

| | | | |
|---------------------------|-----|-----------------------------|-----|
| Brought forward ... | 347 | Brought forward ... | 419 |
| <i>Cypselidæ</i> | 1 | <i>Anatidæ</i> | 8 |
| <i>Caprimulgidæ</i> | 6 | <i>Ardeidæ</i> | 2 |
| <i>Picidæ</i> | 13 | <i>Columbidæ</i> | 12 |
| <i>Alcedinidæ</i> | 2 | <i>Thinocoridæ</i> | 3 |
| <i>Momotidæ</i> | 1 | <i>Perdicidæ</i> | 2 |
| <i>Trogonidæ</i> | 3 | <i>Cracidæ</i> | 7 |
| <i>Galbulidæ</i> | 2 | <i>Rallidæ</i> | 6 |
| <i>Buconidæ</i> | 3 | <i>Charadriidæ</i> | 7 |
| <i>Cuculidæ</i> | 2 | <i>Scolopacidæ</i> | 10 |
| <i>Ramphastidæ</i> | 6 | <i>Ibididæ</i> | 2 |
| <i>Capitonidæ</i> | 3 | <i>Phœnicopteridæ</i> | 1 |
| <i>Psittacidæ</i> | 8 | <i>Laridæ</i> | 6 |
| <i>Falconidæ</i> | 14 | <i>Procellariidæ</i> | 1 |
| <i>Strigidæ</i> | 3 | <i>Podicipidæ</i> | 2 |
| <i>Pelecanidæ</i> | 5 | <i>Tinamidæ</i> | 2 |
| Carried forward..... | 419 | Total | 490 |

2. Descriptions of New Asiatic Lepidoptera.

By FREDERIC MOORE, India Museum, London.

[Received July 9, 1874.]

(Plates LXVI. & LXVII.)

PAPILIONES.

Fam. NYMPHALIDÆ.

Subfam. SATYRINÆ.

HIPPARCHIA CADESIA, n. sp. (Plate LXVI. fig. 7.)

Allied to *H. hübneri*, Feld.

Male. Upperside bright ferruginous; exterior marginal line blackish; cilia yellowish alternated with brown: fore wing with the base, costal, and exterior border pale brown; a subapical pale-bordered black spot with a white central dot; subcostal vein and its branches blackish, terminating in a transverse sinuous submarginal line: hind wing with the base, abdominal and outer border brown, the veins being ferruginous; a submarginal series of blackish lunules.

Underside: fore wing paler ferruginous, the costal and outer borders being fawn-colour; a few transverse brown strigæ within the cell; veins below the apex terminating in a pale streak: hind wing ferruginous white, numerous covered with short blackish strigæ, which are thickest at the base; veins prominently whitish; a broad curved transverse median brown band with irregular black borders, and a broad submarginal brown band with black outer dentate lunules; outer margin and base of wing suffused with brown. Body and legs brown. Antennæ yellow, tip ferruginous.

Exp. $1\frac{7}{12}$ inch.

Hab. Cashmere: Boorzil valley towards Stakpila Pass, 11000 ft. (Capt. H. B. Hellard, R.A.).

EPINEPHELE PULCHELLA, Felder, Nov. Voy. Lep. p. 490, tab. lxi. fig. 16.

Upperside vinous brown; middle of fore wing in male dusky ferruginous, bright ferruginous in the female, enclosing a black subapical spot.

Underside greyish brown: fore wing bright ferruginous in both sexes; ocellus with a white dot: hind wing with narrow short dark brown strigæ, and crossed by a subbasal, discal, and submarginal row of dusky dentate lunules.

Exp. $1\frac{3}{8}$ inch.

Hab. Cashmere (Capt. H. B. Hellard).

Differs from *E. neoza*, Lang, in being smaller, in the ferruginous on the fore wing being more distinct in the male, and in the absence of the transverse discal sinuous brown line on the fore wing.

MYCALESIS KHASIANA.

