outwardly diffused spot in the upper discoidal interspace. A marginal orange line bounded on either side by very fine dark lines. A conspicuous oval patch of black scales placed at the base of the first median interspace, with a tuft of long hairs lying over it. UNDERSIDE ochreous, suffused darker on the disc and at the outer angle

of the forewing. A common subbasal brown line commencing before the apex of the cell in the forewing, and ending near the middle of the abdominal margin of the hindwing; the area beyond it paler; a discal very irregular similar line across both wings. *Forewing* with a submarginal series of four inconspicuous rudimentary ocelli placed on a violet ground, which is continued to the apex; a series of three minute dots with paler borders placed transversely in the middle of the cell. *Hindwing* with a submarginal series of seven indistinct yellow ocelli, the two anal ones run together, with black centres broken up into numerous minute dots; marginal lines to both wings as on upperside. FEMALE differs on the upperside in having all the ground-colour except the apex and outer margin of the forewing, bright ferruginous. *Forewing*, with the subapical spots pure white, and with a bent macular band of pure white spots across the disc. The anterior spot elongate and somewhat quadrate, reaching from the costa to the lower discoidal nervule; a large rounded spot in the second median interspace; a smaller one in the interspace below, and the last, double the size of the one above it, in the space below the first median nervule. *Hindwing* with a fifth diffused black spot in the space above the subcostal nervule. UNDERSIDE paler than in the male, with a white band across the disc of the forewing, outwardly sharply angled, and inwardly clearly defined with a dark brown line.

Godart's description of *Satyrus caunus** is appended for reference. It is not known why Messrs. Moore and Butler have rejected the older Fabrician name for this species.

Captain C. T. Bingham took this species in the Donat Range and Meplay in January, at Meplay in January and February, in the Thoangyeen Forests in March and May, and at Houndraw in November; and Limboig took it at Alsown probably in the cold weather.

The next two species are closely allied, and have the same general aspect as *L. daretis* and *L. drypetis* of the second group; and having, in the female only, a conspicuous white bar on the forewing. Moore, in his "Lepidoptera of Ceylon," page 18, has placed them in a distinct genus from *Lethe*, which he characterises as follows:—Genus HANIPHA. "Wings similar in form and venation to *Lethe*, but the forewing comparatively shorter and of less breadth, and the hindwing longer. MALE with a conspicuous lengthened tuft of short hairs transversely covering a sericeous patch of compact raised scales between the first median nervule and submedian nervure; first median nervule much curved. Type, *H. sihala*," (Moore, l. c.)

123. *Lethe sihala*. Moore.

L. sihala, Moore, Proc. Zool. Soc. Lond., 1872, p. 555, *Hanipha sihala*, id. Lep. Cey., p. 19, pl. viii, figs 2, 2b, male, 2a, female (1880).

HABITAT: Ceylon.

EXPANSE: ♂, 2.25; ♀, 2.50 inches.

DESCRIPTION: MALE: UPPERSIDE dark olive-brown. *Forewing* with two very indistinct or obsolete dusky-white apical spots, and a longitudinal tuft of long blackish-brown hairs between first median nervule and submedian nervure. *Hindwing* with a submarginal series of indistinct black spots. UNDERSIDE, basal area dark brown, apical area pale brown, being divided on the forewing by an oblique discal chalybeate-purple streak, and on the hindwing by a discal medially-angled dark brown line; a submarginal series of four very indistinct ocelli on forewing formed by a central black dot, and two chalybeate rings; a submarginal series of six larger ocelli on hindwing, formed by a black spot with a single white central dot and fulvous outer ring, each being encircled by a purple border; both wings with a dark brown purple-bordered subbasal transverse line. FEMALE: UPPERSIDE brown, basal area paler. *Forewing* with a broad oblique discal white band and a terminal spot near posterior angle; a small

* *Satyrus caunus*, Godart. DESCRIPTION: MALE, UPPERSIDE dark brown, with a little tuft of black hairs on the disc of hindwing; and an ashy spot, elliptic longitudinal, surrounded with black, towards the middle of the inner margin of the forewing. FEMALE: UPPERSIDE dark tawny, terminated on the forewing by a blackish space, triangular and very large, on which there is a transverse white macular band bent hindwards, and followed by a white dot which faces the apex. Hindwing has parallel to the outer margin a row of four large black eye-like spots. These spots are also present in the male, but of a darker colour. BOTH SEXES: UNDERSIDE reddish-grey, with three transverse ferruginous lines, of which the second and third are more undulate than the anterior one, and enclosing on the hindwing six yellowish contiguous ocelli, having the iris of a pearly-grey, the pupil black and sprinkled with dots, which appear as if gilded. On the forewing these same lines enclose some indistinct ocellated dots. Body brown; antennae reddish. (Godart, Enc. Meth., vol. ix, p. 479, n. 7 (1819).)

white apical spot and two indistinct streaks below it; an indistinct series of blackish submarginal spots. *Hindwing* with a submarginal series of five black spots, the middle spot very small; the upper spots with broad irregular whitish-brown borders, the two lower with pale brown rings and a white central dot. *UNDER-IDE* brown at base; outer borders paler. *Forewing* with oblique band as above, and five submarginal spots. *Hindwing* as in male; subbasal transverse line purple bordered, and the irregular medial line with whitish-brown outer border. The female of this species is much like that of *L. dynaste*, but it differs in having a narrower oblique discal band, and more defined subapical white and black spots on the forewing, and the hindwing has paler interspaces between the outer series of spots. The underside also differs in the forewing having five submarginal ringlet spots instead of four, and the hindwing has all the spots smaller, the costal spot and the second anal being one-third less in size." (Moore, l. c. in Lep. Cey.)

"Rare and very local; observed only in two places in forest land near Newera Eliya. Habits similar to those of *L. drypetes*" (Hutchison). We have never seen this Butterfly.

124 *Lethe dynaste*, Hewitson

Debis dynaste Hewitson, Ex Butt., vol. iii. *Debis* pl. 11, figs. 9 to (1863), female; *Lethe dynaste*, Butler, Cat. Lep. B. M., *Satyridæ*, p. 115, n. 10 (1868), *Hanipha dynaste* Moore, Lep. Cey., p. 20 pl. 12, figs. 1, 12 (1880), female.

HABITAT: Ceylon

EXPANSE: 2.55 inches.

DESCRIPTION: "FEMALE UPSERSIDE rufous-brown. *Forewing* dark brown, except near the base, crossed at the middle by a broad equal band of white, and a solitary white spot, two indistinct white spots near the apex [the lower one with a rounded dark spot contiguous to it internally]. *Hindwing* with a large bilobed spot near the apex, followed by three black blind ocelli [one [the first] minute]. [The apical spot is on a yellowish ground; internal to it is a yellowish spot; and an indistinct yellowish band crosses the wing from just beyond the extremity of the cell, where the third median nervule is given off, to the first median nervule. The *forewing* has a submarginal black line, and the *hindwing* two similar lines]. *UNDERSIDE* rufous and grey-brown. *Forewing* with the white band continuous to the anal angle, with, between it and the apex, a band of three blind ocelli [placed on a lilac ground reaching to the apex where it expands and coalesces with a lilac submarginal line, which latter is bordered on both sides with a black line. A violet band from the subcostal nervule crosses the middle of the cell, and is continued across the wing till it meets the band on the hindwing. It is bordered on both sides with a dark brown line]. *Hindwing* with a band of six perfect ocelli, the first and fifth large, the other four small and somewhat misshapen, each with two or three white dots." (Hewitson, l. c.) A violet line edged internally only with dark brown, crosses the wing before the middle in continuation of that on the forewing; beyond the middle of the wing the brown ground-colour deepens and terminates abruptly in an irregular line greatly extended above the third median nervule, succeeded by a grey band above the discoidal nervule, and a yellow band below from the third median nervule, the usual yellow and violet submarginal lines, separated by and edged with dark brown; the violet line wide at apex where it extends beyond the brown line up to the ocelli; the ocelli ringed with yellow, then brown, and then incompletely with grey. MALE unknown.

We have never seen a specimen of this insect, the additions to the description have been made from Hewitson's figures of the species.

The second group contains a very large number of species, and presents considerable variations in the outline of the wings, but the transition from the elongate forewing and highly caudate hindwing of *L. sinorix* to the short broad forewing and rounded, scarcely caudate, hindwing of *L. sidonis*, is so gradual that the separation into subgroups on this point only would be impossible. The only structural variation in this group of any note is in the position of the apex of the cell in the hindwing. The differentiation of the sexes varies widely.

Key to the Indian species of *Lethæ*.

Second Group.

B. Males without sexual glands and tufts on either wing.

a. The apex of the cell in the hindwing at the origin of the second median nervule.

a¹. Males with the forewing narrow and elongate; the outer margin concave. Ocelli on underside of hindwing *not* disintegrated.

a². Hindwing with a long narrow tail. Underside ground-colour nearly uniform, with two distinct narrow dark transverse lines, the inner one not outwardly bordered with lilac.

a³. With the ocelli on the upperside of the hindwing placed on a ferruginous ground.

125. *L. SINORIX*, Assam.

a⁴. With the ocelli on the upperside of the hindwing not on a ferruginous ground.

126. *L. KANSA*, Sikkim, Assam, Burma.

a⁵. Hindwing with the tail shorter and more blunt. Underside with the ground-colour paler externally, and darker on the disc; the inner transverse line distinctly bordered with lilac on its outer edge.

a⁶. Upperside of forewing uniform brown.

a⁷. Male, upperside, hindwing with the ocelli placed on a ferruginous ground.

127. *L. SAMIO*, East India.

128. *L. PURANA*, Habitat unknown.*

a⁸. Upperside of forewing with the outer area abruptly paler.

a⁹. Male, upperside, hindwing with five blind ocelli; underside, forewing with five ocelli.

129. *L. VINDHVA*, Assam, Tenasserim.

130. *L. DOLOPES*,† Sikkim.

a¹⁰. Male, upperside, hindwing with four blind ocelli; underside, forewing with six ocelli.

131. *L. ALBERTA*, Benares, Tenasserim.

a¹¹. Males with the forewing somewhat broader and less elongate; the outer margin less concave; tail short and inconspicuous. Ocelli on underside of hindwing disintegrated. *FEMALE* with the white band angulate, macular.

a¹². The dark median fascia on the underside of the hindwing slightly angled outwardly at its middle.

132. *L. MEKASA*, N.-E. India, Burma.

a¹³. The dark median fascia on the underside of the hindwing sharply angled outwardly at its middle, being produced into a conspicuous projection outwards.

a¹⁴. Male with the outer margin of the upperside of the hindwing bright ferruginous. Female with the base of both wings on the upperside bright ferruginous.

133. *L. DISTANS*, Sikkim.

a¹⁵. Male with the upperside of the hindwing entirely deep brown. Female with the base of both wings on the upperside dull ferruginous.

134. *L. CHANDICA*, N.-E. India, Burma.

Forewing short and broad; outer margin slightly concave; hindwing, tail somewhat long; ocelli on underside disintegrated. *FEMALE* with the white band straight.

a¹⁶. With a prominent single straight violet-white streak crossing the subbasal area of both wings on the underside.

135. *L. EUROPA*, India, Burma, Andamans.

In the description of this species neither sex nor habitat are given. Butler remarks (Cat. Lep. B. M. *Satyrinae*, p. 118): "Is not this the female of *L. samio*?" The description of *L. purana* is apparently that of a female.

† The specimen described is a female. It seems probable that it is the opposite sex of *L. vindhya*.

- ♂². Male, upperside, forewing unmarked. Female with the discal white band on the upperside of the forewing reaching the first median nervule.
 136 I. DRETTIS, Ceylon.
 137 L. TODARA S India
- c³. Male, upperside, forewing with three small ochreous costal spots, the outer two touching. Female with the discal band on upperside of forewing reaching the submedian nervule; hindwing, upperside, with the blind ocelli having distinct irides.
 138 L. DARETIS, Ceylon
- d³. Male, upperside, forewing with the spots larger, and an additional subtypical spot beyond and below the outer ones. Female, hindwing with a few dark spots on upperside, with no distinct irides.
 139 L. DARTA, Himalayas Assam Burma
- c². Male, upperside, forewing with another additional spot near the margin between the lower median nervules. Female with the discal band on upperside of forewing broken up into three large quadrate spots.
 140 L. NEELGHERRIENSIS S India, Ceylon
- d¹. Forewing short and broad. outer margin straight or convex, hindwing with the tail short and inconspicuous.
 a². Ocelli on underside of hindwing disintegrated.
 141 L. SATYAVATI, Assam
- ♂³. Ocelli on underside of hindwing not disintegrated.
 a³. Male, underside forewing with two brown lines crossing the cell. Female with a conspicuous straight discal white band across the upperside of the forewing.
 a⁴. Underside not tinted with lilac, the ocelli on a pale ground.
 142 L. MYNABIA, N W Himalayas
 ♂⁴. Underside tinted with lilac the ocelli on a shining lilac ground. Female unknown
- 143 I. DINABAN Sikkim
- ♂⁵. Male underside, forewing with three brown lines crossing the cell. Female unknown.
 144 L. SERBONIA, Sikkim
- c⁴. Male and female upperside, forewing with a conspicuous even curved white band across the disc.
 145 L. KORNIA, Himalayas to Tenasserim

125 *Lethe sinorix*. Hewitson

Delis sinorix, Hewitson, Ex Butt, vol iii. *Delis* pl iii figs 19, 20 (1863), male

HABITAT. Cherra Punji and Sibsagar, Assam, Dafia Hills

EXPANSE 2.6 to 3.0 inches

DESCRIPTION. "MALE. UPPERSIDE rufous-brown. Forewing with three pale yellow spots near the apex. Hindwing with a broad rufous band near the outer margin, encircling four round black spots. the second spot large, the fourth small. [In some specimens there is a fifth spot placed between the third median and discoidal nervules, and a sixth placed in the interspace behind the first median nervule.] UNDERSIDE rufous. Both wings crossed by two continuous linear bands of rufous-brown. Forewing with the apex lilac-white, the three yellow spots as above, and associated with them two small ocelli. Hindwing with a band of six small ocelli, the third out of line [sometimes entirely absent], each with white pupil and rufous iris bordered with brown, and again with silvery white [the anal one is usually bipupilled] a triangular white spot at the anal angle. a submarginal line of lilac white, the margin rufous, bordered on both sides with black." {Hewitson, l. c.} THE FEMALE is unknown.

We have no precise record of the capture of this species. It is closely allied to *L. Anusa*, and seems confined to our eastern frontier.

126. *Lethe kansa*, Moore.*

Debis kansa, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 4, p. 220, n. 456 (1857).

HABITAT: Sikkim, Manipur, Sibsagar, Upper Tenasserim.

EXPANSE: 2.75 to 3.00 inches.

DESCRIPTION: "MALE: UPPERSIDE glossy olive-brown. *Hindwing* with caudal appendage somewhat long; marginal row of blackish spots indistinct. UNDERSIDE drab, with two transverse dark lines. *Forewing* with four pale ocelli. *Hindwing* with six small black ocelli, encircled by a yellow, brown, and then a lavender-coloured line; the sixth minute and geminated." (Moore, l. c.)

Moore's description of the female, which is appended below,* is manifestly erroneous, and appears to have been taken from a specimen of *L. vindhya*, Felder.

The MALE on the UPPERSIDE of the *forewing* frequently has three submarginal ochreous spots, the first placed in the interspace above the termination of the costal nervure, the other two in the interspaces below the second discoidal and third median nervules, one in each. In the *hindwing* the submarginal spots are very distinct, black, rounded, and enclosed each in an ochreous ring; the first and fifth are subequal in size; the second the largest, but only a little larger than the fourth; the third the smallest of all. The usual marginal fine lines. On the UNDERSIDE the ground-colour is usually glossed with violet; the *forewing* in many specimens has a short dark brown transverse bar across the middle of the cell; and the disco-cellular nervules in both wings defined with dark brown. The FEMALE differs from the male in the wings being broader and the markings more distinct, especially the ochreous spots on the *forewing*, and it has in addition two or three ochreous subcostal spots as the outer edge of the transverse line which partially shows through from the underside; the outer dark line on the UNDERSIDE of the *hindwing* is more conspicuously dilated into a round spot in the middle of the interspace between the third median and discoidal nervules than in the male.

Messrs. Otto Moller and de Nicéville have taken both sexes of this species in the Sikkim Hills at low elevations in October. Mr. A. O. Hume took it in the eastern hills of Manipur in May, and Captain C. T. Bingham in the Thoungyen forests in March.

127. *Lethe samio*, Doubleday, Hewitson.

Debis samio, Doubleday, Hewitson, Gen. D. L., p. 360, n. 2, pl. 121, fig. 3 (1851),* male.

HABITAT: East India.

EXPANSE: 2.7 inches.

DESCRIPTION: MALE: UPPERSIDE, both wings dark rich brown. *Forewing* narrow, produced; outer margin slightly concave, without spots or markings. *Hindwing* with a broad rufous band near the outer margin, bearing four round black spots, the third very small and out of line, being placed close to the outer margin. A fifth spot between the first and second median nervules is black, oval, and has an outer ferruginous ring. An indistinct submarginal black line. (Described from the figure in the Gen. D. L. The underside is not shown, but some hints regarding it can be gathered from the description of *L. distans*, p. 148.)

On the upperside the *forewing* agrees exactly with *L. mekara*, but differs from *L. sinorix* in being quite immaculate. The *hindwing* differs from both *L. mekara* and *L. sinorix* in having the rufous band much brighter in colour, more sharply defined, and not extending to the fifth spot, which is separated from it by the ground-colour.

We have not seen a specimen of this species, nor, as far as we are aware, has any record of the capture of a second specimen ever been published. See remarks on the following species; also *L. distans*, p. 148.

* *Debis kansa*. "FEMALE: UPPERSIDE dark brown. *Forewing* with darker line across the disc. *Hindwing* with five large black spots, narrowly encircled with red, from anterior angle. UNDERSIDE brown, darker within the outer transverse line; the inner line within, about the apex of *forewing*, glossed with lavender-colour; ocelli pale. *Hindwing* with the anterior first and fifth ocellus large, that at the anal angle geminated, all encircled with a glossy lavender band." (Moore, Cat. Lep. E. I. C., vol. 2, p. 220, n. 456 (1857).

128 *Lethe purana*, Felder.

Debis purana, Felder, Wien. Ent. Monatsch., vol. iii, p. 401, n. 43 (1859); *Lethe purana*, Butler, Cat. Lep. B. M., Satyridæ, p. 118, n. 28 (1868).

HABITAT: Not given.

EXPANSE: Not given.

DESCRIPTION: "UPPERSIDE fulvous-brown. Forewing subfalcate, with the apex subtruncate, with an external nearly straight macular fascia, diffused outwardly, and an adjacent obsolete spot, white. Hindwing extended, subcaudate externally; the cilia white at the tips, with an angulate discal striga, and an adjacent obsolete spot, swarthy; an external band pale fulvescent, with four large spots uniform, each spot (the third excepted) large, rounded, marked with swarthy, with a round black ocellus circled with yellow, including a white spot near the anal angle; a marginal fulvescent line. UNDERSIDE pale brown, shining with lilac. Forewing paler outwardly, with a subbasal striga, terminated externally with lilac powdering, and another oblique discal, broadly bordered with white externally, ferruginous swarthy; four obsolete exterior ocelli whitish-brown, with a swarthy pupil marked with white, margined with brown, and placed on a white ground tinted with lilac; with two marginal swarthy lines. Hindwing with a straight submedian striga, margined externally with lilac; a discal litura and another striga, angulate, corresponding to the upperside, swarthy; six exterior black ocelli arranged in a bent line, broadly circled with yellow, and margined with swarthy, including a white drop (geminate in the anal one), each placed upon a whitish lilac ground; an anal spot of the same colour, and two swarthy marginal lines."

"*D. purana* is allied to *D. samio*, Doubleday, but is sufficiently distinguished from it by the white band of the forewing, the different position and formation of the ocelli, the more angular hindwing and the bands being entirely differently formed." (Felder, l. c.) "Is not this the female of *L. samio*?" (Butler, l. c.) The description is apparently that of a female, and it is not improbable that Butler's suggestion is a correct one. We have never seen a specimen of this species, nor has any other record of its capture been published to our knowledge.

129. *Lethe vindhya*, Felder.

Debis vindhya, Felder, Wien. Ent. Monatsch., vol. iii, p. 402, n. 44 (1859).

HABITAT: Assam; Donat Range, Upper Tenasserim.

EXPANSE: ♂, 3.6 to 3.8 inches.

DESCRIPTION: "MALE: UPPERSIDE ferruginous-swarthy, with an exterior obsolete swarthy line. Forewing subfalcate, the outer border paler. Hindwing subcaudate, with five large exterior obsolete blackish-swarthy spots, the last marked with a white dot. UNDERSIDE brown, with the basal half (especially about the disc) obscure swarthy, terminated outwardly by a swarthy line (in the forewing oblique, continuous; in the hindwing curved, subangulate in the middle); with a submedian striga on both wings, swarthy, margined outwardly with lilac, and two marginal swarthy lines. Forewing outwardly and at the apex powdered with lilac; a cellular patch swarthy, circled with white; five exterior ocelli arranged in a line, yellow, circled with swarthy and white, including a black pupil marked with white. Hindwing with six unequal ocelli arranged in a bent line, black, narrowly bordered with yellow and fuscous, marked with a white drop, each on a lilac ground, the first and fourth (7 fifth) much larger, the sixth geminate. Thorax and abdomen black above, beneath pale fawn-colour."

"This species reminds one on the upperside of *Debis* [= *Lethe*] *samio*, Doubleday, and differs from *L. purana* in the absence of the white band on the forewing, the different curve of the outer line of the hindwing, and the less projecting angles of the same." (Felder, l. c.)

There can be but little doubt that *L. dolopes* which follows is the female of this species, but in the absence of sufficient evidence to decide the point, we retain them for the present as distinct.