Male. Upperside dark vinous brown, paler at the apex and along exterior border; marginal lines black. Underside bright vinous brown, purplish grey along exterior border; covered with minute black and grey strigæ: both wings with a transverse discal narrow purplish grey band, and a distinct yellow narrow marginal black-bordered band: fore wing with five and hind wing with seven minute perfect ocelli.

Exp. $1\frac{3}{4}$ inch.

Hab. Khasia Hills (Major Godwin-Austen).

MYCALESIS CHARAKA.

Male and female. Upperside yellowish olive-brown, outer margins paler: fore wing with two very prominent bright-coloured ocelli, the upper one the smallest and sometimes with two white pupils, the lower ocellus fully a quarter of an inch in diameter.

Underside pale olive-brown basally, greyish brown externally, divided by a nearly straight transverse discal brown line; two subbasal short zigzag brown lines on fore wing and one on hind wing; both wings with a narrow black submarginal line, and a brown fascia or cloud passing through the ocelli: fore wing with a linear series of four minute subapical ocelli, and a small though larger lower ocellus, the white pupil of which is a half-circle and occupies nearly the whole of the black portion: hind wing with seven ocelli, the first three subapical, minute, and disposed in a linear oblique series, fourth very minute, fifth the largest (though small), sixth and seventh minute.

Exp. $1\frac{6}{8}$ inch.

Hab. N.E. Bengal. In Brit. Mus. and Coll. F. Moore.

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

Note.—The specimens of this species in the British-Museum collection stand as the representatives of Hübner's *M. otreä* (Zuträge, f. 79, 80), which name Professor Westwood altered, in

the 'Genera of Diurnal Lepidoptera' (p. 394) to *ostrea*, believing Hübner's figure to represent a species distinct from Cramer's *otrea*; but I find, after a careful examination of a lengthened series of specimens in the British Museum and others in my own collection, that Hübner's figure well represents a *male* of Cramer's species (*otrea*), whose figure (pl. 314. f. A, B) is that of a female. The name *ostrea*, therefore, cannot be retained, as it was applied to Hübner's figure, and *not* to the specimens which Prof. Westwood erroneously determined as representing it.

YPHTHIMA NEWARA.

Ypthima nareda, Hewits. Trans. Ent. Soc. 1865, pl. 17. fig. 7 (nec fig. 6).

Male. Upperside brown: fore wing with single subapical ocellus; hind wing with two subanal ocelli, the former bipupilled, and the latter with a single pupil of bright blue.

Underside yellowish grey, partly covered with numerous short brown strigæ; both wings with a narrow submarginal brown fascia: fore wing with single bipupilled ocellus as above: hind wing with three ocelli, the apical one very large, the anal bipupilled, the others with single bright blue pupil.

Female brown, externally with short pale strigæ; both wings with single ocellus above. Underside as in male.

Exp. $1\frac{6}{8}$ inch.

Hab. Nepal. In Coll. W. C. Hewitson and F. Moore.

Differs from *Y. nareda*, Kollar, in being somewhat larger, the female striated above, the ocelli of both sexes much larger on the underside, and the position of the ocellus on fore wing being less inwardly oblique.

YPHTHIMA NIKÆA.

Upperside dark brown: pupils of ocelli blue: fore wing with a subapical bipupilled ocellus (smaller than in *Y. sakra*): hind wing with two subanal ocelli; male sometimes with only one subanal ocellus.

Underside grey, with numerous short brown narrow strigæ: fore wing with ocellus as above, and a distinct brown submarginal transverse fascia: hind wing with five ocelli, the two apical being the largest and joined together, though having a yellow band between them; the other three ocelli in a linear series from anal angle, the anal one bipupilled.

Exp. $1\frac{7}{10}$ inch.

Hab. N.W. Himalayas. In Coll. Capt. A. M. Lang and F. Moore.

Differs from *Y. sakra* in its smaller size, darker colour above and greyer below; and may be distinguished by the difference of the apical ocelli on the hind wing, which in *Y. sakra* have no intervening yellow band.

YPHTHIMA AVANTA.

Upperside dark brown, with an indistinct bipupilled ocellus on the fore wing, and two subanal ocelli on hind wing.

Underside grey, numerous covered with dark brown narrow striæ, and crossed with three brown fasciæ, the subbasal being indistinct: fore wing with a bright oval ocellus bipupilled with silver: hind wing with seven small prominent silver-pupilled ocelli, the upper third minute, the two anal geminated.

Exp. $1\frac{1}{4}$ inch.

Hab. Lower Bagh river-valley, Cashmere (*Capt. H. B. Hellard*).

YPHTHIMA ARIASPA.

Male. Upperside dark brown: fore wing with a subapical bipupilled ocellus: hind wing with a small subanal ocellus.

Underside whitish grey, with numerous narrow brown uniform prominent strigæ: fore wing with ocellus as above: hind wing with a single large subapical ocellus, and two smaller ocelli from anal angle.

Exp. $1\frac{1}{10}$ inch.

Hab. Punjab. In Coll. Oxford Museum and F. Moore.

This species is similar in appearance to *Y. nareda*; the ocelli of the upperside are smaller, the ground-colour of the underside being much paler, more uniformly covered with strigæ, and without transverse brown fasciæ.

Subfam. ELYMNIINÆ.

ELYMNIA SINGHALA.

Female. Upperside dark velvety fuliginous brown: fore wing with pale yellow-speckled quadrate patches on exterior margin: hind wing with a broad transverse submarginal series of narrow and broad partially confluent pale yellow streaks, some small streaks also along the exterior margin: cilia whitish. Underside dark brown, palest exteriorly; apex of fore and hind wings suffused with pale pink: both wings covered with numerous short transverse black confluent strigæ, which are broadest and darkest at the base of fore wing and along exterior margin of hind wing: hind wing with a submarginal series of six black dots each on a pale pinkish space, the upper spot having a small contiguous pure white spot.

Exp. 3 inches.

Hab. Colombo, Ceylon (*Capt. F. J. Hutchison*).

Subfam. NYMPHALINÆ.

ARGYNNIS VITATHA.

Allied to *A. aglaia*; markings similar but more prominent. Underside of hind wing with the whole of the space from base to the transverse discal series of silvery spots, as well as their outer bordered spots, and marginal lunules, dark powdery green.

Exp. $2\frac{1}{4}$ inches.

Hab. Cashmere, N. side of Rajdiangan Pass and Gurais (*Capt. H. B. Hellard*).

ARGYNNIS SIPORA. (Plate LXVI. fig. 11.)

Allied to *A. pales*.

Upperside pale fulvous in the male, dusky fulvous in the female.

Male—fore wing with black narrow short streak, two small spots, and a recurved streak within the cell, a curved streak at its end, a dentate spot beneath and an irregular transverse discal series of lunules beyond the cell; a transverse discal row of conical spots, a submarginal row of triangular spots, and a marginal line formed into less-defined spots, one being at the end of each vein: hind wing with two narrow streaks at end of the cell, a transverse discal series beyond, two outer and a marginal row of spots. *Female*—black markings broader, the submarginal row of spots on both wings large and with pale whitish outer marginal border: cilia white.

Underside, *Male*—fore wing paler, markings indistinct, apex and exterior border yellow, streaked with red: hind wing yellow, abdominal margin greenish; a broad irregular subbasal and discal transverse red band, the basal band enclosing a pearly-white round spot within the cell and an elongated spot beneath it, the band bordered exteriorly by three pearly-white transverse streaks; within the discal band the upper and lower portions are slightly streaked with pearly white, and on the middle portion is a series of five blackish spots; on the outer margin of the wing is a row of quadrate pearly-white spots. *Female*—fore wing dark fulvous; markings more prominent, apex and margin greenish: hind wing with the base and middle portion dark green, the subbasal and discal bands dark chestnut-red; markings as in male.

Exp. ♂ $1\frac{3}{8}$, ♀ $1\frac{4}{8}$ inch.

Hab. Cashmere, near Gungabul lake, at foot of Haramook Peak (Capt. H. B. Hellard).