This is a very distinct and beautiful species. In the Indian Museum, Calcutta, there are two male specimens, one from Sibsagar, Assam, the other with no precise locality; and in

Major Marshall's collection there is a single male taken by Captain C. T. Bingham in the Donat Range, Upper Tenasserim, in January. (See remarks on *L. alberta*, below.)

130. *Lethe dolopes*, Hewitson.

Delus dolopes, Hewitson, Ent. Month. Mag., vol. 12, p. 85 (1872).

HABITAT: Sikkim.

EXPANSE 2.5 inches.

DESCRIPTION: "FEMALE UPPERSIDE rufous-brown. *Forewing* crossed from the costal margin beyond its middle to a little above the anal angle by a band of paler colour, straight until it reaches the submedian nervure, where it makes an angle inwards. *Hindwing* tailed: crossed by a submarginal band of five blind black ocelli bordered with dull yellow, the middle ocellus much smaller than the rest. UNDERSIDE. *Both wings* rufous brown to beyond the middle, crossed by a continuous common band of dark brown, bordered outwardly by lilac-white, the margin of the brown sharp and well defined; the wing beyond it rufous-white. *Forewing* with four scarcely visible ocelli. *Hindwing* with seven ocelli, which are small and black, each with a white centre and yellow iris bordered with brown, the first and fifth largest" (Hewitson, l. c.).

We have not seen a specimen of *L. dolopes*, but as the description of the underside agrees well with that of *L. vindhya*, we are inclined to believe, as noted above, that *L. dolopes* is only the female of that species.

131. *Lethe alberta*, Butler.

L. alberta, Butler, Ann. and Mag. of Nat. Hist., fourth series, vol. viii, p. 283 (1871); idem, id., Lep. Ex., 87, pl. xxxiii, fig. 5 (1872). male.

HABITAT: Benares, Tanasserim.

EXPANSE 2.92 inches.

DESCRIPTION: "MALE UPPERSIDE olivaceous fuscous. *Forewing* with the apical area abruptly paler. *Hindwing* with four large black blind ocelli, circled with ferruginous; the external margin blackish, a very indistinct swarthy submarginal line. UNDERSIDE chestnut swarthy, the apical area paler; a black median line, margined outwardly with grey, another discal defining the basal area, angulate in the hindwing. *Forewing* with the margin tinted with rosy, a black submarginal line, the discal area rosy towards the inside, swarthy outwardly with the apex bluish, six discal ocelli black, circled with yellow, and zoned with rosy. *Hindwing* with the external margin greenish; a black submarginal line, the discal area ochraceous fuscous inwardly, blackish chestnut outwardly; seven ocelli in an irregular series, the fifth the largest, black, circled with yellow, and zoned with pale green. *Body* cinereous fuscous. Allied to *L. samio*, *distantis*, &c." (Butler, l. c. in Ann. and Mag. of Nat. Hist.).

Butler in his Lep. Ex. states that he has seen a female of this species in Mr. Moore's collection, but it is as yet undescribed. We have never seen *L. alberta*: the habitat given (Benares) is almost certainly incorrect, no *Lethe*, except possibly *L. eucopa*, is likely to occur in the plains of the North-West Provinces, at all events so far away from the hills.

Among a collection of Butterflies taken to England by Captain Bingham from Tenasserim and presented to the British Museum is a *Lethe* regarding which Butler writes "probably conspecific with *L. alberta*, though differing from the type of that species in having five instead of four large ocelli on the upperside of the hindwing, and lilacine instead of greenish zones to the ocelli on the underside. A nearly allied, though apparently distinct, species found in Darjiling has sericeous pink zones to the ocelli." (Butler, Ann. and Mag. of Nat. Hist., fifth series, vol. x, p. 373, 1882). It is probable that Mr. Butler's remarks apply to the Tenasserim *Lethe* we have identified above as *L. vindhya*, and it seems further probable that in describing *L. alberta* Felder's description of *L. vindhya* was overlooked by Mr. Butler, and that the two are inseparable; if the four ocelli of the *hindwing* on the upperside and the green zones on the underside are not constant characters, there is nothing that we can trace to separate the two as distinct species.

132. *Lethe mākara*, Moore. (PLATE XI, FIG 24 ♂ ♀.)*Delis mākara*, Moore, Horsfield and Moore, Cat., Lep. E. I. C., vol. i, p. 229, n. 454 (1857).

HABITAT: N.-E. India and Upper Tenasserim.

EXPANSE: 2·6 to 3·1 inches.

DESCRIPTION: "MALE: UPPERSIDE glossy olive-brown. *Hindwing* with four round spots encircled with red. *UNDERSIDE* with two transverse lines. *Forewing* with five submarginal pale ocelli. *Hindwing* with six brown ocelli, encircled by a yellow and then a black line, the centre being minutely spangled with white." (Moore, l. c.) FEMALE: UPPERSIDE rufescent brown. *Forewing* with the apical area darker, almost black in a fresh specimen from Tenasserim, crossed beyond the cell by an angulate macular white band, consisting of a short oblique bar from the costa to third median nervule, below which are two triangular spots directed inwards, one on each median interspace: a subapical bifid white spot near the costa. *Hindwing* as in the male, but rufescent instead of brown, and having five or six round black spots circled with paler red, the two upper large, the third smallest, except when the sixth is present, in which case the latter is the smallest. *UNDERSIDE* ochreous. *Both wings* crossed by a continuous brown subbasal line not quite reaching the margin at either end, beyond which the ground-colour is paler; a broad median dark brown band sharply defined externally crosses both wings, straight on the forewing, somewhat angled on the hindwing at the middle. *Forewing* with the white macular band as on the upperside, cutting through the median brown band in its upper half, the white spots below following its exterior margin, five or six obscure ocelli, the first and fourth incomplete; the outer margin brown bearing two ochreous lines finely defined with dark brown. *Hindwing* with six ochreous brown ocelli, complete, of irregular shape spangled with whitish, and circled with yellow and dark brown, outer margin as in forewing, but the marginal lines clearer and brighter. Except in the absence of the white band of the forewing, and the straighter outline of the median band the underside of the male closely resembles that of the female.

The underside of this species very closely resembles that of *L. chandica*, but in the latter species the outer margin of the median brown band on the hindwing is far more sharply angulate extending into a lengthened point beyond the cell. *L. mākara* is found in the same tracts as *L. chandica*, and extends also into Tenasserim, where it has been taken both by Limborg and Captain C. T. Bingham, but not commonly. Captain Bingham has sent a female from the Donat Range, taken in April, and a male in February. The latter of these two specimens differs from North-Indian examples in having the ferruginous outer area of the upperside of the hindwing brighter in shade, and rather more extended. On the underside the ground-colour is more ochreous. The ferruginous ground-colour of the upperside of both wings of the female is also brighter. Mr. Otto Moller has taken it in Sikkim in April, August, and October.

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

133. *Lethe distans*, Butler*L. distans*, Butler, Trans. Ent. Soc. Lond., 1870, p. 488, idem, id., Lep. Exot., p. 87, pl. xxxii, figs. 4, 6 male, 7 female (1872).

HABITAT: Darjiling.

EXPANSE: ♂, 2·75; ♀, 3·1 inches.

DESCRIPTION: "MALE, allied to *L. samio*,* differing in the more arched costa, and angulate outer margin of the forewing. *Hindwing* above, with dusky-ferruginous outer area, exhibiting five blackish spots, the second the largest, outer margin dusky, especially towards the anal angle. *UNDERSIDE* paler than in *L. samio*, the prevailing colour pale ochraceous, the central lines much more irregular and wider apart than in *L. samio*; the ocelli of the hindwing irregular, with numerous pupils; the fourth not thrown out of the series as in *L. samio*."

* *Lethe samio*, p. 145, ante

(Butler, l. c. in Trans. Ent. Soc. Lond.) "FEMALE: UPPERSIDE, with the basal area ferruginous. Forewing with a small band beyond the cell, a bifid subapical spot; and three [as in *L. minerva* not two as in *L. mekara*] discal, submedian, in an angulate transverse row, white. Hindwing with the ocelli circled widely with yellow; a median angulate line black inwardly, and yellow outwardly; otherwise almost as in the male." (Butler, l. c. in Lep. Ex.)

This appears to be a very rare species; we have never seen a specimen. It differs from *L. mekara* in the MALE, in the outer area of the forewing being abruptly paler as shewn in the figure (in *L. samio* it is concolorous throughout), and in having five instead of four black spots in the hindwing. On the UNDERSIDE the central lines in *L. distans* are far more irregular than they are in *L. mekara*. The FEMALE differs on the UPPERSIDE of the hindwing from *L. mekara* in the basal ferruginous area being produced into a long curved point at the third median nervule, and this area and the spots being outwardly defined with yellow.

134. *Lethe chandica*, Moore.

Debis chandica, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 219, n. 455 (1857).

HABITAT: North-East India; Tenasserim.

EXPANSE: ♂, 2.5 to 3.0; ♀, 2.62 to 3.00 inches.

DESCRIPTION: "MALE: UPPERSIDE dark brown, about the disc blackish. Hindwing with indistinct submarginal spots. UNDERSIDE: Forewing pale drab-brown, and having a purple tinge; along costal margin, and broadly on exterior margin, yellowish; transverse red line crossing from middle of discoidal cell; and another irregular brown line across the disc; five pale ocelli; straight marginal, and wavy submarginal line. Hindwing drab-brown, two irregular zig-zag transverse lines, anteriorly within yellowish, posteriorly ferruginous-brown; six ocelli encircled with a yellow and brown line, the three anterior, and last posterior, black, the other two drab, all minutely spangled with white; exterior margin yellowish; marginal line, and submarginal row of ill-defined lunular marks, ferruginous-brown. FEMALE: UPPERSIDE: Forewing with the basal half obliquely brownish-red, anterior half brown, with a band obliquely from middle of costal margin, terminated by two spots, white; also a small white subapical spot. Hindwing brownish-red, anterior angle and along exterior margin yellowish, a submarginal row of indistinct spots and marginal line black. UNDERSIDE as in male, excepting that the oblique band of forewing is more distinct." (Moore, l. c.)

Lethe chandica is not uncommon in the lower valleys in Sikkim, where Mr. Otto Möller has taken it in May, August, and October. It also occurs in the Khasi Hills and Sylhet. Mr. A. O. Hume took it in the Eastern hills of Manipur in May; Captain C. T. Blingham in the Thongyeen forests in Upper Tenasserim, in September; and the late Mr. Cock took it at Shillong. See remarks on *L. mekara*, p. 148.

135. *Lethe europa*, Fabricius.

Papilio europa, Fabricius, Syst. Ent. p. 500, n. 247 (1775); *Oreas marmorea europa*, Hübner, Sammlt. Exot. Schmett., vol. i, pl. 20, figs. 1-4 (1805). *Lethe europa*, id., Verz. bek. Schmett., p. 56, n. 534 (1816); *Satyrus europa*, Godart, Enc. Méth., vol. ix, p. 478, n. 6 (1819); *Papilio berot*, Cramer, Pap. Ex., vol. i, pl. lxxix, figs. C, D (1775), female; *Papilio arete*, Cramer, Pap. Ex., vol. iv, pl. cccxiii, figs. E, F (1780), male; *Lethe arcuata*, Butler, Cat. Lep. B. M., Satyridæ, p. 114, n. 4; pl. ii, fig. 3 (1868), male; *Lethe europa*, Distant, Rhop. Malay., p. 43, pl. v, fig. 5, male, 6 female (1882).

HABITAT: The plains of India, Sikkim, Burma, the Andamans, Malaya, and China.

EXPANSE: 2.4 to 3.0 inches.

DESCRIPTION: MALE: UPPERSIDE dull brown. Forewing with an incomplete pale band from the costa just beyond the cell, and coincident with the white inner band below, nearly obsolete in some specimens; a trifid whitish spot with a pale ochreous spot below it near the apex; two ochreous marginal interrupted lines edged with dusky, broadly internally. Hindwing also with two ochreous marginal lines defined with dusky, broadly bordered with dusky internally; a row of submarginal black spots sometimes obsolete, that near the apex

coalescing with the dusky margin. **UNDERSIDE** with the basal area dark amber brown, crossed by a prominent silvery white subbasal streak on both wings. *Forewing* with a white oblique transverse discal band tinged with yellow, joined at the middle by a pale band from the apex, forming together a V-shaped figure, and enclosing a dark brown triangular patch; a row of six ocelli on the outer pale band, the sixth geminate, all grey with irregular black pupils, and circled with pale brown and violet; the area beyond the ocelli yellowish, shading into dark brown towards the margin, and grey at the apex; two ochreous marginal lines sharply defined with black lines. *Hindwing* with six very large ocelli, all profusely irrorated with white, and all, except the first, disintegrated, the whole enclosed by a silvery lilac line; an outer ochreous and an inner silvery marginal line both sharply defined with black. *Cilia* ochreous. **FEMALE** similar to the male, but paler coloured; on the **UPPERSIDE** the *forewing* is crossed from middle of costa to outer angle by a broad straight pure white band, the subapical spots are pure white; and on the *hindwing* the submarginal black spots are more prominent. **UNDERSIDE** similar to the male, but having in addition a broad transverse white bar on *forewing* which more or less obliterates the two lower ocelli.

This is the type corresponding with *L. arcté* of Cramer, which is common in Sikkim, Assam, Sylhet, Upper Tenasserim, Calcutta, South India, and the Andaman Islands. There is another form corresponding with *L. berce* of Cramer, in which the basal portion of the wings on the underside is much paler, and the silvery subbasal streak is broadly bordered externally on the hindwing, and up to the cell of the forewing with pale grey. This form was found commonly in the Barrackpore Park in November, by Major Marshall, and was taken by Captain C. T. Bingham in Upper Tenasserim from December to April. The only specimen from Calcutt in the Indian Museum seems to be intermediate between the two forms. The specimens from the Andamans are the largest and darkest of all. It occurs also in Orissa, but has not been recorded from Ceylon; and Mr. de Nicéville has taken it in Sikkim, in October. Its range is exceedingly wide, and it is the only *Lethe* that we know to occur in the plains of India.

Mr. Kirby in his supplement places *L. arcté* as a distinct variety.

136. *Lethe drypetis*, Hewitson.

Debis drypetis, Hewitson Ex. Butt., vol. iii, *Debis* pl. ii, figs. 11, 12 (1863), female; *Debis embolina*, Butler, Ent. Month Mag., vol. iii, p. 77 (1866), male; *Lethe drypetis*, Moore, Lep. Cey., p. 17, pl. viii, figs. 1, 16 male, 12 female (1882).

HABITAT: Ceylon.

EXpanse: 2·4 to 2·6 inches.

DESCRIPTION: "MALE: **UPPERSIDE** dark olive-brown. *Forewing* without markings. *Hindwing* with three submarginal very indistinct small black spots. **UNDERSIDE** dark brown; *both wings* with a transverse subbasal wavy dark-bordered purple line. *Forewing* with an oblique transverse discal purple band, a submarginal curved row of five small purple-bordered ocelli, the upper one indistinct, a marginal narrow pale wavy line. *Hindwing* with a transverse discal medially-angled purple-bordered dark brown line; a submarginal row of five purple-bordered ocelli, the first or upper one and the fifth only regularly formed; the others oval and numerous white speckled; a marginal distinct lunular purple line. *Cilia* brownish-ochreous. **FEMALE**: **UPPERSIDE** ferruginous olive-brown, externally dusky-brown. *Forewing* with two prominent subapical ochreous-white spots, an oblique transverse discal macular band extending to first median nervule, submarginal small indistinct black spots. *Hindwing* with four upper submarginal ochreous-yellow outer bordered black spots, the second spot large, and extending to the pale-bordered marginal line, the first being a minute apical dot with broad yellow outer border. **UNDERSIDE** paler, markings as in male, except that on the *forewing* the oblique discal band is purplish-white, the lower submarginal ocellus is absent, and the ocelli on *both wings* are bordered with purplish-white. *Body* dark olive-brown; *palpi* at sides, and *legs* beneath grey streaked." (Moore, l. c.)

"Taken [in Ceylon] in the hills of the Central Province at 3,000 feet and slightly above at all times. Very local; found in several spots of limited extent." (Hutchison.)

137. *Lethe todara*. Moore.

L. todara, Moore, Trans. Ent. Soc. Lond., 1881, p. 305.

HABITAT: Nilgiris.

EXPANSE: ♂, 2.3; ♀, 2.6 inches

DESCRIPTION: "MALE: UPPERSIDE dark olive-brown, both wings without markings. UNDERSIDE dark vinous-brown. *Forewing* with a transverse duplex subbasal and an oblique discal waved purple line, a submarginal row of five indistinct small ocelli encircled by a purple border, a marginal narrow purple line, the extreme outer margin being ochreous. *Hindwing* with a transverse discal waved medially angled purple line, six submarginal ocelli encircled by a purple border, the first and fifth large and regularly formed, the second, third, and fourth, and duplex sixth narrow and minutely white speckled, a narrow marginal purple line and ochreous outer border. FEMALE: UPPERSIDE ochreous-brown, dusky externally. *Forewing* with two ochreous white, small, ill defined, subapical spots, and an oblique discal irregular band. *Hindwing* with three submarginal apical black spots, the two lower slightly bordered externally with ochreous white, above them is an ochreous white apical spot; marginal line bordered with pale ochreous. UNDERSIDE paler, markings as in male, but more prominent, and all with pale purple borders. *Forewing* with an oblique discal ochreous-white band, which extends to the posterior angle, the lower submarginal ocellus obsolete, extreme outer margin of both wings ochreous."

"This species is nearest allied to the Ceylonese *Lethe drypetis*, Hewitson" (Moore, l. c.) After a careful examination of a large series of *L. drypetis* from Ceylon, and *L. todara* from South India and Orissa, we have come to the conclusion that there is only one species, which will stand as *L. drypetis*, as we can detect not the slightest difference between the Ceylon and continental examples; no indication is given of the characters relied on, and the descriptions by Moore of both species apply equally well to the specimens from both localities. We have specimens taken at Mynall 2,000 feet elevation in May, at Trevandrum in June, and at Calicut in September, also examples from the Wynaad, and from Khoodah in Orissa.

138. *Lethe daretis*, Hewitson

Debis daretis, Hewitson, Ex. Butt., vol. iii, p. 75, *Helix* pl. ii, figs. 7, 8 (1863), *feminae*, *Lethe daretis*, Moore Lep. Cey., p. 18 pl. vii, figs. 2, 2b male, 2a female (1880)

HABITAT: Ceylon

EXPANSE: ♂, 2.1; ♀, 2.4 inches

DESCRIPTION: "MALE: UPPERSIDE dark olive-brown. *Forewing* with a very small ochreous costal spot above end of the cell, and two small less distinct spots before the apex. *Hindwing* with a submarginal row of five small indistinct black slightly pale bordered spots. UNDERSIDE dark brown, with a median and subbasal transverse sinuous purple-grey band on both wings. *Forewing* with an oblique discal transverse pale ochreous irregular lunular band, five small black purple-bordered submarginal ocelli, and marginal lunular purple line. *Hindwing* with six distinct well-formed purple bordered submarginal ocelli, and marginal lunular purple line. FEMALE: UPPERSIDE ferruginous olive-brown. *Forewing* with two prominent ochreous-yellow subapical spots, transverse discal macular band extending to the submedian nervure, and four or five small indistinct black submarginal spots. *Hindwing* with a submarginal row of five well-defined oval ochreous-yellow bordered black spots, an upper marginal narrow lunular yellow line. UNDERSIDE as in male, markings more prominent, oblique discal band on *forewing* broader. *Cilia* alternated with white. *Body* dark brown. *Palpi* at sides, and *legs* beneath grey streaked." (Moore, l. c.)

"Found [in Ceylon] all the year round, but most plentiful in the spring in the hills of the Central Province at about 5,000 to 6,000 feet elevation, in grass-land or close to forests. Rather shy, flight rapid, often settling down in grass, or on open road." (Hutchinson.)

139. *Lethe dyris*, Felder. (PLATE X, FIG. 22 ♂ ♀).

Debis dyris, Felder, Reise Novara, Lep., vol. iii, p. 497, n. 860 (1867); *Lethe dyris*, Butler, Cat. Lep. B. M., Satyridæ, p. 115, n. 6 (1868).

HABITAT: The Himalayas generally up to 8,000 feet from Murree eastwards; the Khasi Hills; Mepalay Valley, Tenasserim.

EXPANSE: ♂, 2.1 to 2.2; ♀, 2.4 to 2.5 inches.

DESCRIPTION: "FEMALE: UPPERSIDE dilute swarthy, the *cilia* broadly intersected with white. *Forewing*, with the apical half darker, the band as in *L. drypetis* but a little broader and pure white, more oblique, and more excised within, excised at the lower discoidal fold without; with a whitish spot below the band, and three subapical placed as in *L. drypetis*, but the lowest evanescent. *Hindwing* with a rounded subapical spot, a somewhat diffuse macular band parallel with the margin, a narrow stripe before the margin, and the margin before the *cilia*, obscure swarthy. UNDERSIDE much paler. *Forewing* with a small fascia extending below the cell, defined externally with hoary; then a bent stripe on a hoary ground within the cell, and the apical two thirds broadly deep fuscous; the white band as on the upperside, but wider and almost reaching the submedian nervure; three blackish ocelli with white irides, and broadly circled with swarthy and lilac-white, connected with and starting from the white band, with two upper subapical spots merging into the swarthy ground-colour at the outer edge; a lilac-white streak edged with swarthy, much dilated at the apex, and another fulvescent streak immediately beyond it before the margin. *Hindwing* with two swarthy basal streaks, connected, and each bearing a hoary stripe, the outer giving out a process beyond the cell; six large ocelli broadly circled with swarthy and lilac-white, the uppermost largest and retired inwardly with a single white pupil, the last but one blind, and the last geminate, black speckled with white with a yellowish iris; the remaining three yellowish brown, the pupil black, lacerated, and profusely speckled with white; a lilac-white stripe, defined with swarthy, widely on the inside, and another fulvous streak before the margin" (Felder, l c) MALE similar to the female, but smaller, the UPPERSIDE lacking the white band on the *forewing*, having in its place a whitish spot on the costa, while only the extreme apex is darker. On the UNDERSIDE the white band is indistinct, and a fourth ocellus appears on the line of the band.

Felder also states that "the margin of the wings is more regularly scalloped between the nervures than in the allied *L. drypetis*, and the outer margin of the forewing not concave" But these distinctions do not appear to hold good, as many specimens of *L. dyris* have the outer margin of the forewing distinctly concave, and the margin is not more regularly scalloped than in *L. drypetis*; the chief distinction in the female appears to lie in the upperside of the *hindwing*, which in *L. drypetis* has an ochreous subapical spot, and all the marginal and submarginal markings more boldly defined. The males can easily be distinguished from one another, as the upperside of the forewing in *L. drypetis* is unmarked, while in *L. dyris* there are three subapical ochreous spots.

L. dyris has been found in Tenasserim by Captain C. T. Bingham in February; in the Khasi Hills in May and November; and in the N.-W. Himalayas it is very common throughout the warmer months.

There is a *Lethe* found in the Khasi Hills of this type, which differs from *L. dyris* by having in both sexes on the upperside of the *hindwing* a distinct submarginal row of five blackish spots largest near the costa, and more or less distinctly bordered with paler brown externally. Moreover in all Shillong specimens the white band of the female is extended by an adjacent large white bifid spot below the first median nervule, whereas in the Western Himalayan specimens there is only a slight suffusion of whitish just below the nervule in continuation of the white band.

The figure is taken from a male specimen from Shillong, and a female from Kalu, and shows the uppersides only.

14a. *Lethe neelgherriensis*, Guérin.

Satyrus (Cyllo) neelgherriensis and *neelgherriensis*, Guérin, in *Messier's Voy. dans l'Inde*, pt. 2, p. 24, pl. xxi, figs. 1, 1a (1843), male; *Dehis neelgherriensis*, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 217, n. 447 (1857); *D. neelgherriensis*, Hewitson, Ex. Butt., vol. iii, *Dehis* pl. ii, fig. 6 (1863), female; *Lethe neelgherriensis*, Butler, Cat. Lep. B. M. *Satyridæ*, p. 115, n. 8 (1868); *id.*, Moore, Lep. Cey., p. 26, pl. vii, figs. 1 male, 2 a female (1880).

HABITAT: South India, Ceylon.

EXPANSE: 2'1 to 2'3 inches.

DESCRIPTION: MALE: "UPPERSIDE blackish smoky-brown. *Forewing* with a yellowish spot beyond the middle at the costal margin, divided into three by the nervules; two square spots near the apex; and another spot near the external margin at one-third the length from the hinder angle. *Hindwing* unspotted, but showing through by transparency some traces of the ocelli of the underside [especially the second ocellus from the apex, at the site of which there is, in some specimens, a round indistinct dark spot]; the marginal lines as on underside, but less distinctly marked. UNDERSIDE with a very irregular sinuous and dented greyish white band across both wings, larger towards the costa of the forewing, not corresponding exactly on the hindwing. [This band is bordered with brown on both sides; on the *forewing* beyond it is a very zigzag greyish white line across the cell; an irregular whitish macular line from the costa, beyond the cell to the hinder angle, and a row of five round ocelli concave to the outer margin on a whitish ground; the uppermost obsolete at the apex; the margin is narrowly dark brown, followed by a yellowish line, then a dark brown line, then a grey line bordered on the outside with dusky] *Hindwing* with another greyish band bordered with brown a little beyond the middle, and strongly angulated towards the outer margin a little before the middle of its length; between this last band and the margin are situated six black ocelli encircled with first yellow, then brown, and then ashy grey; the first, which touches the costa, is the largest, and has in the middle a large white pupil; the three following are oval and elongated, the black portion with a great number of little white dots scattered over it; the fourth [? fifth] is quite round, much retired towards the margin, and well defined, having in the middle only three or four white dots [it is often entirely blind], the ocellus at the anal angle is in a line with the third, fourth and fifth, [second, third and fourth] and geminate with two black ovals surrounded with and separated by yellow, and sprinkled with numerous white dots. Both wings have the *cilia* whitish; and the *hindwing* has the marginal lines as in the *forewing*, but more sinuous and irregular."

The above is taken from Guérin's original description, the parts in brackets being added to complete it where deficient.

"FEMALE: UPPERSIDE, light brown. *Forewing* with the outer half dark brown, crossed obliquely beyond the middle of the wing by three white spots, and near the apex by two of the same colour. *Hindwing* with a band of four spots beyond the middle, the outer margin and two submarginal lines black. [The narrow line between the margin and first submarginal black line is yellowish.] UNDERSIDE grey and rufous-brown. *Forewing* with the white spots as above, and between them a band of three ocelli. [The three white spots across the middle tend to become confluent, forming an irregular maculated band across the wing.] *Hindwing* with two perfect ocelli only—one, the largest, at the costal margin, the other towards the anal angle; between these ocelli there is a trifid triangular space minutely dotted with black and white; and at the anal angle an eye-like rufous spot enclosing two oval spots of black, dotted with white." (Hewitson, l. c.)

L. neelgherriensis very closely resembles *L. dyrita* on the underside, so much so that, with the exception of the band of the forewing being maculated and irregular in the former, and prominent and continuous in the latter, the differences are very difficult to describe. On the upperside, however, the presence in *L. neelgherriensis* of the whitish spot on the forewing of the male near the hinder angle, and in the female the white band being replaced by three separate square white spots, render it notably distinct from *L. dyrita*.

In Horsfield and Moore's Cat. Lep. E. I. C. (1857) it is recorded from Bhutan, N. India, and Darjiling; but this probably requires confirmation; it was originally described both by

Guérin and Hewitson from the Nilgiri Hills, and is probably to be found in suitable localities throughout the south of the peninsula. Mr. Fergusson has taken it in the Ashamboos Hills in Travancore in May, and again in July at Trevandrum. Mr. E. H. Atken took it at Khandalla in April. Lieutenant-Colonel Swinhoe has taken it at Mhow in the autumn, and also commonly at Abu; but we have never seen a specimen from farther north than this latter place. It also occurs in Ceylon, where it is "found in the neighbourhood of coffee-plantations south of Newera Eliya, at about 3,000 feet elevation. It appears plentifully, except from January to March." (*Huckisson*). "Taken also at Kandy and Dickoya by Captain Wade." (*Moore*, l. c. in *Lep. Cey.*)

141. *Letho satyavati*, de N.

L. satyavati, de Nicéville, Journ. A.S.B., vol. Alix, pt. 2, p. 246 (1880).

HABITAT: Sibsagar, Assam.

EXPANSE: 2·7 inches.

DESCRIPTION: FEMALE: UPPERSIDE dull brown, paler towards the margins. *Forewing* with an indistinct submarginal darker line. *Hindwing* with a submarginal series of four rounded spots darker than the ground-colour, placed one in each interspace above the first median nervule; two marginal darker lines defined inwardly by paler lines than the ground-colour. UNDERSIDE pale brown, with no ochreous tint, and washed with lilac, especially on the outer half. *Both wings* crossed by a prominent brown nearly straight subbasal line outwardly margined with lilac. *Forewing* with an irregular discal transverse brown line; a bar in the cell within the subbasal line; five indistinct submarginal ocelli circled with lilac and brown on a lilac ground; and a yellowish marginal line edged on both sides with dusky, within which is a brown waved band on the lilac ground between the ocelli and the margin. *Hindwing* with a discal very much angled dark brown line, within which is a very distinct lilac *littura* above the third median nervule and just beyond the apex of the cell; the submarginal ocelli large, the upper one distinctly pupilled with white, and all of them profusely speckled with white; the usual marginal markings. Similar in outline to *L. latiaris*, ♀, and differing from it on the upperside in markings only in the absence of the transverse oblique ochreous line, and the subcostal spot near the apex of the forewing.

The MALE is unknown. The type specimen, the only one seen, is in the Indian Museum, Calcutta.

142. *Letho hyrانيا*, Kollar.

Satyria hyrانيا, Kollar in Hügel's Kaschmir, vol. iv, pt. 2, p. 449, n. 7, pl. xvii, figs. 1, 2 (1844), male; *Batyria isana*, idem, id., p. 448, n. 6, pl. xvi, figs. 3, 4 female.

HABITAT: N.-W. Himalayas.

EXPANSE: 2·2 inches.

DESCRIPTION: "MALE: UPPERSIDE, swarthy. *Hindwing* obtusely dentate, with four obsolete black ocellate spots. UNDERSIDE: *Forewing* with three obsolete ocelli at the apex, and a pale oblique median streak. *Hindwing* with six black white-pupilled ocelli, the last geminate, and two narrow obscure stripes. FEMALE: Wings swarthy. *Forewing* with an oblique band on both surfaces, and a spot near the apex, white. *Hindwing* obtusely dentate, with four obsolete black ocelli on the upperside. UNDERSIDE with three ocelli at the apex in the *forewing*; six on the *hindwing*, white-pupilled, first, fourth, and fifth larger, the sixth geminate; the streaks angulate, fuscous, the *cilia* paler, marked with black." (*Kollar*, l. c.)

The upper surface in the MALE is, in fresh specimens, a rather glossy and not very dark olive brown; on the *forewing* is a very faint trace from the costa of a paler oblique medial band, and near the apex a yellowish trifid spot, below which is sometimes a small round dark spot. On the *hindwing* are four or five submarginal blackish spots, the second usually largest and oblong; the third the smallest, the last white-pupilled and ringed with yellowish; the third and fourth are also sometimes faintly ringed with yellowish; the margin has three narrow dark lines, narrowly separated by yellowish interspaces. UNDERSIDE paler. *Forewing* with two narrow darker lines across the cell, neither of which extend at all beyond it; a narrow sinuous dark

line from the costa towards the hinder angle, and broadly edged outwardly with whitish from the costa narrowing to the middle of the wing; a whitish trifid spot near the apex, below which a greyish submarginal obscure patch, bearing three faint white-pupilled ocelli; the margin paler, with three narrow dark lines. *Hindwing* with a narrow dark streak cutting across the cell from the costa, and not reaching the abdominal margin, the disco-cellulars defined by a dark line, and beyond it a sinuous dark line across the wing, six black ocelli, each with a single white pupil, the sixth geminate, the first and fifth largest, circled with yellowish, then dusky brown, then obscure grey; three dark lines along the margin, the inner one dilated between the median nervules. The *FEMALE* is somewhat paler, with a greenish tinge at base, the *forewing* crossed by a conspicuous white band from the costa to the hinder angle, beyond and at both edges of which the apical portion is blackish, and with a trifid white spot near the costa. On the *underside* the *forewing* shows the same white band, broadly edged with bright dark brown on the inside, and a large triangular patch of the same colour on the outside from the costa, the outer border paler, greyish towards the apex, and marked as in the male. *Hindwing*, as in the male. In a single specimen received from Kulu the white band has invaded the cell between the points where the second and third median nervules are given off, thus giving the inner side of the band a very irregular appearance.

The female, which is much rarer in collections than the male, was originally described as a distinct species under the name *vanu*, Kollar, and subsequently erroneously identified as the female of *L. rohsia*. The male was originally obtained at Simla by Heir von Hugel, and the female at Mussooree. Both sexes have been taken at an elevation of 7,000 feet by Colonel Lang, at Mussooree, in June, and in Lower Kunawai; in May numbers of the males were taken by Major C. H. T. Marshall in Chumba, and both sexes by Mr A. Graham Young in Kulu from May to July, and the male only by Mrs. Deane in Chini in June. There is no record at present of its having been taken further east than Mussooree.

143 *Lethe dinarbas*, Hewitson

Debis dinarbas Hewitson, Ex Butt vol III, *Debis* pl III, fig 15 (1863), male

HABITAT: North India, Sikkim

EXPANSE: 2.1 inches

DESCRIPTION: "UPPERSIDE brown. *Forewing* crossed at the middle by a very indistinct band of brown, a minute bifid white spot and obscure brown spot near the apex. *Hindwing* with four obscure brown spots (one minute) near the outer margin, the spot nearest the anal angle dotted with white. *UNDERSIDE* brown. *Forewing*, paler towards the outer margin, tinted with lilac; the cell crossed by two rufous lines, the transverse band and apical spot as above, but more distinct, with, between them, three minute ocelli (one blind); the outer margin and two submarginal lines rufous brown. *Hindwing* crossed transversely by two rufous-brown bands; one before the middle straight, the other at the middle curved, followed by a band of six ocelli, each with white pupil, and rufous iris bordered with brown and lilac" (Hewitson, l c)

We have only seen males of this species from Sikkim; the female is apparently unknown. The anal ocellus on the underside of the hindwing in the specimens we have seen is geminate. Hewitson's figure is much too rufous, and the lilac colouration is much too vivid. This species differs from *L. hyrانيا* only in the darker colouration of the ground colour above and below, and on the underside in being washed with lilac. In *L. hyrانيا* there is no trace whatever of this colour. It is probably only a geographical variety of *L. hyrانيا*.

144 *Lethe serbonis*, Hewitson

Debis serbonis, Hewitson, Ent Month Mag, vol XIII, p 151 (1876) id, Desc Lep Coll. Atkinson, p. 2, pl I, figs 4, 5 (1879), male.

HABITAT: Sikkim.

EXPANSE: 2.9 inches.

DESCRIPTION: MALE: "UPPERSIDE rufous-brown. *Both wings* with two submarginal brown lines. *Forewing* with two indistinct pale spots on the costal margin beyond the middle. *Hindwing*

with a series of three black eye-like spots, and an ocellus marked with white near the anal angle. **UNDERSIDE** rufous. *Forewing* with a zig-zag brown line, and a large pale spot, bordered on both sides with brown within the cell; the disco-cellular nervules brown, crossed beyond the middle by a dark brown band, bounded outwardly, near the costal margin, by a dull white spot; a white spot near the apex, and below two small ocelli, one of which is incomplete, followed by a band of brown, and a submarginal band also brown. *Hindwing* crossed by two brown bands, one before, the other at the middle; a brown line at the end of the cell; a series of six ocelli, the first and fifth larger and more distinct than the rest; the outer margin and a line near it black." (Hewitson, l. c. in Desc. Lep. Coll. Atk.)

THE FEMALE is unknown; and all the males we have seen are from Sikkim.

145. *Lethe rohria*, Fabricius.

Papilio rohria, Fabricius, Mant. Ins., vol. II, p. 45, n. 446 (1787), *Satyrus rohria*, Godart, Enc. Méth., vol. ix, p. 479, n. 8 (1819)

HABITAT: Java, Upper Tenasserim, Khasi Hills, Sikkim, and thence through the Himalayas as far west as Simla.

EXPANSE: 2'0 to 2'5 inches

DESCRIPTION: MALE **UPPERSIDE** dark brown, blackish on the outer half of the forewing. *Forewing* crossed about the middle by a pure white regular curved band extending to the submedian nervule at the anal angle, and two ill-defined white spots near the apex. *Hindwing* with two narrow yellowish lines near the margin, which are continued less distinctly on to the forewing, and with faint traces of the ocelli of the underside showing through; occasionally some of their sites marked by a dark ill-defined spot. **UNDERSIDE** with the white band as on upperside. *Forewing* with three decreasing submarginal ocelli; a white streak from the costa near apex, which dividing partially encloses the three ocelli from above, two submarginal purplish-white lines, and before the middle a straight pearly grey streak across the wing. *Hindwing* with a pearly grey, straight streak in continuation of that on the forewing, then a sinuous line of the same colour from the inner margin directed towards the pupil of the apical ocellus, and thence following its contour to the costa, and joining with the first streak just before the abdominal margin, and close to the sixth (anal) ocellus; six perfect ocelli beyond, the first very large, the fifth large, all more or less pupilled with white dots, and tinged with yellow, then brown, then grey; two narrow submarginal lines, the outer tinged yellowish, the inner violet-white. THE FEMALE is paler on the upperside, the band of the forewing rather wider, and the marginal lines of the hindwing are yellower and more prominent. On the **UNDERSIDE** too the colours are paler and less brilliant; otherwise the markings are similar.

In specimens from Sikkim the apical ocellus of the hindwing is very large indeed, and pupilled with a single prominent white spot. In specimens from Tenasserim this ocellus is not so large, and is generally blind; the ground-colour in both sexes is browner, and the grey markings are duller, lacking the pearly tint, and often tinged whitish.

Lethe rohria is not uncommon in Upper Tenasserim; it was found by Limborg at Hatsiege, and on the Taoo plateau at 3,000 to 5,000 feet elevation; and by Captain C. T. Bingham in the Meplay valley in February; and in the Upper Thoungyeen forests in April, September, and October. In the Khasi Hills it is found in the autumn. Mr. Otto Moller has taken it in the Sikkim tarai in July, in the Sikkim Hills, where it appears to be common, at 4,000 feet elevation in April, August, September to November, and also in the valley of the Great Ranjit in November, at 1,200 to 3,500 feet elevation, where Mr. de Nicéville also took it commonly in October. Further to the west it becomes much rarer, Dr. Scully took a pair at Khatmanda in Nepal. It is found in Kumaon at moderate elevations, and Colonel Lang, R.E., possesses a specimen from Gurhwal. Mr. de Nicéville has taken two specimens in the neighbourhood of Simla, but further to the west no record exists of its occurrence. Kashmir has erroneously been stated as a locality for *Lethe rohria*, but this arose from *Debis isana* of Kollar having been mistaken for the female of this species, whereas it really is the female of *L. hyrkania*.

L. volkris is very similar in colouration to *L. verma*, but differs in some points, and conspicuously in the outline of the wings (see *L. verma*). Next to *L. europa* it has the widest range of all the species of *Lethe* occurring within Indian limits.

Key to the Indian species of *Lethe*.

Third group.

B. Males without sexual glands and tufts on either wing

A. The apex of the cell in the hindwing beyond the origin of the second median nervule

Male and female, upperside, forewing with a conspicuous almost straight broad white band across the disc, underside, hindwing with the ocelli not disintegrated

a¹ Upperside, forewing without an apical white spot Underside, hindwing with two narrow transverse sinuous silvery lilac lines across the disc.

146 *L. (Tansima)* vishnu* N. W. Himalayas to Assam.

b¹ Upperside, forewing with an apical white spot Underside, hindwing with no silvery lilac lines across the disc

147 *L. (Tansima) masoni*, Sikkim

Underside with four very irregular more or less interrupted silvery lines across the basal area of the hindwing

Underside of forewing with silvery lilac markings, the ocelli of hindwing perfect

Underside of forewing unmarked, except by an incomplete silvery submarginal line near apex, and three minute dots within it, underside of hindwing with the second and third ocelli out of line

--- *L. sideria*, Sikkim.

a² Underside of forewing with a lilac bar (often obsolete) across the cell defined on both sides with darker brown; a dark brown transverse line beyond the cell, edged outwardly near costa with lilac, and another shorter one beyond defined with lilac white above the ocelli three or four minute ocelli on a paler ground, underside of hindwing with all the ocelli in line

149 *L. sidonis*, Himalayas, Assam, Khasi Hills.

b² Underside of forewing with ochreous markings

a³ Underside with the ocelli of the hindwing with the irides blurred and indistinct, the black centre generally obsolete Forewing with an ochreous bar across the cell.

150 *L. matrya*, Himalayas

b³ Underside, with the ocelli of the hindwing perfect, the black centres usually conspicuous, and the irides well marked, no ochreous bar across the cell

151 *L. nicetas*, Himalayas

c¹ Underside of forewing with pure white markings, a pure white complete submarginal line on both wings, ocelli perfect, those of forewing with white rings, of hindwing on a pure white ground

152 *L. visrava*, N. E. Bengal, Sikkim

The species of this group differ from the typical species *L. europa* and its allies, and all the species preceding *L. europa*, notably in having the hindwing rounded, the outer margin sinuate, but scarcely perceptibly dentate, and in having the apex of the cell in the hindwing considerably less acute, and situated well beyond the origin of the second median nervule; but this feature is not even constant in the same species, a female specimen of *L. nicetas* from Kulu having the second median nervule almost exactly in prolongation of the lower disco cellular nervule, while in the males from the same locality the distance varies, and is often

* Genus TANSIMA, Moore. "FEMALE. Wings short broad Forewing with the costa much arched at the base, apex rounded, exterior margin very slightly oblique and convex cell broad; first and second subcostal branches emitted near end of the cell, third trifid disco-cellulars outwardly oblique, upper bent near the subcostal, concave below, lower slightly concave anteriorly, radials emitted from their angles Hindwing broadly oval, exterior margin convex; cell broadly triangular Pips long slender, pilose beneath. Antennae slender, Legs slender, naked" (Moore. Trans. Ent. Soc. Lond., 1881 p. 305).

considerable. The group contains two forms, in one of these which has been separated under the generic name of *Tamsima*, Moore, with *Lethe verma* as its type the cell in both wings is very broad; the other has the cell of the forewing much as in typical *Lethe*.

146 *Lethe verma*. Kollar (PLATE X, FIG. 23 ♂)

Satyrus verma, Kollar, in Hugel's Kashmir, vol. iv, pt. 2, p. 447, pl. xvi, figs. 1, 2 (1848), *Tamsima verma*, Moore, Proc. Zool. Soc. Lond., 1882, p. 235.

HABITAT: Upper Tenasserim, Khasi Hills, Assam, and westward through the Himalayas as far as Chumba, and the borders of Kashmir.

EXPANSE: 20 to 24 inches.