SYMBRENTHIA COTANDA. (Plate LXVI. fig. 9.)

Male. Allied to *S. hypselis* (figured by Boisduval and Doubleday), but is smaller; bands orange-red, very broad; the band from base of fore wing with irregular sinuous margins and confluent with cloudy red patches below the cell; narrow marginal line on hind wing distinct and extending to near anterior angle. Underside white, clouded with dark yellow; tessellations similar; submarginal series of metallic-green conical spots and caudal lunules prominent.

Female differs from male only in having paler bands, and in the oblique subapical spot being irregularly lengthened and extending from the costa to near edge of exterior margin, above which is a small recurved streak.

Exp. ♂ $1\frac{7}{8}$, ♀ 2 inches.

Hab. Darjeeling (*A. E. Russell*). In Coll. F. Moore.

SYMBRENTHIA KHASIANA.

Male and female. Allied to *S. hyppocla*, but differs from N.W. Himalayan specimens on the upperside in having the orange-red bands somewhat narrower, and in the submarginal band on the hind wing being dotted with black. On the underside the interlacings and other markings are prominent.

Exp. ♂ $1\frac{6}{8}$, ♀ $2\frac{1}{8}$ inches.

Hab. Khasia hills (*Major Godwin-Austen*).

SYMBRENTHIA DARUKA. (Plate LXVI. fig. 10.)

Male. Allied to *S. hyppocla*; differs on the upperside in having the orange-red bands very broad, which are irregular-margined and confluent, leaving but little black intervening spaces. On the underside the colour is paler and the interlacings much less prominently defined.

Exp. $1\frac{6}{8}$ inch.

Hab. N. India. In Coll. F. Moore.

NEPTIS EURYNOME.

Limenitis eurynome, Westwood, in 2nd edit. Donovan. Ins. of China, p. 66.

Pap. leucothoë, Donovan, Ins. of China, 1st edit. t. 35. f. 3 (1798), nec Cram.

Male and female. Upperside fuliginous, black; markings white and very broad, broader than in *N. leucothoë*, Cram., or in *N. surakarta*; submarginal row of spots on fore wing prominent; outer band of hind wing very broad, nearly the same width as inner band. Underside ferruginous yellow; bands as above, all black-bordered; subbasal streak on hind wing short and not black-bordered.

Exp. ♂ $2\frac{3}{8}$, ♀ $2\frac{5}{8}$ inches.

Hab. N. China (Shanghai).

Differs from *N. leucothoë*, Cram., in its larger size, broader markings, and much greater width of the outer band on hind wing.

NEPTIS KAMARUPA.

Male and female. Upperside fuliginous black; markings white, broad, prominent: fore wing with the discal series of spots at very oblique angles, the first spot of the lower portion small; a prominent marginal linear series of white quadrate spots: hind wing with the subbasal band evenly margined; outer band broad and composed of quadrate spots; a prominent narrow white marginal line. Underside ferruginous yellow; markings as above; very slightly black-bordered.

Exp. ♂ $2\frac{1}{8}$, ♀ $2\frac{2}{8}$ inches.

Hab. Assam. In Coll. Oxford University Museum.

Nearest allied to *N. varmona*, but may be distinguished from it on the underside by the delicate narrow black bordering of the bands and the absence of the black streaks on the veins of the fore wing.

NEPTIS PAPAJA.

Male. Upperside fuliginous black; markings white, disposed somewhat as in *N. emodes*: fore wing with the discoidal streak and terminal elongated triangular spot blackish-speckled; transverse discal series of spots small, each widely separated; the row of submarginal lunular spots bordered on each side by pale-bordered black lunules: hind wing with straight subbasal band and submarginal row of separated lunules; a line between the bands and outer marginal line pale

brown. Underside ferruginous yellow; markings prominent, black-bordered; two marginal lunular lines on hind wing.

Exp. $1\frac{7}{8}$ inch.

Hab. Sumatra (*Wallace*). In Coll. Oxford University Museum and F. Moore.