DESCRIPTION: MALE and FEMALE alike, except that the female is rather paler in colouration. **UPPERSIDE** swarthy brown, darkest externally. *Forewing* with a conspicuous nearly straight white band from the middle of the costa, passing just beyond the cell to the first median nervule near the outer margin. *Both wings* with two narrow pale submarginal lines, bordered and separated by fine blackish lines. In some specimens the *hindwing* is unspotted, in others the sites of the ocelli on the underside are marked on the upperside by indistinct blackish spots, always most prominent between the median nervules; these spots again are sometimes white-pupilled and are sometimes perfect ocelli, ringed with yellowish. These variations do not seem to be peculiar to any locality, the specimens from Chumba show usually one, two, or three white-pupilled spots. A specimen from Shillong shows no white pupils at all, while another from the Sikkim Himalayas has four perfect ocelli, the two between the median nervules being especially prominent, and lastly in the large series from Simla in Mr. de Nicéville's collection many of the specimens have only faint traces of the white pupils, while in some the spots are hardly perceptible. **UNDERSIDE** lighter and rather brighter brown. *Forewing* with the white band as on the upperside, but extending a little below the first median nervule; above it two contiguous submarginal ocelli, black, with white pupil and yellow iris; above this an irregular whitish streak near the costa; two greyish submarginal lines widening towards the apex, edged with and separated by fine dark lines. *Hindwing* with submarginal lines as on forewing, but the outer one more decidedly tinged with yellowish; six perfect ocelli, that near the anal angle bipupilled, the first, fourth, and fifth larger than the others, black, with white pupils, and ringed with yellow, then brown, then lilac grey. Between the ocelli and the base are two narrow lilac-grey lines, that nearest the base nearly straight, the outer one very sinuous, both edged on the side furthest from the other one with darker brown.

Lethe verma is of much the same style of colouration as *L. rohita*, but on the upperside it lacks the subapical whitish spots of the forewing, and the band is broader, more oblique, not reaching the hinder angle, and often tinged with yellowish, and on the underside the grey bands of the hindwing are far less prominent and the ocelli are more uniformly pupilled with a single white dot. But the most marked difference is in the outline of the wings. The forewing is broader, the inner margin being much longer, and the hindwing is much rounded, dentate, but scarcely perceptibly caudate. It has a very wide range in the hills of Northern India, being much more common in the North West Himalayas, and extending further in that direction than *L. rohita* does.

According to Colonel Lang this is an autumnal insect in the North-west Himalayas, affecting shady localities, and trees in preference to rocks, pitching on the trunks of rhododendrons and oaks. His specimens were taken in lower Kunawar at an elevation of 7,000 feet, and at Mussoorie. There is, however, a summer brood, as Mr. de Nicéville has taken it then commonly in Simla at about 5,000 feet elevation in forest, settled on the dark rough bark of the deodar, where, till disturbed, it is completely hidden. It was not found in Kashmir either by von Hugel or by Captain Keed. Major C. H. T. Marshall found it extremely commonly in Chumba in May at Kujjar. In Sikkim Mr. de Nicéville took it in October, and Mr. Otto Möller in November at 4,000 feet elevation. It was taken in the same month at Shillong by Mr. J. P. Cock, and Mr. Ossian Limborg found it at Moolai in Upper

Tenasserim, at an elevation of 3,000 to 6,000 feet. In Sikkim it is far less commonly met with than *L. rohria*; in the North-West Himalayas it is *L. verma* that is most frequently seen.

The figure is taken from a male specimen from Shillong in Major Marshall's collection.

147. *Lethe masoni*, Elwes.

Debia (Tansima) masoni, Elwes, Proc. Zool. Soc. Lond., 1882, p. 405, pl. xiv, fig. 2.

HABITAT: Sikkim.

EXPANSE: 2.3 inches.

DESCRIPTION: "Resembles *L. verma*, Kollar, in general appearance, size, form, and colour; but is distinguished on the UPPERSIDE by a single white spot near the apex of the *forewing*, which wing is slightly undulate and fringed white. The anterior angle of the *hindwing* is bordered and fringed white. On the UNDERSIDE there is one ocellus close to the white spot near the apex of the *forewing*, and the ground-colour of the *hindwing* is overlaid with greyish scales, and without the transverse steely bands of *L. verma*. The ocelli resemble those of *L. verma* in number, size, and position, but are ringed with hair-brown instead of fulvous. The sexes do not differ." (Elwes, l.c.) On the underside of the hindwing there is in the figure a short subbasal dark brown line, a sinuous one beyond crossing the middle of the cell and reaching the costal and abdominal margins, a short one defining the disco-cellular nervules, and a fourth very sinuous one across the disc from the costa to the submedian nervure.

In describing this species Captain Elwes writes: "Of this species, which, though allied to *L. verma*, is very distinct, I received a large number of specimens which do not vary. As this insect has never been taken before, I imagine it to be from the Chumbi valley, on the other side of the Passes, but it is probably not found at extreme elevations."

148. *Lethe sideres*, Marshall.

L. sideres, Marshall, Journ. A. S. B., vol. xlix, pt. ii, p. 246 (1880).

HABITAT: Sikkim.

EXPANSE: 2.1 inches.

DESCRIPTION: MALE: Differs from *L. sidonis*, ♂, in being smaller, and in the uniform absolutely spotless upper surface, somewhat darker towards the outer margin. UNDERSIDE uniform brown. *Forewing* entirely wanting the discal bands and the whitish spots on the costal margin; the only markings being three minute submarginal white spots beyond the cell, the middle one faintly ringed with black; a single yellowish marginal line, edged on both sides with dark brown, and within this a distinct silvery-lilac submarginal line extending from the apex to the second median nervule. *Hindwing* with all the silvery streaks brighter and distinctly lilac; the submarginal silvery line very slightly dilated at the anal angle; the ocelli all blacker, and less prominently pupilled with white. The second and third ocelli much nearer the margin than the others, giving the line of ocelli a strong curve outwards, the silvery band within following this curve, and deeply sinuated outwards beyond the cell; the ground-colour being uniform brown, scarcely at all darkened at the edges of the silvery lines. The *hindwing* less distinctly caudate.

We have only seen two specimens of this species, both from Sikkim, which agree exactly the one with the other. The irregular curve of the series of ocelli on the underside of the *hindwing* at once distinguishes *L. sideres* from all the numerous specimens of *L. sidonis* we have seen.

149. *Lethe sidonis*, Hewitson.

Debia sidonis, Hewitson, Es. Butt., vol. iii, *Debia* pl. iii, fig. 26 (1863), male.

HABITAT: The Himalayas from Kulu to Sikkim, extending into Sylhet.

EXPANSE: 2.0 to 2.2 inches.

DESCRIPTION: "MALE: Upperside dark [uniform] brown. *Forewing* with an indistinct white spot near the apex. *Hindwing* with two or three indistinct black spots near

the outer margin, **UNDERSIDE** brown. *Forewing* with an indistinct band across the cell, a white spot beyond the middle of the costal margin part of a brown band which crosses the wing, a second white spot near the apex, and below it three black spots dotted with white. *Hindwing* crossed by several lines of silvery white, followed by a band of seven black ocelli; the first (at the costal margin), and the fifth large, two at the anal angle touching, each with a white pupil and rufous iris, bordered with [brown, and then] silvery white; a submarginal line of silvery white; the margin rufous, bordered on both sides with black." (*Newitson*, 1c) On the underside of the *hindwing* the silvery white submarginal line is narrow at the apex, and much dilated at the anal angle; and on each side of the series of ocelli is a broad darker and brighter brown edging to the silvery lines which enclose it. The *forewing* has two narrow yellowish submarginal lines. The *cilia* are dotted with whitish. The **FEMALE** differs from the male on the **UPPERSIDE** in having the ground-colour immediately within the marginal lines somewhat darker, more especially so on the *hindwing*, where it forms a distinct submarginal band. The ocelli also on that wing are more distinct. The outer margin of *both wings* are also somewhat more deeply scalloped. **UNDERSIDE** as in the male.

L. sitionis is a somewhat variable insect. Some specimens from Sikkim are smaller than *L. sidera*, the forewing as immaculate on the upperside as in that species, and the hindwing in some of these small specimens shews no sign of the submarginal series of blackish round spots, which are distinct in other specimens quite as small, and in the larger ones. On the underside of the forewing there is every gradation from a spotless cell to one bearing a prominent transverse violet bar at its middle, on both sides margined with darker brown than the ground-colour. Specimens from Mussoorie have the upperside quite immaculate, the silvery undulating lines on the underside of the hindwing are far duller and altogether less prominent than in more eastern examples, while in the Kulu specimens these lines are obsolete; and in all the Western Himalayan specimens the underside of the forewing has no trace of the bar across the cell.

Mr. A. Graham Young took three specimens of *L. sitionis* on the Tihir Pass in Kulu in July; Colonel Lang took a few at Mussoorie in June; in Sikkim, at from 5,000 to 7,000 feet elevation Mr. de Nicéville took it most commonly in roads through forests, in October; and the late Mr. Cock took it at Shillong in July. It is far commoner in the Eastern than in the Western Himalayas.

159. *Lethe maltrya*, de N. (PLATE X, FIG 20 ♂.)

L. maltrya, de Nicéville, Journ. A. S. E., vol. xlix, pt. ii, p. 245 (1880)

HABITAT: Jajalau Pass, Ngikunda, N.-W. Himalayas; Sikkim.

EXPANSE: 2.1 to 2.2 inches.

DESCRIPTION: MALE: UPSIDE deep shining brown. *Cilia* marked with ochreous at the interspaces. *Forewing* crossed beyond the cell by a pale ochreous, outwardly curved band, narrowest and most distinct at the costa, almost obsolete on reaching the third median nervule. A subapical trifid spot divided by the subcostal nervules. *Hindwing* with the ocelli below showing through indistinctly in black spots, and a hardly perceptible submarginal series of black lunules. **UNDERSIDE** *Forewing* with a prominent outwardly curved bar, extending across the cell just beyond its middle; the band beyond the cell of the upperside, but much more distinct, both ochreous. The trifid subapical spot as above but whitish, below which are four minute white dots, the remains of obsolete ocelli, one on each interspace; some indistinct marginal lines. *Hindwing* crossed by four very irregular lilascent lines, the first pair basal, the second discal, and enclosing the disco-cellular nervules, which are margined on both sides with lilascent. The innermost line of this pair is inwardly narrowly, and the outermost line outwardly broadly-margined with a deeper shade of brown than the ground. A submarginal band of six ocelli, the first four from the apex joined, the fifth separate, the sixth small and geminate; these ocelli are all very indistinct, and have lilascent pupils, and are outwardly margined with that colour. An almost obsolete lilascent submarginal line dilated within the first median nervule, and extending up the abdominal margin, outwardly bordered, especially at the anal angle, with a rufous line.

Allied to *L. sidonis*, from fresh Sikkim specimens of which species it differs on the upperside in having a band across the forewing beyond the cell, and on the underside this same band being very prominent, as is also the bar in the cell. The ocelli and submarginal lilaceous line are also very indistinct in *L. maitrya*.

Mr. de Nicéville took a single male, from which the figure is taken, on the Jalauri Pass, at about 8,000 feet elevation on July 29th, 1879. In Colonel Lang's collection there is a male from Narkunda on the Hindustan and Thibet Road, taken by himself in July, which is identical with the type specimen; and a male and two females from Sikkim, collected by Dr. T. C. Jerdon, that evidently belong to this species. The latter are somewhat smaller than the type specimen described above, but agree with it in the blurring of the ocelli on the underside of the hindwing, and in having an ochreous bar in the cell of the forewing, which latter feature is absent from all the specimens of *L. sidonis* we have seen, and to which *L. maitrya* is evidently closely allied, as also it is to *L. nicetas*, differing from the latter chiefly in having the ocelli blurred. *L. maitrya* seems to be intermediate between *L. sidonis* and *L. nicetas*.

151. *Lethe nicetas*, Hewitson.

Debis nicetas, Hewitson, Ex. Ratt., vol. iii, *Debis* pl. iii, figs. 17, 18 (1863), female.

HABITAT: Himalayas, from Sikkim to Kulu.

EXPANSE: 1.8 to 2.25 inches.

DESCRIPTION: "FEMALE. UPPERSIDE light rufous-brown. Forewing with the outer half darker brown, crossed beyond the middle by a macular band of pale yellow, and nearer the apex by three spots of the same colour. Hindwing with a band of five black spots with rufous border, the outer margin rufous, bordered on both sides with black, some submarginal dark-brown conical spots. UNDERSIDE rufous-yellow. Forewing as on upperside, except that the transverse band is continuous and that two of the three spots near the apex are small ocelli. Hindwing from the base to the middle rufous-brown, crossed by several indistinct ilac bands; the outer half rufous yellow, darker toward the outer margin, crossed by a band of seven black ocelli (two at the anal angle touching), each with a white pupil and rufous iris bordered with lilac; a submarginal band of silvery white, the margin rufous, bordered on both sides with black" (Hewitson, l.c.) MALE smaller than the female, the costal margin only of the UPPERSIDE of the forewing darker, the yellow maculated band very indistinct, and the two lower of the subapical spots wanting. Hindwing with the spots smaller and much less distinctly bordered with rufous. UNDERSIDE as in the female. On the upperside of the hindwing in both sexes the row of black hind ocelli are very distinct; in the preceding species, *L. maitrya*, they can hardly be traced. On the underside of the hindwing the rufous brown of the basal half is sharply defined, highly dentate and outwardly more or less margined with pure yellow, while in *L. maitrya* it is less distinct, sinuate rather than dentate, and with scarcely a trace of yellow beyond, and that only in a Sikkim specimen.

L. nicetas is found at from 3,000 to 6,000 feet elevation in suitable localities in the Himalayas, from Sikkim to Kulu; it does not seem to be common anywhere, and is rarer to the west than to the east. In Kulu Mr. A. Graham Young has taken it in May, July and October, but never plentifully. These latter are much smaller than specimens from the Eastern Himalayas.

152. *Lethe visrava*, Moore.

Debis visrava, Moore, Proc. Zool. Soc. Lond., 1865, p. 708, pl. xli, fig. 4, male.

HABITAT: Sikkim; N-E Bengal.

EXPANSE: 2 inches.

DESCRIPTION: "MALE. UPPERSIDE dull brown. Forewing with three small black white-centred ocelli before the apex, and a marginal white line. Hindwing with six submarginal blackish spots, the third and last small, bordered outwardly with white; a marginal narrow white lunulated band, and outer dark double line. UNDERSIDE pale dull brown. Forewing with each apical dot encircled with white; marginal band white. Hindwing with purple-white irregular basal lines, seven ocelli, each composed of a black spot with

white centre and yellow outer circle, the two last ocelli geminate, all bordered with white, a marginal narrow white lunulated band, and extreme outer marginal yellowish line." (Moore, l. c.) The yellowish marginal line is as usual narrowly edged with blackish on both sides. *Celis* white. On both sides the white bordering of the ocelli is very broad outwardly, and coalescent forming a white band, and having only a series of brown lunules between it and the white marginal line.

L. vinova appears to be rare. Colonel Lang's collection contains three male specimens from Sikkim. The FEMALE is unknown.

The single remaining species we have been obliged to keep separate; for in the absence of specimens for examination it is impossible to determine its affinities and proper place in the genus.

Key to the Indian species of *Lethes*.

Fourth Group.

C White, with rufous brown markings

153. *L. DELIADÆS*, Sikkim.

153 *Lethes deliades*, Hewitson

Delis deliades, Hewitson, Ent Month. Mag., vol ix, p 84 (1872)

HABITAT Sikkim.

EXPANSE 2 3 inches.

DESCRIPTION: "UPPERSIDE white. *Forewing* with the costal margin from the base to the middle, the whole of the cell and a little beyond it a triangular spot between the first and second median nervules near their base, the apex (where it is broad and marked on the costal margin by a small trifid white spot and two small black ocelli, each dotted with white) and the outer margin (where it is deeply sinuated on the inner border), and a round spot near the anal angle, all dark rufous-brown: a submarginal line of dark brown *hindwing* crossed beyond the middle by a series of seven blind ocelli: the first, second, third and fourth large, the others small. A submarginal series of lunular brown spots: the outer margin rufous-yellow, bordered on both sides with black. UNDERSIDE as above, except that the *forewing* is nearly white, the spots on the upperside being scarcely visible; that the *hindwing* has perfect black ocelli, each with a white centre and rufous iris; and that the submarginal lunular spots are also rufous."

"This is a remarkable species, and cannot be compared in colour with any other butterfly" (Hewitson, l. c.) We have never seen this species.

Genus 11.—ZOPHOESSA, Westwood. (PLATE X)

Zophoessa, Westwood Gen D. L., vol ii, p 362 (1851).

"BODY moderate-sized; eyes hairy; *forewing* elongate-triangular; *hindwing* [usually] tailed. HEAD small, wider in the male than in the female, hairy not tufted. Eyes prominent, hairy. *Antennæ* not half the length of the *forewing*, very slender, terminated by a distinct elongate, slender club. *Palpi* long, slender, compressed, elevated obliquely considerably higher than the level of the top of the eyes; the long second joint not clothed behind with a tuft of hairs, the front with numerous long hairs; terminal joint minute. *Thorax* short, very convex, finely hairy. *Abdomen* small and slender in the males, elongate-ovate in the females. FOREWING large, elongate-triangular; costal margin but slightly curved; apical angle obtuse; outer margin long, slightly concave, not scalloped; inner angle rounded; inner margin nearly straight. *Costal* nervure rather dilated at the base, extending to the costa a little beyond the middle. *Subcostal* nervure with the first and second branches arising near the middle of the wing; the second close to the anterior extremity of the discoidal cell; the third and fourth arising at equal distances apart beyond the cell. *Upper disco-cellular* extremely short, oblique; *middle disco-cellular* rather longer, less oblique straight; *lower disco-cellular* very much longer, nearly straight, almost transverse, uniting with the third branch of the median nervure at about the same distance from its base as exists between the first and second branches; the third

branch being angulated at the place of junction, beyond which it is slightly curved. Hindwing subovate; costal margin slightly arched; outer margin scalloped; the middle at the extremity of the third branch of the median nervure being [usually] elongated into a tail; the space within the extremity of the first branch being deeply emarginate. *Precoastal* nervure very short, furcate at the tip. *Costal* nervure extending to about two-thirds of the length of the costa. *Subcostal* nervure branching at a considerable distance from the base. *Upper disco-cellular* short, curved, but rather longer than the space between the branches of the subcostal nervure. *Lower disco-cellular* longer than the upper, curved, uniting with the median nervure close to the origin of the third branch, which is slightly curved, and extends to the outside of the tail. *FORELEGS* of the male very minute, the *femur* and *tibia* of equal length, slightly hairy; the *tarsus* longer than the *tibia*, very hairy and brush-like. Of the female not longer than those of the male, cylindrical; the *tibia* externally clothed with a few hairs; the *tarsus* scarcely more than half the length of the *tibia*, scaly, rather dilated, and obliquely truncate at the tip, with a few very short rather thick spines nearly concealed by the scales. *MIDDLE* and *HINDLEGS* rather short, slender; *tibia* with a few very fine spines on the underside; *tibial spurs* rather long; *tarsus* armed on the sides beneath with rows of fine spines, *claws* elongated, curved, very acute, entire." (*Westwood*, l. c.)

The species of *Zophoessa* are confined to the north and east of India, and are unknown beyond Indian limits; most of them are rare and local, and even those which have the widest range appear to be only found in a few localities wide apart. In the Western Himalayas they are found between 7,000 and 9,000 feet elevation; but eastwards they inhabit the lower ranges; and in Tenasserim the only species that has yet been found was taken at scarcely 1,000 feet above the sea. All of them have a submarginal series of blackish spots on the upperside of the hindwing, and a submarginal series of prominent ocelli on the underside.

Key to the species of *Zophoessa*.

- A. Upperside brown, with a row of black spots on the hindwing; underside much variegated.
 - a. Hindwing distinctly tailed.
 - a¹. Of large size (2½ inches and above in expanse); upperside, forewing unmarked by bands and spots.
 - a². Underside basal area pale brown.
 - a³. Upperside, forewing with the outer margin scarcely perceptibly paler.
 - 154. Z. SURA, Eastern Himalayas, Assam.
 - b³. Upperside, forewing with the outer margin distinctly paler.
 - 155. Z. DURA, Upper Tenasserim.
 - b². Underside, basal area ochreous.
 - 156. Z. GOAIPARA, Himalayas, Assam.
 - b¹. Of small size (2½ inches and under in expanse); upperside, forewing marked with bands and spots.
 - a⁴. Upperside, forewing with the discal band macular.
 - a⁵. Upperside, markings orange-yellow.
 - 157. Z. ATKINSONIA, Eastern Himalayas.
 - b⁵. Upperside, markings ochreous.
 - 158. Z. JALAUHIDA, North-West Himalayas.
 - b⁴. Upperside, forewing with the discal band straight, continuous.
 - a⁶. Underside, forewing with numerous bands, one only silvery.
 - 159. Z. BALADEVA, Eastern Himalayas.
 - b⁶. Underside, forewing with three bands only, all silvery.
 - 160. Z. ANDERSONI, Upper Burma.
 - c⁶. Underside, forewing with two bands only, not silvery.
 - 161. Z. DIRPHIA, Eastern Himalayas.
 - a. Hindwing scarcely perceptibly tailed.
 - a⁷. Underside, forewing with the cell marked with three transverse dark brown bars.
 - 162. Z. VARA, Himalayas, Khasi Hills.

This genus was not a very satisfactory one even when only the type species *Z. sura* was known; but since the discovery of the other species it has become almost impossible to specify the characters which may be relied on to distinguish it from *Lethes*. Typically *Zophoessa* is of larger size, but *Z. atkinsonia*, *Z. bala leva* and *Z. jalaurida* are smaller than the average *Lethes*. Typically the hindwing is more strongly caudate, but *Z. yama* has the tails almost obsolete; typically again *Zophoessa* has the forewing more triangular with the outer margin concave, but no species of *Zophoessa* has the forewing so concave as it is in *L. sinensis*, and in almost all the outer margin of that wing is straight; typically the character of the markings of the underside is much more variegated and usually with bolder and straighter transverse lines than in *Lethes*, but in *Z. jalaurida* the markings of the underside agree well in general style with those of *L. nicetas*. Typically again in *Zophoessa* the base of the forewing is almost destitute of the dense clothing of short hairs which in many species of *Lethes* overlies the scales on the base of the wing and the entire discoidal cell, but this feature it also lacks in common with the concluding group of small *Lethes* which includes *L. nicetas*. But on the other hand there are no sexual glandular patches or tufts of hairs on the wings in *Zophoessa* such as are found in the first group of *Lethes*; and perhaps the most important difference lies in the small extent to which the sexes, so far as is known, are differentiated in *Zophoessa*; in all cases in which both sexes are known the female differs but little either in colour or markings from the male; and there is no such prominent characteristic of the female as the white band on the forewing so general in *Lethes*. *Z. yama* appears to belong more properly to the second group of the next genus, *Neope*, with which it corresponds in the outline of the wings as well as in the markings of the underside. See remarks on the genus *Neope*.

154 *Zophoessa sura*, Doubleday, Hewitson

Z. sura, Doubleday, Hewitson, Gen D L, vol II p 362, n 1, pl 141, fig 1 (1851), female

HABITAT: Bhutan, Sikkim, Sylhet, Assam.

* EXPANSE: 2 8 to 3 4 inches.

DESCRIPTION: MALE. UPPERSIDE, velvety chocolate-brown. Forewing with the outer margin paler, with a suffused submarginal darker line. A very indistinct blackish bar near the outer end of the cell, an equally indistinct fulvous spot on the costa beyond the cell, and another subapical one somewhat more distinct. Hindwing strongly caudate, with a broad outer paler band bordered both inwardly and outwardly with a darker shade of the ground-colour, and bearing five round dark brown spots, the middle one the smallest. Two marginal pale lines, the inner one the more prominent, divided by a line of the ground colour. UNDERSIDE paler, with dark brown and silvery purplish-white bars and markings. Forewing light brown, gradually deepening from the base to beyond the middle of the wing where it forms a dark band across the wing just beyond the cell, sharply defined, and somewhat suffused outwardly, beyond this is a silvery purplish-white band, broad at the costa, diffused outwardly, and gradually disappearing towards the inner margin, terminated on the costa by a pure white spot. Beyond this band the ground-colour is again light brown, ending before the margin in another dark band sharply defined outwardly. The margin is pale brown, bearing a fine darker brown line; the extreme margin defined with a dark line. Three small decreasing ocelli on the discoidal and upper median interspaces, above which are three small costal purplish-white spots divided by the subcostal nervules. The ocelli are variable in number, some specimens having two, others only one ocellus. Crossing the cell at its middle is a wide deep brown bar, beyond which is a slightly narrower silvery purplish-white bar; then another dark bar inwardly sharply defined, outwardly becoming diffused into the paler ground-colour; the extremity of the cell again irrorated with silvery in an incomplete bar. Hindwing light brown, shaded with deeper brown, and crossed by first a short basal streak; second by a pair of narrow irregular lines enclosing a space of a deeper colour than the ground; third by two other lines from the costa to the abdominal margin, somewhat far apart and irregular, the space between them irrorated with silvery bluish-white, which is also the colour of all the lines. The inner of this last pair of lines is inwardly narrowly, and the outer

the outwardly widely bordered with deep brown, as are also the disco-cellular nervules. A submarginal series of six large ocelli, the anal one geminate, black, pupilled with white, the black portion being often irrorated with silvery-bluish scales, with a yellow iris surrounded by a brown and then a silvery ring; the dark brown margin having an irregular purplish-white line, then a narrow dark brown line, a broader ferruginous line, and lastly the extreme margin defined by dark brown. *Cilia* alternately brown and whitish.

FEMALE much lighter above and below. **UPPERSIDE**, *forewing* with the basal area gradually deepening to beyond the cell, where it ends abruptly, and is followed by a pale brown band across the wing, inwardly sharply defined with its edge very irregular, outwardly diffused, palest at the inner margin. The spots in the *hindwing* placed on a paler ground than in the male. **UNDERSIDE**, *hindwing* with the area narrowly within and more widely beyond the disco-cellular nervules irrorated with ochreous, otherwise as in the male.

As far as is known, *Z. sura* is confined to the north-east of Bengal, and is rare. Mr. Otto Möller took two male specimens near Darjiling at 6,000 feet, in November.

155. *Zophoessa dura*, Marshall.

Z. dura, Marshall, Journ. A. S. B., vol. li, pt. ii, p. 38, pl. iv, fig. 2 (1883), male.

EXPANSE: ♂, 2·8 inches.

HABITAT: Upper Tenasserim.

DESCRIPTION: MALE. **UPPERSIDE**, both wings dark velvet brown, with a faint purple gloss and in some lights a golden sheen, the outer margins abruptly paler, the pale margin widening on the hindwing, where it occupies nearly half the wing. *Forewing* with an indistinct dark brown submarginal line on the pale ground. *Hindwing* with four round blackish spots on the pale ground, and beyond them a dusky marginal line, followed by the usual outer yellowish lines divided by a fine dusky line. **UNDERSIDE** as in *Z. sura*, Moore, to which this species is closely allied, but the silvery-grey and chestnut markings are less prominent, and the grey zig-zag lines at the base of the *hindwing* are much more convex in outline.

The spots on the upperside of the hindwing are much smaller than in *Z. sura*, the two on the median interspaces are prominent, the other two are obsolescent.

* Taken by Captain C. T. Bingham in the lower Thoubgyeen forests in Upper Tenasserim in May. The type specimen, which is unique, is now in the Indian Museum, Calcutta.

156. *Zophoessa goalpara*, Moore.

Z. goalpara, Moore, Proc. Zool. Soc. Lond., 1865, p. 768.

HABITAT: Sikkim, Assam.

EXPANSE: ♂, 2·5 to 2·8; ♀, 3·0 inches.

DESCRIPTION: "MALE: UPPERSIDE glossy olive-brown, palest on the exterior margin. *Forewing* with a marginal suffused brown line. *Hindwing* with a transverse discal line, a submarginal series of round spots, and marginal lunulated line dark brown. **UNDERSIDE** pale glossy greyish olive-brown, suffused with darker brown exteriorly. *Forewing* with two short bands within the cell, a transverse discal band, and suffused submarginal line dark brown. *Hindwing* with subbasal transverse bifid line and transverse discal sinuous band dark brown, a submarginal series of seven dark brown ocelli, the last two at anal angle geminate, each with a white central dot and yellowish border, the whole having an outer pale whitish border along each side, a marginal line of pale lunules. **FEMALE** dark olive-brown, pale greyish-brown exteriorly. *Forewing* with a marginal suffused brown line. *Hindwing* with a submarginal series of brown pale-bordered spots, a marginal narrow lunulated pale line bordered with brown. **UNDERSIDE** glossy greyish olive-brown, palest exteriorly; markings as in male, but more suffused; those of the *hindwing* each with a pale border; the submarginal ocelli less defined, the three upper partially covered with blue, the two next wholly so, the geminate last jet-black, the whole of them having each a separate pale-white outer circle. *Forewing* with three small indistinct subapical ocelli." (Moore, l.c.)

* On the **UPPERSIDE** of the *forewing* in the **MALE** there are a dark brown transverse discal band and two more or less prominent bands in the cell corresponding to those of the under-side; and on the *hindwing* beyond the lunulated line is a fine dark brown submarginal line, and the margin itself is narrowly dark brown, the narrow space between being ferruginous. On the **UNDERSIDE** in fresh specimens the ground-colour is a pale yellowish olivaceous; on the *forewing* are sometimes two inconspicuous small ocelli, one on each side of the lower discoidal nervule, above which is a group of three small white spots near the costa, and a narrow dark line beyond the suffused submarginal band. On the *hindwing* there is also a broad basal streak, and the marginal lines as on upperside. We have not yet seen the female.

Z. goalpara, though apparently very local, has a wide range. The Indian Museum has a single specimen from Sibsagar in Upper Assam; in the neighbourhood of Darjiling in Sikkim it is found but rarely; and in the neighbourhood of Simla it is not uncommon in some years at Sidhpore and in the Narkunda forests at about 9,000 feet elevation at the end of July and the beginning of August; but there is no record as yet of its occurrence in the vast intermediate area. The specimens from Simla differ from those from Sikkim in having on the **UPPERSIDE** the spots on the *hindwing* smaller; and on the **UNDERSIDE** in that the yellowish basal area of the *hindwing* is much more suffused with brown, especially towards the abdominal margin, the pure yellowish tone being confined to the space between the subbasal and discal brown bands above the median nervure, and to narrow diffused edgings to all the brown bands. This suffusion with brown is apparent even in Sikkim specimens, but in them it is far less pronounced and less extended.

157. *Zophoessa atkinsonia*, Hewitson.

Z. atkinsonia, Hewitson, Ent. Month. Mag., vol. xiii, p. 151 (1876); id., Moore, Desc. Lep. Coll. Atkinson, p. 2, pl. i, figs. 2, 3 (1879), male.

HABITAT : Sikkim.

EXPANSE : 2'1 to 2'2 inches.

DESCRIPTION : **MALE** : **UPPERSIDE** dark brown, rufous towards the base. *Both wings* with a submarginal black line. *Forewing* marked by several rufous-orange spots; two in the cell, a quadrident band beyond these, three (one bifid) near the apex, and five below the middle. *Hindwing* with a rufous-orange band near the outer margin, marked by five black spots; a submarginal rufous line. **UNDERSIDE** rufous-brown; a spot in the cell, which is bordered on both sides with brown, and a continuous band beyond the middle, sinuated and bordered inwardly with dark brown, both yellow; a series of four small white spots near the apex, and two submarginal linear brown bands. *Hindwing* tinted with green near the base, marked by two short bands of yellow, and followed by a broader band of the same colour; the outer half of the wing rufous-brown, marked by five black ocelli, with rufous iris and pupil of blue; a submarginal band of white." (Hewitson, l. c. in Desc. Lep. Coll. Atk.) The **FEMALE** is unknown.

Rare. Colonel Lang's collection contains a single specimen from Sikkim and there is a single specimen in the Indian Museum, Calcutta.

158. *Zophoessa jalaurida*, de N. (PLATE X, FIG. 198.)

Z. jalaurida, de Nicéville, Journ. A. S. B., vol. xlix, pt. ii, p. 245, n. 2 (1880.)

HABITAT : N.-W. Himalayas.

EXPANSE : 2'3 inches.

DESCRIPTION : **MALE** : **UPPERSIDE** of *both wings* deep brown. *Cilia* brown, ochreous at the interspaces. *Forewing* with a somewhat constricted band across the cell beyond middle, widely bordered on both sides with a deeper shade of the ground-colour. A transverse discal band extending from the costa to the inner margin, divided anteriorly by the veins into four somewhat square-shaped spots, below the third median nervule consisting of diamond-shaped spots. A subapical spot divided into three portions by the veins, followed

by four small round spots, the third from the apex slightly the largest; all the bands and spots ochreous. An indistinct suffused submarginal dark brown line. *Hindwing* with an indistinct dark bar across the cell near its end, the disco-cellular nervules bordered on both sides with deep brown, and a band beyond the cell across the wing also of a deeper brown than the ground-colour. Six round black spots (the anal one small and indistinct) with pale circumferences placed upon a somewhat lighter coloured band than the rest of the wing. The margin dark brown with two ochreous lines divided by a dark brown line. *UNDERSIDE* paler brown than above, and without any sheen. *Forewing* with the bands and spots as above, only more distinct and yellowish; the first two of the four round subapical spots developed into ocelli with lilascent pupils and placed on a light band. *Hindwing* slightly greenish on the abdominal margin and base; an irregular streak at the base wide below the cell; parallel to this is a line from the costa to the median nervule; beyond this a W-shaped figure, the first line of the W being in the cell, the last ending near abdominal margin. Outside the cell a transverse streak, somewhat straight from the costa (where it is very broad) to the third median nervule, to which point it gradually decreases, beyond this it is very narrow and sinuous; the first median nervule is inwardly bordered from its origin to the point where it is cut by the last named streak with silvery-white, which is the colour of all the lines and streaks. A band of six black ocelli, pupilled with blue, with yellow sides and narrowly cycled with brown and then grey lines; the fourth from the outer angle with the blue pupil very large, and nearly covering the black portion, the sixth bipupilled. A submarginal lilascent line extending up the abdominal margin, beyond which are two dark fine lines with a broader ferruginous line between them. The FEMALE is unknown.

Z. jalauria appears to be confined to the Western Himalayas, and occupies the most westerly range of the genus. Mr de Nicéville took a large number of this species near the top of the Jalauri Pass on July 29th, 1879, none were on the wing, but all were settled on the red flower of a *Piscaria* which grows abundantly in the thick forest between 6,000 and 8,000 feet which clothes the Kulu side of the Pass. Strangely enough this flower was entirely disregarded by all the other butterflies (except the single *Lethe matrya* taken in the same place) flying about, and he took them settled on nothing else. *Z. jalauria* is also not uncommon in the Narkunda and Bhagi forest in the neighbourhood of Simla, at about 8,000 to 9,000 feet elevation, at the end of July and the beginning of August. Colonel Lang took several specimens there in 1865; and in 1882 Mr Doherty, an American naturalist, found it commonly there at the same season, but we have no record of its occurrence in any other localities as yet.

The figure is taken from a male now in the Indian Museum, Calcutta, and shows the upper and undersides.

159 *Zophoessa baladeva*, Moore.

Z. baladeva Moore, Proc Zool Soc Lond, 1865, p 769 pl xli, fig 5, male

HABITAT. Sikkim.

EXPANSE. 2.12 to 2.35 inches

DESCRIPTION: "MALE. *UPPERSIDE* greenish olive-brown. *Forewing* with three pale apical bands, the first oblique, each extending from the costa to near the posterior angle, the medial band having a linear series of small dark spots. *Hindwing* with a submarginal series of black, pale-ferruginous-bordered spots, the lower spot with a central white dot, a narrow marginal double black line. *UNDERSIDE* yellowish olive-brown. *Forewing* with bands crossing the cell; the oblique discal and submarginal band and marginal line pale yellow, the medial band composed of six small uniform ocelli, each with a black spot having a white dot and pale ferruginous outer circle, the whole bordered inwardly by a silvery-white band. *Hindwing* with a straight silvery-white band from inner margin extending across the cell, beneath which it terminates with yellow; a basal streak, discal and marginal lines yellow; the ocelli seven in number, and very prominent, each composed of a jet-black spot with white central dot (the lowest spot with two), and pale ferruginous outer circle; the upper spot bordered with yellow; the others with a silvery-white inner band; space below the last two ocelli ferruginous; marginal lines black." (Moore, l.c.)

On the underside of the *forewing* there is a short streak near the base of the cell, and another at its extremity, both pale yellow, in addition to the streaks mentioned above. On the *hindwing* the upper ocellus is twice the size of any of the others, and well retired; there are also only six ocelli, if the anal one is considered to be bipupilled. The dark marginal lines are inwardly bordered with yellowish. The first and third median nervules of the hindwing are produced into two short but distinct tails. The FEMALE is unknown.

Rare. The few specimens in our collections are all from Sikkim.

160. *Zophoessa andersoni*, Atkinson.

Z. andersoni, Atkinson, Proc. Zool. Soc. Lond., 1871, p. 215, n. 2, pl. xii, fig. 3; *id.*, Anderson's Researches, vol. i, p. 922, vol. ii, pl. lxxxi, fig. 3 (1878).

HABITAT: Upper Burma.

EXPANSE: 2.25 inches.

DESCRIPTION: "UPPERSIDE brown. *Forewing* crossed by two pale bands rising from the costa, and directed towards the posterior angle, but not reaching it; the first beyond the extremity of the cell, the second intermediate between the first and exterior margin, [beyond which are a series of five equal-sized obsolete ocelli, with small distinct black pupils]. *Hindwing* with a pale submarginal belt containing a series of incomplete ocelli. The first and third median nervules produced into short tails. UNDERSIDE bright ferruginous. *Forewing* crossed by three silvery-white bands, the first cutting the middle of the cell at right angles, the second and third corresponding to the pale bands on the upperside. Exterior to the third band a series of rudimentary ocelli reduced to four dark points. The exterior marginal lines bordered within by yellow. *Hindwing* crossed by two silvery-white bands, the first cutting the lower part of the cell, and corresponding to the first band of the forewing, the second equidistant between the first and the exterior margin, and corresponding to the second band of the forewing. At either end of the second band and within it are ocelli, the upper with one, and the lower with two white pupils ringed with black. Exterior to the second band a series of four white-pupilled ocelli, their outer edge forming an interrupted yellowish-white band. The exterior margin sharply defined by two fine black lines divided by a yellow line, and bordered within by bright yellow. *Cilia* yellow. *Antennæ* brown, with ferruginous tips." (Atkinson, l.c.) It is probable that a male is described, but the sex is not mentioned.

Very rare. There are two male specimens in the Indian Museum,—one brought by the Yunan Expedition from Ponsee, where it was taken in March, 1868, the other without locality.

161. *Zophoessa dirphia*, Druce.

Z. dirphia, Druce, Cist. Ent., vol. i, p. 357 (1875).

HABITAT: Sikkim.

EXPANSE: 2.5 inches.

DESCRIPTION: "UPPERSIDE dark brown. *Forewing* crossed beyond the middle from the costal margin to near the anal angle by a pale brown band almost yellow on the costal margin, a yellow spot beyond near the apex, below which are three minute black spots. *Hindwing* dark brown, with a submarginal row of four incomplete ocelli, the second the largest, the third minute, the *cilia* of both wings white. UNDERSIDE bright chestnut brown. *Forewing* crossed beyond the middle by a cream coloured band, a pale coloured band crossing the middle of the cell, bordered widely within by a wide reddish-brown band which crosses both wings, terminating near the inner margin of the hindwing; a row of four white-pupilled ocelli near the outer margin, which is pale brown with a very fine dark brown submarginal line. *Hindwing* crossed beyond the middle by a reddish-brown band, bordered outwardly by pale yellowish-brown, a submarginal row of six white-pupilled ocelli, the first and fifth the largest; the outer margin pale brown, with a dark submarginal brown line. This species is allied to *Z. andersoni*, Atkinson." (Druce, l.c.)

This is the only species of this genus which we have not seen; it must be very rare.

162. *Zophoessa yama*, Moore. (PLATE X, FIG. 21 ♂.)

Z. yama, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 227, n. 458 (1857).

HABITAT: Mussoorie, Kumaon, Bhutan, Sikkim, Khasi Hills, Sylhet.

EXPANSE: 2·8 to 3·4 inches.

DESCRIPTION: "Differs from *Z. sura* in having no caudal appendage to the hindwing. UNDERSIDE having on the forewing three pale bands crossing the discoidal cell, and four submarginal ocelli; the hindwing having the basal portion irrorated with minute pale dots, the transverse streaks more oblique, and the ocelli, seven in number, are black, encircled with a pale and then a dark line, centred with a minute white dot, that at the anal angle being, as it were, geminated. Cilia seen from upperside yellowish-white. Sexes alike." (Moore, l.c.)

Z. yama, of all the species of *Zophoessa* yet known, has the underside the most profusely variegated; but it lacks the silvery purplish-white markings of *Z. sura*, being only here and there scarcely irrorated with that colour; and on the upperside of the forewing the ochreous spots on the costa are much more prominent than in *Z. sura*, more especially so in specimens from Shillong. In specimens from Sikkim the ocelli on the underside of the forewing show through on the upperside slightly. In specimens from the Khasi Hills, they are even more distinct; while in those from Mussoorie they sometimes do not show at all. It is not uncommon in the Khasi Hills and Sikkim, where its colour is velvety chocolate-brown, the buff cilia being very broad and conspicuous. It extends westwards in the hills as far as Mussoorie, where its general colouration is totally different in tone, though the markings are identical in arrangement. Specimens from Mussoorie are much paler and of a yellowish-brown, smaller in size, and with the buff cilia inconspicuous. On the underside, too, the markings are paler and less conspicuously defined. This is no doubt a local variety, resulting from the drier climate of the western hills, there are analogous variations dependent on comparative humidity of climate in every branch of the animal kingdom. The FEMALE has the wings slightly broader, and is generally paler and duller in colour, the markings of the underside especially being duller and less distinct, but in other respects identical with those of the male.

Z. yama occurs in the Khasi Hills in May, and at Mussoorie, at 7,000 feet elevation, in June; Mr. E. T. Atkinson also records it from the outer ranges of the Himalayas in Kumaon.

The figure shows the upper and undersides of a male specimen from Shillong in Major Marshall's collection.

Genus 12.—NEOPE, Butler. (PLATE XI.)

Neope, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 166, pl. iv, fig. 7a (1867), structure; *Neope*, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 228 (1857); *Blanaida*, Kirby, Syn. Cat. D. L., Supplement, p. 699 (1877).

"WINGS large: forewing elongate, subtriangular; costa rather convex; outer margin denticulate; inner margin somewhat convex, rarely straight; nervures scarcely tumid at the base, arranged as in *Lethe*, with spots and ocelli as in *Lasiommata*. Forewing with the shape and venation of *Lethe*, &c. UNDERSIDE with submarginal ocelli, basal area scrawled with irregular streaks and bands. Antenna with a gradually formed club."

"The species composing this genus seem very closely allied to some of the species of *Lethe*." (Butler, l. c.)

Kirby has recently proposed the name of *Blanaida* for this genus, on the ground that *Neope* is preoccupied; but the nearest approach to preoccupation is in the genus *Neopus* of the Raptorial suborder of *Aves*, and as there is a sufficient difference between *Neopus* and *Neope* for all practical purposes, there does not seem to be any justification for suppressing the latter.

* This is a small genus; only eight species are known, of which five are found in Indian limits, and the remainder in China and Japan. The Indian species are confined to the Himalayas, extending into Burma, and the genus is unrepresented either in the plains of North India or in the South. The *Neopes* are forest-loving insects, not common anywhere apparently except in Sikkim.

Key to the Indian species of Neope.

- A. Upperside dark brown, with numerous ochreous spots and markings throughout; hindwing distinctly tailed.
- a. Of small size: forewing with the median and submedian nervures broadly defined with ochreous.
 - 163. *N. PULAHA*, Himalayas
 - b. Of large size, none of the nervures defined with ochreous.
 - 164. *N. BHADRA*, Sikkim; Assam.
 - 165. *N. KHASIANA*, Khasi Hills
- B. Upperside ochreous-brown, with a prominent series of submarginal black spots on both wings; hindwing scarcely perceptibly tailed.
- a. Underside with a prominent nearly straight ochreous discal band on both wings; forewing with five ocelli, four of them pupilled with white.
 - 166. *N. BHIMA*, Burma.
 - b. Underside with no ochreous discal band, forewing with one ocellus and two black spots.
 - 167. *N. MOORII*, India

The genus *Neope* includes two groups differing considerably from one another in outline, and from each other and from all allied genera in the character of their markings, both of which are represented in India, and correspond to the *atkinsonia* and *yama* types in *Zophoessa*. The first, which has the forewing rather elongate and the hindwing quadrate and distinctly tailed, is distinguished by numerous ochreous spots irregularly scattered on the upper side on the dark ground and in no regular pattern; on the underside, moreover, the markings are more irregular, and the bands on the hindwing are perpendicular to the body, instead of being parallel to it, as in all *Zophoessas*. The second which has the wings shorter, broader, and more rounded and similar in outline to *Z. yama* is distinguished by having on the upper side on both wings a submarginal row of large oval black spots on a yellowish ground; on the underside the markings resemble generally those of *Z. yama* in arrangement. Structurally there appears to be nothing to separate *Neope* from *Zophoessa* except the outline of the wings, in the first or typical group; if this feature were taken as a basis, *N. bhima* and *N. moorii* would form a separate genus, in which *Z. yama* should be included. The male insects possess no glandular patches or tufts of hair on the wings; and the sexes are scarcely, if at all, differentiated, agreeing in both these respects with *Zophoessa*, but the differences in style of markings pointed out above render it convenient to retain them in a separate genus; the antennæ are perhaps more gradually and less abruptly clavate than in *Zophoessa*.

The first group contains three species, all inhabiting the hills to the North of India.

163. *Neope pulaha*, Moore. (PLATE XI, FIG. 25 ♀.)

Lasiommata f. *pulaha* and *Enope pulaha*, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. i, p. 227, n. 477 (1837).

HABITAT: Throughout the Himalayas to Upper Burma.

EXPANSE: 2.5 to 2.9 inches.

DESCRIPTION: "UPPERSIDE chocolate-brown, dusky about the apex and margins. Forewing with the veins at the base, a stripe at extremity of discoidal cell, and two transverse series of spots, ochreous-yellow. Hindwing with two rows of ochreous-yellow spots. Cilia spotted with yellowish-white. UNDERSIDE dark brown. Forewing with three bars across the discoidal cell and subapical spots tinged with white; lower series of spots and space below the cell yellow. Hindwing with a submarginal row of eight ocelli and a single ocellus at abdominal angle; an irregular dark brown band from middle of anterior to middle of abdominal margin; markings about anterior margin tinged with white."

"Remark.—This species is somewhat allied in form to *Heteronympha merope*, Fabricius [from Australia]." (Moore, l. c.) The sexes in this species are alike. The underside of the hindwing has numerous irregular dark brown zig-zag lines and markings, too irregular to

describe in detail, including several ochreous spots outlined with dark brown, and between the markings the ground-colour is irregularly and beautifully irrorated with lilac-white scales throughout, grouped here and there into cloudy bands and lunular lines in Sikkim and Eastern Himalayan specimens. The specimens taken at Kujar in the Western Himalayas are smaller and paler, with the ochreous spots much larger, and the markings of the underside on the hindwing far less rich and prominent; they are perhaps separable as a local subspecies, but the differences are no greater than the colder and drier climate of the Western Himalayas would account for.

Major C. H. T. Marshall took *N. pulaha* at Kujar, near Chamba, in April. Colonel Lang took it in lower Kunawar at 7,000 feet elevation, and again at Narkunda near Simla at about 9,000 feet elevation, and the Indian Museum, Calcutta, has specimens from Mussoorie, and Sikkim, and one taken by the Yunnan Expedition.

Regarding its habits, Colonel Lang notes as follows:—"I have only seen two specimens of this species in two localities far apart in the interior of the Himalaya, in dark forests of Oak, Sycamore, and Horse chestnut, affecting shade and pitching on trunks of trees." (Ent. Month. Mag., vol. 1, p. 182 (1864).) Mr. A. Graham Young writes of this species as follows:—"I have as yet never seen it but on the Tihar Pass and the Jamere Mountain, Kulu. On the 21st July, 1872, it was in swarms round an oak tree on the top of a stony ascent, called Ghora Dik Walle." "

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

164 *Neope bhadra*, Moore.

Lasiommata ? *bhadra* and *Enope bhadra*, Moore, Horsfield and Moore, Cat. Lep. E. I. C., vol. 1, p. 327, n. 478 (1857).

HABITAT, Sikkim, Assam.

EXpanse. 3.2 to 3.7 inches.

DESCRIPTION. "UPPERSIDE blackish brown, suffused with chocolate-brown at the base of forewing and along abdominal margin. Forewing with two transverse bars within discoidal cell, and two rows of spots across the wing yellowish, the lower inner spot being long. Hindwing with two rows of irregular shaped spots, and small space about extremity of discoidal cell deep ochreous-yellow, the last spot on each row near anal angle encircling a spot of black. UNDERSIDE dark brown, tinged in parts with pink. Forewing with markings as above, also with a subapical eye-spot. Hindwing with a series of seven ocelli, and a smaller spot at abdominal angle, base of the wing varied with pale ochreous-white and dark brown markings" (Moore, l. c.) The FEMALE does not differ from the male in markings.

The underside of the hindwing is beautifully variegated; there is a short greyish white streak along the costa from the base, then a broad dark brown band perpendicular to the body irregularly variegated with ochreous and lilac grey irrorated markings, then a greyish white band from the middle of the body to the costa, followed by a dark brown broad band below, which bears a very irregular band of yellowish irrorations defined by yellowish lines, and the paler ground-colour beyond on which the ocelli are placed, is irregularly irrorated with ochreous and lilac-white, the margin is brown, profusely irrorated with yellowish towards the anal angle, and bears two sinuous dark brown lines, in addition to the extreme marginal line, which is also dark brown.

Mr. de Nicéville found this species in profusion in the Great Runjit Valley, Sikkim, in October. It settles on the road with closed wings, flying off into the jungle when disturbed. The beautifully variegated underside of this species effectually hides it when settled, as is its habit, amongst dead leaves. Mr. Otto Möller has also taken it in the neighbourhood of Darjiling in May and June.

165. *Neope khasiana*, Moore.*N. khasiana*, Moore, Trans. Ent. Soc. Lond., 1887, p. 306.

HABITAT: Khasi Hills.

EXPANSE: 3.25 inches.

DESCRIPTION: "MALE. Allied to *N. bhadra*. UPPERSIDE: markings on forewing similar, the two streaks within the cell much less distinct, that crossing its middle almost obsolete; the streak between the first median nervule and submedian nervure narrower, and confluent with its terminal spot. Hindwing ochreous-yellow, with the costal border and apical end of exterior border brown, the immediate base of the wing ochreous-brown; a large oval dark brown spot beyond lower end of the cell, and a discal curved series of six round spots decreasing in size to a minute spot above anal angle. UNDERSIDE similarly marked to *N. bhadra*, except that there are two subapical ocelli, the lower one situated between the third and second median nervules; the three streaks crossing the cell are zig-zag, and the posterior margin broadly ochreous. Hindwing with a regular transverse subbasal ochreous-white fascia, the dark spot at end of the cell smaller and more prominent, the transverse series of ocelli also smaller, the interspace on both sides paler ochreous brown." (Moore, l.c.)

This species appears to differ from *N. bhadra* chiefly on the upperside of the hindwing. In the latter species there is often a distinct ocellus between the third and second median nervules on the underside of the forewing. We have never seen a specimen of *N. khasiana*.

The next group contains only two species in India, the remaining species of the genus being found in China and Japan. Of the two Indian species, one has been found only in Upper Tenasserim, and of the other the precise locality is doubtful; both are evidently very rare.

166. *Neope bhima*, Marshall. (PLATE XI, FIG. 26 ♀.)*N. bhima*, Marshall, Journ. A.S.B., vol. xlix, pt. iv, p. 246, n. 6 (1880).

HABITAT: Upper Tenasserim.

EXPANSE: 3.0 inches.

DESCRIPTION: FEMALE. UPPERSIDE ochreous-brown. Forewing with a yellowish submarginal macular band narrowed at the costa and inner margin and widest in the middle, bearing three large oval black spots, one between the discoidal nervules, the others between the median nervules, and (in one specimen) a small round black spot below the first median nervule, and above the third median nervule is a small incomplete ocellus; between this band and the cell is another paler yellowish band, narrow, ill-defined, brightest at the costa, and divided by the dark nervules. Hindwing with five prominent oval black spots narrowly circled with yellow on a somewhat paler ground, the middle one smallest and rounded; a faint trace of the ocelli of the underside is seen through at the anal angle; the margin itself and two fine marginal lines dusky. UNDERSIDE ochreous-grey, variegated with dark brown and pure ochreous; both wings crossed by an almost straight prominent ochreous band (greyish on the hindwing) just beyond the middle. Forewing with the ocelli as on upperside, but smaller, and all pupilled with white (except the lowermost); beyond the ocelli is another ochreous band, and two fine marginal lines and the margin itself dusky; in the discoidal cell there are three transverse sinuous brown bands, the first near the base narrow, the second across the middle broader, bearing four ochreous spots and appearing like two figures of 8; the third near the extremity zig-zag, widest at the lower end; the space beyond it irregularly variegated. Hindwing with three prominent brown spots near the base, two in the cell, and one above bearing ochreous pupils, the rest of the basal half irrorated with brown and bearing numerous irregular zig-zag brown lines, some bordered and some centred with ochreous. Eight nearly equal black ocelli pupilled with white and banded with pure yellow and dark brown, arranged in a sinuous line, the seventh and eighth confluent; marginal lines as on forewing. Cilia prominent, ochreous on both sides, marked with brown at the tips of the nervules.

This species has as yet only been found in Tenasserim, where two females were taken by Captain C. T. Bingham in the Upper Thoungyeen forests in March and April. It is allied to *N. moorei*, Butler.

The figure is taken from a female specimen in the collection of Major Marshall from Upper Tenasserim, and shows the upper and undersides.

167. *Neope moorei*, Butler.

N. moorei, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 166, n. 3, pl. iv, fig. 7 (1867), male; idem, id., Cat. Lep. B.M., *Satyrinae*, p. 113, n. 4 (1868); *N. goschkevitchi*, Ménédriés, var. a, Kirby, Syn. Cat. D.L., p. 42, n. 3 (1877).

HABITAT: East Indies.

EXPANSE: 3·12 inches.

DESCRIPTION: "MALE. UPPERSIDE yellow-olivaceous, the nervures ochreous. *Forewing* with seven elongate oval ochreous spots, the first and second interrupted with a swarthy fasciole, the third, fifth and sixth including large blackish-swarthy spots, and the seventh a small spot. *Hindwing*, with seven submarginal ochreous spots, the first and the seventh minute, from the seventh to the second increasing in length, all including swarthy spots; a marginal line and the margin itself greyish-swarthy beyond the middle. *Body* ochreous. UNDERSIDE pale ochraceous; the cell of the *forewing* and the basal area of the *hindwing* irregularly variegated with lines and streaks; a very irregular continuous median band, two marginal lines and the margin itself swarthy. *Forewing* with the apex fuscous; four submarginal spots, the first ocellate, black, banded with yellow and pupilled with white, the second ochraceous, the third and fourth black. *Hindwing* with seven black ocelli, white pupilled, banded with yellow and again with swarthy, the seventh geminate, the third and fourth small. *Body* pale ochreous." (Butler, l. c. in Ann. and Mag. of Nat. Hist.)

"This is evidently a local representative of *N. goschkevitchi*." (Butler, l. c. in Cat. *Satyrinae*.)

We have not seen a specimen of *N. moorei*. The "East Indies" is a wide term, and it is possible that so far as this species is concerned it may not include India at all.

Genus 13.—ORINOMA, Doubleday. (PLATE XIII.)

Orinoma, Doubleday, in Gen. D.L., p. 368 (1871); id., Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 50, pl. ii, figs. 4, 4a (1867), structure.

"BODY moderately robust, clothed, especially at the sides of the thorax, in front and behind, with fine hairs; wings with longitudinal interrupted pale bars between the nervules, and not ocellated. *Head* hairy, especially in front, where the hairs form a small tuft. *Eyes* large, hairy. *Antennae* about two-fifths of the length of the forewing, very slender, curved downwards at the tip, and terminated by a long, gradually formed, but very slender club, the articulations scarcely distinct, finely carinated beneath on the inside. *Palpi* compressed, large, corrected obliquely, reaching nearly to the level of the top of the eyes, and extending forwards nearly to the length of the head, very hairy in front; terminal joint minute, slender. *Thorax* oval; tippets clothed with fulvous hairs; meta-thorax clothed with longer grey hairs. *Abdomen* elongated, slender. FOREWING elongate, subovate; costal margin arched; apical angle rounded; outer margin entire, about three-fifths of the length of the costal margin, very slightly emarginate in the middle; anal angle rounded; inner margin straight in both sexes, of the same length as the outer margin. *Costal nervure* swollen at the base, united to the costa a little beyond the middle of its length; *subcostal nervure* with its first and second branches free, arising before the extremity of the cell; the third at nearly half-way between the cell and the apex; the fourth half-way between the third and the apex, uniting with the costa before reaching the apex, as does also the terminal part of the subcostal nervure, the upper discoidal nervule being extended to the extremity of the rounded apex. *Upper disco-cellular* very short, oblique, arising a little before the middle of the length of the wing; *middle disco-cellular* scarcely longer than the upper, nearly transverse; *lower disco-cellular* much elongated and curved, the extremity directed outwards, and united with the third branch of the median nervure at about the same distance from its origin as exists between the origin of its first and second branches, thus

closing the discoidal cell rather before the middle of the wing; the third branch being angulated at the place of junction, beyond which it is rather curved. *Submedian nervure* nearly straight. *HINDWING* elongate-ovate; costal margin curved; outer and anal angles rounded; outer margin slightly scalloped, the scallop at the extremity of the third branch of the median nervure being rather more decided than the rest. *Prediscoidal* [*precostal*?] *nervule* erect, curved outwards at the tip. *Subcostal nervure* arising nearer the body than the prediscoidal [*precostal*?], branching at a considerable distance from its base. *Upper disco-cellular* arising at a little distance from the base of the branch, curved, oblique; *lower disco-cellular* about equal in length to the upper, straight, rather more transverse, uniting with the median nervure exactly at the origin of its second and third branches, the latter of which is curved; the discoidal cell being thus closed in a rather acute point at some little distance before the middle of the wing. *FORELEGS* of the male very slender, small, and pectoral, densely clothed with delicate hairs; the tibia a little shorter than the femur, and the tarsus than the tibia; the tarsus exarticulate and destitute of claws. *Four hindlegs* moderately long, scaly; femur hairy within; tibia scarcely spined beneath; spurs distinct. Tarsus as long as the tibia, scaly, finely spined beneath and at the sides. *Claws* entire, very curved and acute. *Panonychus* minute, bifid" (Westwood, l.c.)

The type and only known species of this genus has very little of the general appearance of the *Satyrinae*, and more resembles some of the *Danainæ* or *Pierinæ*, but the hairy eyes, and the arrangement of the veins of the wing, almost identical with that of *Neorina*, indicate its affinity with the *Satyrinae*.

168. *Orinoma damaris*, Gray. (PLATE XIII, FIG. 32 ♂.)

O. damaris, Gray, Lep. Ins. Nepal, p. 14, pl. vii, fig. 2, 2 a (1846). id., Gen. D. L., pl. lxiii, fig. 3 (1851).

HABITAT: Himalayas, Cachar, Assam, Burma.

EXPANSE: 2.6 to 3.35 inches.

DESCRIPTION: "Wings yellowish white, with the veins and marginal bands brown; the costal nervure [base of the discoidal cell] of the forewing orange, with two black spots in the middle. UNDERSIDE paler." (Gray, l.c.)

MALE: UPPERSIDE deep swarthy, almost black, with all the markings pale yellowish-white, except the one occupying the basal half of the cell of the forewing, which is rich orange. *Forewing* with a triangular patch of rich orange colour filling the basal half of the cell, outwardly defined by a line of darker colour than the ground, the orange portion marked with two black spots placed obliquely. The upper part of the outer half of the cell is marked with a diffused black patch, below which is a black streak. The rest of the markings are almost identical in pattern with those of *Danaus aglea*, except that the long streak in the interno-median area is divided transversely near its middle by a fine, outwardly-angled black line, instead of longitudinally. *Hindwing* with the markings also bearing a very general resemblance to those of *Danaus aglea*, but with the yellow space in the cell divided by a black line parallel with the disco-cellulars. UNDERSIDE with all the markings paler and more clearly defined. On both wings there is a submarginal row of obsolete small black ocelli, those on the *hindwing* pupilled with yellowish; also a marginal line divided by the nervules, within which is a series of elongated rectangular marks. *Cilia* dark brown, ochreous at the interspaces. The collar and anterior portion of the thorax with orange hairs. *Body* dark above, pale yellow at the sides, and beneath marked with fine dark narrow longitudinal lines.

Orinoma damaris is a somewhat local insect nowhere very common; in the Kangra district Mr. Hocking records (Proc. Zool. Soc., Lond., 1882, p. 235) that it has been "taken at Jatingri," but is "very local and rare;" in Kumaon Mr. E. T. Atkinson records it as occurring in wooded lowlands, and Major G. F. L. Marshall has taken it in the neighbourhood of Naini Tal; it occurs in Nepal and Sikkim, and also in the Khasi Hills in the autumn; in Cachar, where Mr. Wood-Mason took it on Nemotha in October; and in Sylhet. Captain C. T. Bingham found it in Upper Tenasserim in the lower Thoungyeen forests from March to May. It apparently only occurs in the mountainous parts of North-East India, and at low elevations.

The figure is taken from a male specimen from Sylhet in the Indian Museum, Calcutta.

Genus 14.—RHAPHICERA, Butler. (PLATE XV)

Rhaphicera, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 164, pl. iv, fig. 4ⁿ (1867), structure.

"Forewing elongate triangular, the costa subconvex; outer margin short, convex; inner margin nearly straight. Neuration as in *Lasionmata*; nervures scarcely dilated at base; the disco-cellulars oblique. Hindwing pyriform; costa almost straight; outer margin denticulate; inner margin almost entire. Antennæ reaching to the middle of the forewing, elongate, slender, the club gradually formed. Palpi elongate, woolly; the terminal joint short, distinct. Eyes hairy." (Butler, l. c.)

The neuration differs somewhat from that of *Lasionmata*. In the forewing the first and second disco-cellulars are very short, the two discoidal nervures originating close together, and close to the subcostal nervure; the third disco-cellular is long, nearly straight and oblique. In the hindwing the second median nervule originates slightly before the apex of the cell in the typical species (*R. satricus*), and exactly opposite to it in the only other Indian species, while in *Lasionmata* it originates beyond the apex.

Only three species are known, two of which occur in the Himalayas, and the third at Mou-pin in Tibet. The colouration is dark orange yellow, much marked with black, and the pattern is the same on both upper and underside; the hindwing is also prominently ocellated on the underside. They are forest loving insects, settling on the leaves of trees and bushes, with a quick darting flight, and having nothing protective in their colouring they are prominent objects when settled. Both species are rare and very local. The sexes are only slightly differentiated, the female having the same colour and style of markings as the male.

Key to the Indian Species of *Rhaphicera*.

A. Wings orange yellow, the nervures and some bars across the wings and spots black. Hindwing with a submarginal series of ocelli.

a. The nervures narrowly black.

169 *R. SATRICUS*, Eastern Himalayas.

b. The nervures broadly black, the base of both wings irrorated with fuscous.

170 *R. MOOREI*, Western Himalayas.

169 *Rhaphicera satricus*, Doubleday, Hewitson.

Lasionmata satricus, Doubleday, Hewitson, Gen. D. L., p. 387, n. 24, p. lxxiv, fig. 4 (1851), female.
Rhaphicera satricus, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 164, pl. iv, fig. 3 (1867), female.

HABITAT: Eastern Himalayas.

EXPANSE: 2.5 to 2.7 inches.

DESCRIPTION.—MALE. UPSERIDE rich dark orange yellow; all the nervures black. Forewing with a narrow black bar across the cell in prolongation of the first median nervule, and another much broader one in prolongation of the second; a broad irregular band beyond the cell from the costa to the first median nervule, and sharply angled outwardly at its middle on the third median nervule; a short subapical bar from the costa ending with a round spot between the discoidal nervures, a large round spot on the lower median interspace, and the outer margin irregularly (narrowest on the lower median interspace) and the inner margin extending to the submedian nervule, black. Hindwing with a similar angulate band beyond the cell, narrow from the costa, almost obliterated above the discoidal nervule, broad and prominent across the median nervules; four large round submarginal spots, one on either side of the second subcostal, and one on either side of the second median nervule, and the outer margin, black; two narrow orange lines on the black margin; *alia* orange. UNDERSIDE. Forewing paler yellow; markings as on upperside, but the apex and outer margin also yellow, bearing a fine black line on the extreme margin, and another incomplete within it, and an irregular line much wider about the third median nervule and following the outline of the dark border of the upperside; the lower submarginal spot having a small white pupil and the

upper one developed into a perfect ocellus, with a bluish-white pupil, yellow iris and blackish outer ring. *Hindwing* bright golden brown with a broad much paler streak from the base covering the entire cell, and extending almost to the outer margin; a line from middle of costal nervure across the cell, an irregular angulate line from the costa outside the cell to the submedian nervure and two fine marginal lines black, a dusky sinuous submarginal line; six submarginal ocelli, the third (sometimes absent) and sixth smaller, and the sixth geminate, all black with prominent bluish-white pupil, yellow iris, and blackish outer ring. FEMALE similar in colour and markings.

Rhaphicera satricus is found in Sikkim, and Mr. E. T. Atkinson records it as occurring in the wooded hills beyond Almorah in Kumaon. This is probably the extreme western range of the species; further to the west it is replaced by the allied *R. moorei*.

170. *Rhaphicera moorei*, Butler. (PLATE XV, FIG. 38 ♂.)

Lasionommata satricus, Moore, Proc. Zool. Soc. Lond., 1865, p. 499, n. 82, *Rhaphicera moorei*, Butler, Ann. and Mag. of Nat. Hist., third series, vol. xix, p. 164, n. 2, pl. iv, fig. 4 (1867), female.

HABITAT: North-West Himalayas.

EXpanse: 2.1 to 2.25 inches.

DESCRIPTION. MALE: UPPERSIDE as in *R. satricus*, but all the black lines broader, the nervures being bordered as well as defined with black, giving it more the appearance of a black insect spotted with orange; the base of both wings, and the inner margin of the *hindwing* broadly irrorated with fuscous. UNDERSIDE also similar but paler and less brilliant; the base of both wings, and the inner margin of the *hindwing* broadly irrorated with fuscous as on the upperside; the third ocellus of the *hindwing* often obsolete, sometimes entirely wanting, the fourth, fifth, and sixth comparatively larger, and closer together. FEMALE: UPPERSIDE pale yellowish ferruginous, very similar to *R. satricus*, female, but smaller. *Forewing* with all the nervures fuscous, the base fuscous, the black bands wider, the discal fascia continued to the inner margin; a minute median discal black dot. *Hindwing* more denticulate, the internal area olivaceous-fuscous, with a series of six ocelli with grey pupils; the outer margin fuscous. UNDERSIDE: *Forewing* with the discal fascia more slender, the ocelli smaller, the outer margin slightly fuscous. *Hindwing* paler, the ocelli closer together, the median lines more irregular, continuous; the submarginal lines more undulate" (Butler, l.c.)

R. moorei is generally considered a rare insect, but in 1882 it was found in great profusion by Mr. Doherty in the Bhagi and Narkunda forests and again at Theog, all in the neighbourhood of Simla, in August, flying freely during heavy rain, and alighting on the leaves of bushes and trees; it is conspicuous when settled and appears to have nothing protective in its colouration. Colonel Lang notes, "Observed only late in the autumn, in a forest glade in the Himalayas, near a stream with rich vegetation about its banks." His collection contains five specimens from the neighbourhood of Simla taken at 9,000 feet elevation, and two from lower Kunawar, 7,000 feet elevation; it is evidently a very local insect.

The figure represents a male specimen taken by Mr. de Nicéville at Narkunda near Simla in August, and shows the upper and undersides.

The next two genera *Pararge* and *Ameleta* represent in India the "hairy-eyed" division of the genus *Satyrus* as defined by Godart and Boisduval. They are both sections of the genus *Lasionommata* of Westwood (Gen. D. L.), which latter also includes both *Neope* and *Rhaphicera*. They are distinguished from the remaining subdivisions of *Satyrus* defined further on as *Hipparchia*, *Aulocera*, and *Epinephele*, not only by having the eyes hairy, but by the position of the apex of the discoidal cell of the *hindwing* as defined in the key to the genera (p. 96), and by having a complete series of ocelli on the *hindwing* on the underside. In a few species of *Hipparchia* and *Epinephele* there are two or three perfect ocelli on the underside of the *hindwing*, but in none is there a perfect series, and in the greater number of species and in all the *Aulocera* the ocelli are entirely absent. Westwood's definition of *Lasionommata* is republished for reference.

Genus *Lasiommata*, Westwood.

Lasiommata, Westwood, Gen D L, p 385 (1831).

"Body slender, hairy; costal and median nervures of the *forewing* swollen at the base. *Head* moderate sized, very hairy, with a frontal tuft. *Eyes* prominent, hairy. *Palpi* porrected obliquely, the tips raised to the level of the tops of the eyes, extending forwards as far as the length of the head, very slender; the front of the basal and second joints thickly clothed with long divaricating hairs, extending to the tip; the terminal joint being extremely short. *Antennæ* straight, distinctly annulated with white, not quite half the length of the forewing, terminated by a distinct, compressed, pear-shaped club, the tip being bent outwards; the club, however, varies considerably in shape, being elongated and very gradually formed in some exotic species. *Thorax* oval, moderate sized, hairy. *Abdomen* slender. *FOREWING* large, elongate-triangular, costal margin moderately arched, apex rounded, outer margin entire, more than two thirds of the length of the costal, inner margin about as long as the outer. *Costal* and *median* nervures dilated at the base, the latter less so than the former. *Neuration* as in *Ebia*, the *upper disco-cellular* very short, transverse, the *middle* and *lower* forming a continuous curved line, the middle one shorter than the lower one, the *discoidal cell* reaching rather beyond the middle of the wing; a nervule extending into the discoidal cell continuous with the lower discoidal nervule, another nervule extending backwards from near the lower extremity of the lower disco-cellular nervule. *HINDWING* subovate; outer margin moderately scalloped, anal margin not incised near the extremity. *Upper disco-cellular* nervule arising at a short distance from the origin of the branch of the subcostal, considerably curved, and throwing off a nervule backwards into the discoidal cell; *lower disco-cellular* considerably longer than the upper one, also curved, and united with the median nervule at the origin of its third branch, or sometimes preceding the third branch. *FORELEGS* small, but distinct, and very hairy in both sexes, those of the *male* very slender, and more thickly hairy, with the tarsus simple, and acute at the tip. Those of the *female* scarcely longer, tibia shorter than the femur, tarsus equal to the tibia, dilated, and compressed at the extremity, where it is articulated, and armed on the inside with short spines. *Four hindlegs* moderately long, very slender, scaly, femur hairy beneath; tibia and tarsus with very few spines beneath. *Claws* curved, acute, simple, dilated into an angulated lobe at the base. *Panonychus* slender, bifid. *P. hylus* small, rounded."

"*LARVA*. Elongate, villose, with two short points at the tail. *PUPA* short, thick, with small angular projections, and two points at the head; suspended by the tail" (Westwood, l.c.)

The whole of the Indian species belong to two sections which have been generically separated under the names *Pararge* and *Ameceia* on the following characters.—

Genus 15.—*PARARGE*, Hubner.

Pararge, Hubner Verz bek Schmetz, p 59 (1816)

Differs but slightly from *Lasiommata* in having the *median* nervure of the *forewing* but very slightly swollen at base; the outer margin of the forewing is scarcely sinuate, and the inner margin is longer than the outer. The sexes are identical in markings, but differ somewhat in aspect owing to all the black markings being far more prominent in the female. The *MALE* has no sexual patches of raised scales or tufts of hairs on the wings.

Only a single species occurs within Indian limits, it is found in the North-West Himalayas. The colour is ochreous yellow with the outer margin and a few spots black, and is quite different in aspect from all other Indian species of this subfamily.

171 *Pararge cashmirensis*, Moore

P. cashmirensis, Moore, Proc Zool Soc Lond 1874, p 265, pl xliii, fig 3, male.

HABITAT: N.-W. Himalayas.

EXPANSE: ♂, 2.0 to 2.2; ♀, 2.2 to 2.35 inches.

DESCRIPTION: "*MALE*: *UPPERSIDE* ochreous yellow, brownish at the base. *Cilia* yellowish white, spotted with black. *Forewing* with a black dentate disco-cellular streak, and

a dark ochreous-black exterior border, the inner margin of which commences one-third before the apex and curves half round a subapical white-pupilled black spot, and thence attenuates to posterior angle [with a prominent projection inwards between the second and third median nervules]. *Hindwing* with a broad ochreous brown exterior border with wavy inner margin, contiguous to which are three black spots, each with a white pupil, the middle spot being the largest, and the anterior the smallest. The FEMALE differs in having two subapical spots and a broad disco-cellular patch on the *forewing*, and a fourth smaller anterior spot on the *hindwing*. *UNDERSIDE*. *Forewing* paler ochreous, markings as on upperside, but greyish brown, and with three narrow brown transverse streaks within the cell, and an irregular streak beyond it; two bright white-pupilled subapical spots, the upper one small, beneath which is a white dot, all being encompassed by a brownish line. *Hindwing* with greyish-brown base and exterior border, the disc being whitish grey, the division marked by a dark brown irregular zig-zag inner line and a wavy outer line; within this discal portion is a series of six round bright black spots, each having a white pupil (the basal two), and encircled by a yellow and a narrow brown outer ring, the second and third anterior spots being small, the others of equal size."

"Note.—The nearest ally to this species is *P. atismanni*, Eversmann, from Central Asia, figured in the Moscow Bulletin for 1847, vol. ii, pl. ii, figs. 5, 6." (*Afoore*, l.c.)

In some specimens the MALE also has on the upperside two subapical spots on the *forewing* and four submarginal on the *hindwing*; the base and inner half of the latter is suffused with brown. In the FEMALE the suffusion of brown on the *hindwing* is darker and more extended, the only yellow left being diffused rings round the spots and a small patch at the end of the cell.

Pararge cashmirensis is a rare and very local butterfly; the first capture of it was by the late Captain Reed at Goolmurg, an elevated plateau about 9 000 feet above the sea in Kashmir. Mr Robert Ellis has since taken it in Pangni in July and August at considerable elevations; it was also taken by Mr. Atkinson in Kashmir, but no other records of its capture can be traced. It is a well-marked conspicuous butterfly that would not fail to attract attention if met with.

Genus 16.—AMECERA, Butler. (PLATE XV.)

Amecera, Butler, Ann and Mag of Nat Hist, third series, vol. xix, p. 162, pl. iv, figs. 1, 2 a (1867), structure.

DESCRIPTION: "*Forewing* with the outer margin less wavy, and not angulate at the apex. *Hindwing* more elongate, the outer margin scarcely sinuate; otherwise as in *Lasiommata*. *Neuration* as in *Lasiommata*, but the cell of the *hindwing* shorter. *Antenna* more elongate and slenderer, the club pyriform and compressed. *Pulpi* with the terminal joint more elongate." (*Butler*, l. c.)

In this section Butler has included *Hipparchia baldia*, but as its eyes are quite destitute of hairs it belongs to, and is here included in, the genus *Hipparchia* restricted. He also includes *Pararge eversmanni*, which is a true *Pararge*, very closely allied to *P. cashmirensis*.

It is doubtful whether the name *Amecera* will not have to give way to *Lasiommata*, of which also *megera* was the type. Mr. Butler has restricted *Lasiommata* to the section of which *egria* is the type, and this arrangement we retain, as it has been followed by Mr. Moore.

The genus *Amecera* is spread over Europe and Western Asia, extending to England on the one hand, and to the Eastern Himalayas on the other. The typical species is *A. megera*, an English butterfly, with the wings tawny fulvous, marked with smoky brown. Four species have been described from India, all of them restricted to the mountain ranges on the north and north-west frontiers. One of them, *A. schakra*, is very distinct, and is a dominant species, common over a very large extent of country; the other three are all more or less specialised local forms of *A. maza* of South Europe, the claim of at least one of them

to rank as distinct specifically has been opposed by high authorities, and all three are comparatively rare and local. In this genus the males usually, but not universally, have a broad oblique stripe of raised scales on the forewing from the apex of the cell to the middle of the submedian nervure—a feature which they have in common with some of the *Hipparchias* and *Epinepheles*.

Key to the Indian species of *Amecera*.

A. With the wings smoky brown, with a prominent subapical ocellus on the forewing, and two or more on the hindwing, ringed with fulvous on the upperside; all with six perfect ocelli on the underside of the hindwing.

a. Males with a broad oblique stripe of densely packed scales on the upperside of the forewing.

a¹. With a submarginal series of fulvous streaks, diminishing from the costa (much wider in the female) on the upperside of the forewing, the male sexual streak narrow, and outwardly dentate along the nervules. Hindwing with two to five submarginal ocelli

172. *A. schakra*, Himalayas.

a². Male with two fulvous streaks below the ocellus on the forewing; hindwing with four ocelli

173. *A. marula*, Western Himalayas.

c¹. Male with the submarginal streaks on forewing more or less obsolete; the sexual streak very wide, not outwardly dentate, female with a prominent triangular fulvous patch, divided by the dark nervules only; hindwing with only two ocelli in both sexes

174. *A. menaya*, Western Himalayas.

b. Males with no stripe of densely packed scales on the upperside of the forewing.

a¹. Forewing with the outer dark zone of the ocellus on the underside of the forewing diffused and incomplete.

175. *A. maroides*, Western Himalayas.

172. *Amecera schakra*, Kollar. (PLATE XV, FIGS. 45♂, 46♀.)

Satyris schakra, Kollar in Hugel's *Kaschmir*, vol. iv, pt. ii, p. 446, n. 4, pl. xv, figs. 7, 4 (1848), male; *Lasiommata schakra*, Westwood, *Gen. D. L.*, p. 387, n. 12 (1851). *Amecera schakra*, Butler, *Ann. and Mag. of Nat. Hist.*, third series, vol. xix, p. 163, n. 7 (1867)

HABITAT: The Himalayas.

EXPANSE: 2.0 to 2.5 inches.

DESCRIPTION: MALE: "UPPERSIDE fuscous, with an interrupted marginal fulvous band. Forewing with one ocellus. Hindwing with three ocelli, black, pupilled with white. UNDERSIDE grey. Forewing with a large fulvous patch near the hinder angle, with a large apical ocellus, and a smaller obsolete one adjacent. Hindwing with six ocelli, each with two rings, and obscure angulate streaks" (Kollar, l. c.) FEMALE paler, with an additional fulvous marginal band beyond the ocellus, and the fulvous streaks merging into a pale yellow band between the ocellus and the cell extending nearly to the costa.

Though fairly constant in the markings of the underside *A. schakra* presents considerable variation on the upperside. Besides the difference in tone of the ground-colour due to climate, the MALE shows in the forewing differences in the width and prominence of the fulvous marginal band; and in the hindwing in the number and prominence of the ocelli. The commonest form has three ocelli, one or more of which are blind, others have two ocelli with a fulvous spot above. Others again have three ocelli with a fulvous spot above. Others have four ocelli, the uppermost blind, and some have five, the uppermost smallest, and well separated. The FEMALE shows the same variation in the ocelli of the hindwing.

A. schakra is one of the commonest butterflies of the Western Himalayas, extending eastwards as far as Sikkim; in the north-west "to be seen at all seasons flitting about the rocky road-side, and pitching on the rocks or banks; more abundant on the outer ranges on bare grassy slopes." (Colonel A. M. Lang in *Ent. Month. Mag.*, vol. i, p. 182, 1865.) Mr. A. Graham Young states that in Kulu it is very common, appearing in July, and again in September and October.

LARVA: "Apple-green with pale yellow lateral lines. Feeds on various grasses." (Graham Young.)

The figures show the upper and undersides of both sexes; the male from Simla, the female from Mussoorie.

173. *Amecera marula*, Felder.

Lasioommata marula, Felder, Reise Novara, Lep., vol. iii, p. 496, n. 858 (1865).

HABITAT: Kunawar, Pangi.

EXPANSE: Not given.

DESCRIPTION: "MALE: UPPERSIDE as in *L. [A.] mara*,* but with the ocellus of the forewing larger, and with the two ferruginous-fulvous spots below it narrower, and more distant from the margin. Hindwing with four ocelli (the uppermost blind), also larger and more remote from the margin. UNDERSIDE as in *L. [A.] schakra*, but the forewing with the fulvous patch extending into the cell, the streaks in the cell fuscous, the innermost shortest, the ocellus larger, the streak on the inner side of it short, straight. Hindwing with the streaks obscurely fuscous, a little more flexuous, the basal streak not at all faint, the ocelli larger. This fine species stands between *L. [A.] schakra*, which Dr. Stoliczka collected in large numbers on the Southern Himalayas, and our *L. [A.] mara*, the underside is very similar to that of *L. [A.] schakra*, the shape of the wings, however, together with the upperside reminds one of the latter." (Felder, l. c.)

In the absence of the type we are unable to state what differences can be especially relied on to separate the species, many of the varieties of *A. schakra* noted above accord fairly with the description of *A. marula*, though none of them exactly agree, especially in the outline of the forewing; it seems to us probable that *A. marula* is only a casual variety of *A. schakra*, but we retain it as distinct for the present pending further investigation, and in deference to Dr. Felder's high authority.

A. marula is apparently very rare, we have never seen a specimen. The description of *A. mara* from specimens from Prussia is given below.

174. *Amecera menava*, Moore.

Lasioommata menava, Moore, Proc. Zool. Soc. Lond., 1865, p. 499, n. 85, pl. xxx, fig. 3, male.

HABITAT: Western Himalayas; Beluchistan.

EXPANSE: 1.75 to 2.2 inches.

DESCRIPTION: "MALE: UPPERSIDE fuliginous brown. Forewing with a large apical jet-black ocellus, with white pupil and ferruginous iris; also a much smaller ocellus between it and the apex. Hindwing with two similar ocelli, placed submarginally midway between the anterior and posterior angles, [the inner one much the smaller]. UNDERSIDE with the discal portion of the forewing ferruginous, a series of four transverse discoidal streaks, and a submarginal line dark brown, each bordered with pale grey; the ocelli as above, but with yellow irides. Hindwing pale greyish brown, with irregular transverse basal brown lines; a series of six black submarginal ocelli, the first five with each a white pupil, and a double brown-bordered yellow iris, the sixth [geminate] at the anal angle, without the white-pupilled

* *Amecera mara* Linnaeus, Faun. Suec., p. 275, n. 1049 (1761). HABITAT: Europe. EXPANSE, male, 2.0 to 2.1; female 2.1 inches. DESCRIPTION: MALE: UPPERSIDE dull smoky brown. Forewing with a prominent black, white-pupilled subapical ocellus with a minute similar ocellus attached to it below, and another minute ocellus placed outwardly above it, these ocelli placed on a patch of bright fulvous, widest towards the costa, narrowest at the submedian nervure, which it does not quite reach, and divided by the dark nervules. Hindwing with two submarginal black, white-pupilled ocelli, each surrounded by a fulvous iris, and with a small spot of the same colour in the interspace above the anterior ocellus, sometimes bearing a small ocellus. UNDERSIDE light greyish brown. Forewing with two transverse brown bars in the cell, and the discal cellulae defined with brown; the ocelli ringed with pale yellow, and enclosed in a single fine brown line; the disc bright fulvous, the margin bearing an inner rather broad wavy dark line and two fine marginal lines. Hindwing with six black ocelli, the anal one geminate, each with two rings of fulvous and two of dark brown, a basal, a median and a submarginal dark wavy line, all parallel to the outer margin, two very indistinct wavy darker lines on the margin. FEMALE: Similar, but with the bright fulvous patch wider, and extending into the interspace below the submedian nervure; the disc irrorated with fulvous. UNDERSIDE with the fulvous patch larger and brighter. It lacks the usual sexual streak of the male on the upperside of the forewing. (Described from specimens from Prussia).

black centre, a submarginal series of whitish-grey lunules. Allied to *L. [A.] schakra*, Kollar." (*Moore*, 1 c)

The FEMALE differs in being paler coloured, in lacking the male sexual streak, and in having on the UPSERSIDE of the forewing a large triangular bright fulvous patch occupying nearly the apical half of the wing, the ocellus is included in this patch, and it is cut only by the dark nervules, not divided into streaks as in *A. schakra*.

A. menava "comes from middle Kunawar, the pleasant villages of Pangl and Rarung, where the last showers of rain fall at rare intervals. It does not venture to the drier regions; and its uniformly dark colour remains constant and seems to distinguish it from the more fulvous *L. [A.] schakra* so common on every rocky roadside in Lower Kunawar and the Simla hills" (Note by Colonel Lang in Proc Zool Soc Lond, 1 c). It is also found in the Pangl and Chini districts in the months of June and July, but it appears to be local, and nowhere very common. Mr de Niceville took a male at Nuila, Ladak, on July 5th, and two females,—one each at Chanagund and Kargil, Ladak, on June 30th and July 1st respectively. These were all the specimens he saw the extremely scanty vegetation of this dry and barren region not being favourable to an abundant insect fauna. Quite recently a female specimen has been taken by Colonel Lang in the Kawa Valley in Beluchistan at 8,000 feet elevation in the month of September, which shows that this species has a far wider range than was at first believed.

175 *Amecera maroides*, Felder

Lasiommata maroides, Felder, Reise Novara Lep, vol iii p 496 n 859, pl lix, fig 1 (1865), female

HABITAT: Dras, Ladak; Chulichang, at 12,000 feet elevation, Pangl

EXPANSION: ♂, 21 to 24, ♀, 23 to 24 inches

DESCRIPTION. MALE UPSERSIDE as in *L. [A.] menava*, but paler, the streaks more obsolete. Forewing with the ocellus distinctly surrounded with fulvous and with two large spots irrorated with fulvous below it. Hindwing with two ocelli coloured as in *L. [A.] menava*, but more broadly ringed and a little nearer to the margin, a fulvous spot annexed to the upper ocellus. UNDERSIDE as in *L. [A.] menava*, but the hindwing with the streaks of the basal half fuscous, scarcely margined with fulvous, that beyond the cell a little more directed outwards towards the costa. FEMALE UPSERSIDE Forewing with the ocellus placed on a triangular band of deep fulvous. A local form of *L. [A.] menava*, Moore, which Dr Stoliczka collected in numbers on the Southern Himalayas near Pangl in Kunawar. The FEMALE differs from the yet undescribed female of *L. menava* in the fulvous patch of the forewing being throughout distinctly defined, lighter and hardly divided by the nervules, and in the two ocelli of the hindwing being separated from each other, smaller, and somewhat nearer to the margin, as well as differing on the underside in the same way as described for the male. The two females of *L. menava* taken by Dr Stoliczka have on the upper side a third irregular ocellus confluent with the large one placed between the second and third median nervules' (*Felder*, 1 c).

A. maroides is given by Butler in his Cat. Satyridæ B M, p 126, as a synonym of *A. menava*, but the presence in the male of the large fulvous spots below the ocellus on the upperside of the forewing distinguish it from that species. No difference, however, can be detected on comparing a female of *A. menava* with Felder's figure of a female of *A. maroides*, except in the slightly larger extent of the fulvous patch on the forewing.

There are three specimens in Major Marshall's collection of an *Amecera* taken at Pangl in July and one female in August by Mr Robert Ellis, two of the former are clearly males by the structure of the abdomen and of the forelegs, and the outline of the wings, but they have no trace whatever of the male sexual streak on the forewing. They correspond well with Felder's description of *A. maroides*, and we refer them to that species, although the third specimen, a female, taken at the same time and place, resembles that of *A. schakra*, and not that of *A. menava*, in style of markings of the upperside. All three are much darker in colour than *A. schakra* usually is, but paler than *A. menava*. They are certainly distinct

from *A. schakra*; on the UNDERSIDE all four specimens differ both from *A. schakra* and *A. menava* in that the apical ocellus of the forewing lacks the well-defined narrow dark outer ring, having only an incomplete rather diffused ring, the lower portion obsolete; in the hindwing the ground-colour is paler than even in *A. schakra*, and, as Felder states, the streaks are fuscous scarcely margined with fulvous; and the one beyond the cell is distinctly more irregular and angled in outline. The males correspond so exactly with Felder's description of *A. maroides* that we cannot doubt their identity with that species, and we can only surmise that a female of *A. menava* has been accidentally figured by Felder as the female of *A. maroides*.

Genus 17.—HIPPARCHIA, Fabricius.

Hipparchia, Fabricius, Ill. Mag., vol. vi, p. 281 (1807); *Satyrus* (in part), Westwood, Gen. D. L., p. 388, (1851.)

"BODY generally rather robust, hairy; forewing with the costal and median nervures swollen at the base, and the outer margin somewhat scalloped. HEAD rather small, thickly clothed with rather short hairs. EYES prominent, naked. PALPI rather short, porrected obliquely, but not reaching much above the level of the middle of the eyes, and extending forwards about half the length of the head, rather thickly clothed beneath with moderately short hairs; the middle joint with a compressed conical tuft of hairs in the middle of the hinder margin; terminal joint very short and oval. ANTENNÆ not near half the length of the forewing, very slender, articulations indistinct, not annulated with white; terminated either by a short, abrupt, broad, concave club, or by a long, slender, fusiform club, with its base gradually formed. THORAX oval, clothed especially behind with long soft hairs. ABDOMEN moderately elongate-ovate. FOREWING with the costal and median nervures greatly swollen at the base; costal margin well arched, apex rounded; outer margin more than two-thirds the length of the costal; inner margin not, or scarcely, so long as the outer one, nearly straight. NEURATION as in *Lasioommata*; the third and fourth branches of the subcostal nervure being, however, more approximate to each other than in *Lasioommata*, leaving a greater space between the extremity of the discoidal cell and the third, and between the fourth and the tip of the wing. The upper disco-cellular nervule is extremely short and transverse, and the middle and lower ones nearly continuous and oblique; the latter united with the third branch of the median nervure at about the same distance from its origin as exists between the first and second branches. The discoidal cell extends to the middle of the wing. HINDWING broadly ovate, more or less scalloped along the outer margin; the abdominal margin entire. NEURATION as in *Lasioommata*, except that the upper disco-cellular nervule is longer, and the lower disco-cellular is united to the third branch of the median nervure at a rather shorter distance from its origin than exists between the first and second branches of the median nervure. FORELEGS of comparatively moderate length, and distinctly visible in both sexes; those of the male being much more densely clothed with hair, and those of the female rather larger. TARSUS simple in the male, but articulated in the female; not armed, however, with minute spines at the tips of the joints. Four hindlegs rather short, scaly; femora almost entirely destitute of hairs beneath; tibiae armed with several rows of spines, set rather widely apart, at the sides beneath; tibial spurs very acute, and rather long; tarsi armed beneath and at the sides with several rows of short spines; tips of the joints with longer spines. CLAWS entire, long, very acute, and curved. PANOYCHIA very slender."

"LARVA pubescent, elongate-conical; head rounded; tail bifurcate; body marked with dark longitudinal stripes. They conceal themselves and remain inactive during the day, but come forth to feed by night, when they may be found in great numbers with the help of a lamp, feeding indifferently on different kinds of grasses. PUPA short, ovoid, glabrous, with the head obtuse and tail pointed; either suspended by the tail, or enclosed in a cocoon of earth mixed with a little silk."—(Westwood, l. c.)

The genus *Hipparchia* as restricted is a Palearctic form, and extends throughout Europe and North Asia, occurring also in North Africa, North America, and Japan. Within our limits they are only found in the mountainous regions on the North-West and West frontiers; most of them appear to be local, and many of them are very rare in collections, as they occur

only far in the interior, and at high elevations where naturalists can seldom get opportunities of collecting. They are found on grass and rocky ground, and, with the exception of the aberrant species *H. parisatis*, beyond the limits of tree vegetation as a rule.

Key to the Indian Species of *Hipparchia*.

- A. Upperside swarthy, with a conspicuous white band on the outer margin; the underside of both wings concolorous, with prominent and perfect ocelli.
 - 176. *H. PARISATIS*, Western Himalayas, Afghanistan, Persia.
- B. Upperside brown, with the clia pale, but no prominent white border; the underside with the forewing more or less ferruginous or tawny on the disc; the hindwing mottled and marbled, with a single very minute ocellus, or with none at all.
 - a. Upperside brown, without any broad submarginal fulvous fascia; a single subapical ocellus on forewing.
 - 177. *H. PIMPLA*, Western Himalayas, Afghanistan, Beluchistan.
 - ♂. Upperside brown, with several fulvous submarginal streaks forming a much interrupted band on both wings (obscure in the forewing of the male). Forewing with two equal-sized obscure submarginal ocelli.
 - 178. *H. DIFFUSA*, Western Himalayas.
 - c. Upperside brown, with a broad fulvous submarginal band on both wings.
 - a.¹ The fulvous band angulate on its inner edge in both sexes, and bearing two equal-sized ocelli on the forewing, with two *white* spots between them; and a single minute subanal ocellus on the hindwing.
 - 179. *H. THELEPHASSA*, Beluchistan.
 - ♂.¹ The fulvous band with its inner edge straight on the forewing in the male, angulate in the female; bearing two ocelli (often blind) with or without two *black* spots between them on the forewing, and one (sometimes two) minute subanal ocelli on the hindwing.
 - 180. *H. BALDIVA*, Western Himalayas.
 - c.² The fulvous band broader, with its inner edge angled on the forewing in both sexes; otherwise as in *H. baldiva*, but paler, and usually without the subanal ocellus on hindwing.
 - 181. *H. LEHANA*, Western Himalayas.
 - d.¹ The fulvous band regular and sharply defined on both wings, and bearing a single subapical ocellus on forewing, none on hindwing.
 - 182. *H. DIGNA*, Western Himalayas.
 - e.¹ The fulvous band defined with dark lunules, narrow on the hindwing, and further from the margin in both wings than in *H. baldiva* and *H. lehana*; bearing two prominent black spots on the forewing, none on the hindwing.
 - 183. *H. HUBNERI*, Western Himalayas.
 - d. Forewing fulvous with brown margin.
 - 184. *H. CADESIA*, Western Himalayas.
 - C. Upperside blackish-brown with creamy-white markings.
 - a. With a creamy-white patch in the cell of the forewing.
 - 185. *H. SHANDURA*, Western Himalayas.
 - ♂. With no creamy-white patch in the cell of the forewing.
 - 186. *H. ANTHE*, Afghanistan, Persia.

In this genus the sexual mark in the males presents a good deal of variation; typically it is a streak of thickly set differently formed scales on the forewing as in *Amevra*, but much wider, and extending into the discoidal cell; but we are unable to base the arrangement on this structural feature at present as the males of *H. diffusa*, *H. digna*, *H. hubneri*, *H. cadesia*, and *H. shandura*, are not represented in our collections. The most remarkable deviation from the type in this respect is *H. thelephassa*, in which the sexual streak almost entirely fills the discoidal cell, and bears a deep black patch irrorated and often entirely concealed with greyish-brown scales. The form of the antennæ too varies greatly. In *H. pimpla*, *H. digna*, and *H. cadesia* they are gradually clavate; in *H. thelephassa* and *H. shandura* the club is very short and abruptly formed like a rounded knob, while *H. baldiva* and *H. lehana* have the club as abruptly formed, but much more elongate.

The first species, *H. parisatis*, is the largest of all the Indian *Hipparchias*, and differs so widely in colour and style of markings, more especially in the presence of prominent perfect

ocelli on the underside of the hindwing, from all the other species, that it stands quite apart, having no near allies. The remaining species all come under the subgenus *Eumenis*, Hübner, according to Scudder, who accepts *H. semle* as the type of this group.

176. *Hipparchia parisatis*, Kollar. (PLATE XVI, FIG. 47 ♀.)

Satyris parisatis, Kollar, Denkschr. Akad. Wien. Math.-Nat. Cl., vol. I, p. 52, n. 7 (1850); *Hipparchia* (*Satyris*) *macrophthalmus*, Eversmann, Bull. Mosc., vol. xxiv., pt. I, p. 615, n. 5 (1851).

HABITAT: Western Himalayas, Afghanistan, Persia, Armenia.

EXPANSE: 2·7 to 3·2 inches.

DESCRIPTION: "UPPERSIDE black, broadly margined with white. *Hindwing* dentate. *UNDERSIDE*: both wings marbled with cinereous and white, a common angulate median white fascia, two black ocelli on each wing circled with yellow, and pupilled with white. A most distinct species, widely diverse from all of this genus." (Kollar, l.c.)

In Indian specimens the *UPPERSIDE* is of a blackish brown colour, and when fresh beautifully glossed with blue in certain lights. The white outer margin is broadest on the hindwing, and does not reach the apex of the forewing. In some specimens the outer half of the costal margin is whitish, widening out towards the apex. The *forewing* has two submarginal black spots, the upper minutely white-pupilled, the lower blind. The *hindwing* has one subanal black spot with minute white pupil. The *UNDERSIDE* is pale French-grey, profusely covered with fine irregular dark stræ on the costal half of the *forewing*, and on the entire *hindwing*, and mottled with whitish. With an angulate median white fascia on both wings, inwardly defined by a blackish line, with two large submarginal ocelli on each wing, with yellow iris and narrow dark brown outer ring, the upper prominently white-pupilled on both wings; the lower blind on the *forewing*, minutely white-pupilled on the *hindwing*. A narrow submarginal line, and the extreme margin dark brown; the *celia* white. In Persian specimens the colour is paler brown, and the white margin is much broader, extending beyond the black subanal spot on the hindwing.

The *MALE* has the sexual mark on the forewing broadly along the median nervure extending into the cell, of the same colour as the ground, but visible owing to the greater density of the scales, and a slight sheen on them owing to their different structure. It has also a single white spot (sometimes two) on the underside of the forewing between the ocelli. The *female* lacks the sexual streak, and has two white spots between the ocelli of the forewing on both upper and undersides, which are sometimes traceable in the male on the upperside. Major Roberts states (Proc. Zool. Soc. Lond., 1880, p. 405) that "when fresh and in the sun the white border is shot with brilliant blue."

H. parisatis is the commonest and most widely spread of all the Indian *Hipparchias*. We have specimens taken by Mrs. Deane in Chini in June; in Pangi by Mr. R. Ellis in July; and in Gilgit by Major J. Biddulph in August. Regarding its habits Colonel Lang writes:—"Obtained on steep precipices over bare hill-sides above the Sulej; and these Himalayan precipices are not quite the ground for the entomologist, net in hand, and eye fixed on the soaring insect. The aspect of the insect on the wing is quite Nymphalidian—a soaring flight, swift if frightened, pitching in all sorts of inaccessible spots. Subsequently found very common in Upper Kunawar, always on steep cliffs, pitching on rocks." It is found commonly throughout the hilly regions of Afghanistan and Beluchistan. In the neighbourhood of Kandahar it "frequents nullas and shady places, and may be caught by dozens at a time. Abundant but local at the end of May, and in June in shady, moist places among the low, rocky, barren hills." (Major Roberts, l.c.) Colonel Swinhoe took it in a small field of potatoes, at Chaman in South Afghanistan on the 21st May, and at Mach in the middle of the Bolan pass in July. Mr. de Nicéville has taken it near Simla, and at Kotgarh in the autumn, in Chumba in May, at Budruwah and Junglewah on the frontiers of Kashmir in June, and late in July near Bajoura, Kulu.

The figure is taken from a female specimen in Mr. de Nicéville's collection taken at Tansolewah, Kashmir, and shows both the upper and undersides.

177. *Hipparchia pimpla*, Felder.

Satyrus pimpla, Felder, Reise Novara, Lep., vol. iii, p. 494, n. 856, pl. lxxix, figs. 10, 11 (1866), female.

HABITAT: Western Himalayas, Afghanistan, Beluchistan.

EXpanse: 1.9 to 2.2 inches

DESCRIPTION: MALE UPPERSIDE uniform, rather dark brown, the cilia whitish, marked with brown on the nervules. *Forewing* with a black subapical spot, sometimes minutely pupilled with white, and with obsolete paler lines. UNDERSIDE: *forewing* rather paler brown, with a bright ferruginous discal patch covering almost the entire cell, the costal margin marbled with whitish and irregular dark stria extending into the cell; the subapical ocellus larger bordered with yellowish on the inner side, followed by a short dark streak; an incomplete submarginal dark line. *Hindwing* pale brown, irregularly mottled with whitish and dark brown, all the nervules white; an indistinct subbasal angulate striga dark brown; a dark brown angulate median streak inwardly diffused, outwardly sharply defined and bordered with white finely mottled with brown; a submarginal dentate dark line also inwardly diffused and outwardly sharply defined, beyond which the margin is whitish, more conspicuously mottled with brown; one or two minute subanal black spots marking the positions of obsolete ocelli. FEMALE rather larger, paler brown, the disc tinted with ferruginous, the subapical ocellus much more prominent and with a distinct fulvous iris, with two or three diffused elongate sordid-ferruginous streaks below it. UNDERSIDE much paler, *forewing* with the costal margin ochreous and very slightly mottled, the mottlings scarcely extending into the cell, and showing no defined streaks; the subapical ocellus large, with pale ochreous yellow iris, the apical area mottled with white, the submarginal line nearly complete. *Hindwing* pale ochreous mottled with brown; the subbasal, discal, and marginal dark lines narrow, well defined; the two latter having the ground-colour whitish outwardly.

The female described and figured by Felder is darker than the specimen described above, and lacks the ochreous tinge of the underside.

H. pimpla is a very rare insect, and though found over a large tract of country, is nowhere common. The type specimen, a female, was taken at Chulichang in Ladak, another female was taken by Major J. Biddulph on the Shandur plateau in Northern Kashmir; the male, which has not been previously described, was taken at Sher Darwiza near Kabul by Lieutenant H. Whistler-Smith during the late Afghan war; and again quite recently by Colonel A. M. Lang, R.E., in the neighbourhood of Quetta at Kawa on a rocky peak 8,500 feet altitude in September. It is not very closely allied to *H. arethusa*, Wiener Verzeichniss,* of Europe, with which Felder's original description appended below, † compares it. It is one of the group of which *H. actea*, Esper, of Southern Europe, is the type, and is most closely allied to a variety from Astrabad which has been separated and figured under the name of *H. bryce*, Ochsenheimer, var. *parthica*, by Lederer (Hor. Soc. Ent. Ross., vol. vi, p. 83, pl. iv, figs. 12 male, 13 female, (1869); *H. bryce*, Ochsenheimer, being itself a synonym of *H. hippoduce*, Hubner; and *H. hippoduce*, Hubner, being a variety of *H. actea*, Esper. A short description of this variety *parthica* is given below; the male specimen of *H. pimpla* from

* *Satyrus arethusa*, Wiener Verzeichniss. "Wings dentate, UPPERSIDE fuscous, with a fulvous macular fascia and a blind ocellus. UNDERSIDE. *Hindwing* marbled with cinereous and fuscous, with a recurved whitish fascia. The wings are feebly dentate. of an obscure brown on the UPPERSIDE, with a yellow macular outer band, bearing near the apex of the *forewing*, and near the anal angle of the *hindwing*, a black blind ocellus. UNDERSIDE: *forewing* of a red more or less vivid, with the margins obscure and cut up with blackish, especially on the costa; the ocellus of the upperside but pupilled with white. *Hindwing* ashy dotted with brown, with a whitish transverse discal band curved below, slightly sinuous above, and preceded outwardly by a small black ocellus with a white pupil. The scallops of the outer margin are whitish. Inhabits Russia, Hungary, the middle of Germany, and several districts of France." (Godart, Enc. Méth., vol. ix, p. 517, n. 213 (1859).

† *Satyrus pimpla*, Felder. HABITAT: Western Himalayas, Ladak, Chulichang. EXpanse. 1.9 to 2.2 inches. DESCRIPTION: "FEMALE. Wings with the cilia shorter than in *S. [H.] arethusa*. UPPERSIDE darker. *Forewing* with the disc tinted with ferruginous, with the black subapical ocellus much larger, sometimes pupilled with white, and with a sordid ferruginous iris, and with two or three diffuse elongate sordid ferruginous spots below it. *Hindwing* with the indistinct submarginal streak darker. UNDERSIDE as in *S. arethusa*, but the *forewing* with the fulvous patch covering almost the whole cell, otherwise restricted, well removed from the submarginal streak, the two streaks across the cell wanting, the subapical ocellus larger. *Hindwing* more widely striated, the discal streak prominently bent, not at all directed downwards, but subparallel to the margin, outwardly narrowly defined with hoary white, and another submarginal, outwardly defined with hoary-white, broader and darker." (Felder, Reise Novara, Lep., vol. iii, p. 494, n. 856, pl. lxxix, figs. 10, 11 (1866), female.

Kawas is barely separable from it, though the female from the Shandur plateau is very distinct, being much paler, while the undersides of both sexes in *parthica* are almost exactly alike.

Hipparchia arethusa, Wiener Verzeichniss, is also found both in the Caucasus and the Kuldja hills; it differs from *H. pimpla* chiefly in having a submarginal series of elongate spots irrorated with fulvous on both wings on the upperside, which are very prominent in some specimens, obsolete in others; also the nervules of the hindwing on the underside are not white.

Hipparchia actæa, var. *parthica*, has the upperside almost exactly like that of *H. pimpla*; and the underside differs very slightly; on the forewing the dark submarginal line is lost in the dark band which widens out greatly at the inner angle; the dark median line is present in both sexes, and in both sexes the costa is broadly brown with fuscous mottlings extending into the cell, and in addition there are several distinct irregular dark bars across the cell; on the hindwing the basal area is darker, the subbasal line is obsolete, the median and submarginal lines are broad, inwardly diffused and outwardly defined by whitish fasciæ; all the nervules are whitish.

Another variety of *H. actæa*, Esper, recorded as *Hipparchia bryce*, var. *amasina*, Staudinger, by Lederer (Hor. Soc. Ent. Ross., vol. viii, p. 11 (1871), and as *H. cordula*, var. *amasina*, Staudinger, by Kirby in the Syn. Cat. D. L., is found at Astrabad in Persia.

178. *Hipparchia diffusa*, Butler.

H. diffusa, Butler, Proc. Zool. Soc. Lond., 1880, p. 147, n. 3.

HABITAT: Ravee Basin, North-West Himalayas.

EXPANSE: 2.1 inches.

DESCRIPTION: "FEMALE. Closely allied to *H. semele*,* from which it principally differs in the obscured and diffused character of the ochraceous patches enclosing the ocelli on the UPPERSIDE of the forewing. On the UNDERSIDE the white belt is well marked, more so than in any specimens of *H. semele* which I have seen." (Butler, l. c.)

We have never seen this species, but as there is no other *Hipparchia* recorded from the Himalayas which at all approaches to *H. semele*, there should be no difficulty in recognising it. The true *Hipparchia semele*, Linnæus, is found in the Caucasus, and probably still farther to the East.

Hipparchia autonovæ, Esper, from South Russia and the Kuldja hills, is allied to *H. semele*, and according to Godart's description (Enc. Méth., vol. ix, p. 518, n. 114 (1819) is "brown, with a yellowish transverse band, the band of the forewing more prominent and bearing two black ocelli with white pupils; the band of the hindwing has one smaller ocellus near the anal angle, and sometimes accompanied by two white dots; the underside of the forewing resembles the upperside, except that the disc is reddish; the hindwing is ashy mottled with brown; the nervures whitish, and with three transverse whitish bands, the small ocellus of the upperside, the margin dentate, and the cilia white." It is figured in Boisduval's *Icones*, vol. i, pl. xli, figs. 5, 6 (1832), female.

* *Hipparchia semele*, Linnæus, Faun. Suec., p. 276, n. 1051 (1761). HABITAT: Europe. EXPANSE: 1.3 to 2.3 inches. DESCRIPTION: FEMALE: UPPERSIDE brown; darker on the outer half, with a submarginal band of the same colour, but defined with darker brown. Forewing with a black spot with white pupil between the discoidal nervules placed on a fulvous streak across the band, and another similar one placed between the first and second median nervules, the latter having in addition a narrow fulvous streak above and a broader one below; the outer edge of the band being nearly parallel to the margin, the inner edge much angled. Hindwing with three inwardly sagittate ferruginous marks on the outer edge of the band, and a fourth on the lower median interspace rounded, and bearing a small black spot with white pupil. UNDERSIDE: forewing with the band complete, fulvous, a diffused fulvous patch in the disc, the two black spots with white pupils as on upperside; and the costal margin broadly mottled with whitish and dark brown. Hindwing mottled throughout with whitish and dark brown on a pale brown ground, with three very irregular blackish streaks, one subbasal, one discal, and one submarginal; a minute subanal black spot with white pupil. The MALE has the UPPERSIDE more uniform, the fulvous streaks being obsolescent. UNDERSIDE similar, but with the discal streak on the hindwing broadly margined outwardly with whitish. The discal sexual mark on the forewing broad, extending into the discoidal cell. (Described from examples from Germany).