NEPTIS HARITA. (Plate LXVI. fig. 8.)

Male and female. Upperside olive-brown: fore wing with paler and rather indistinct discoidal streak and dentate discocellular mark; two transverse discal series of pale black-bordered zigzag lunules, and a submarginal similar lunular line: hind wing with pale narrow subbasal transverse band, with dark outer border, beyond which is a blackish fascia, and then a submarginal row of pale-bordered dark lunules (these lunules being triangular in the female). Underside olive-brown; markings as above, but whiter.

Exp. 2 inches.

Hab. E. Bengal. In Coll. F. Moore.

Allied to *N. vikasi*, but may be distinguished from it by its smaller size, less-distinct markings, and in the submarginal band of the hind wing being formed of distinct lunules.

NEPTIS OMERODA.

Upperside blackish, glossed with greenish olive-brown; banded with olive-brown, as in *N. vikasi*; the upper portion of transverse discal series of spots on the fore wing oval, lower portion rounded. Underside black, palest externally, with a glaucous gloss; veins brown; discoidal streak, lower portion of transverse discal series of spots of fore wing, and inner band of hind wing pale fuliginous; the subapical spots and outer bands greyish white, the scales on the latter being raised or depressed and thus having the appearance of short strigæ.

Exp. $1\frac{3}{8}$ inch.

Hab. Penang. In Coll. Oxford University Museum.

Allied to *N. vikasi*, but is a much blacker insect both above and below.

Fam. LYCÆNIDÆ.

CHRY SOPHANUS ADITYA. (Plate LXVI. fig. 1.)

Allied to *C. hippothoë*.

Male. Upperside brilliant metallic brassy copper-red: cilia black, edged with white: fore wing with a narrow jet-black costal edge and outer marginal band, the band expanded at the apex and maculate between the veins: hind wing with a marginal jet-black line and prominent conical spots; abdominal margin greyish.

Underside: fore wing pale golden yellow, brightest on the disk; two pale-bordered black spots within and a larger spot crossing end of the cell; a curved series of four black spots from the costa before the apex, a submarginal series of black dentate lunules, and a marginal row of small black spots: hind wing dull greyish white; two black spots above, two below, two within, and a geminated spot at

end of the cell; a transverse interrupted discal series of nine black spots, a submarginal row of black dentate lunules bordered outwardly with golden yellow, and a marginal row of small spots.

Exp. $1\frac{3}{8}$ inch.

Hab. Dras valley (between Tashgam and Korkitchoor), Ladak (*Capt. H. B. Hellard*).

Gen. nov. NIPHANDA.

Palpi very long, porrect, extending much beyond the head, flattened; second joint fusiform, squamose; third joint slender, naked, slightly thickened vertically at the tip. Antennæ (broken). Body robust. Legs slender, minutely squamose. Wings broad, strong: fore wing elongated, trigonal, costa arched; hind margin extending much beyond posterior wing; exterior margin slightly convex towards posterior angle, which is acute; median vein with four branches, the second and fourth arising at the extremity of the cell, the third starting from the second near its extremity before the apex: hind wing arched along anterior margin; outer angle much rounded, abdominal margin long and nearly straight, anal angle acute.

Near to *Chrysophanus*.

NIPHANDA TESSELLATA. (Plate LXVI. fig. 6.)

Upperside pale glossy blue: cilia white, streaked with brown: fore wing with a broad dusky black band along the costa and exterior margin; a patch below the apex, a discocellular spot, and a lower discal spot also black; a short white streak at posterior angle: hind wing broadly dusky black along anterior margin; the exterior margin with a series of black spots bordered with bluish white and an inner dusky line.

Underside white: fore wing with an irregular basal patch, a quadrate discocellular spot, and an interrupted transverse discal series of quadrate spots dark blackish brown; a suffused streak along the costa, a streak bordering the upper portion of discal spots, and a series of spots with inner bordered line on exterior margin pale brown, the penultimate posterior spot being large, prominent, and nearly black: hind wing with irregular pale-bordered basal marks, a contiguous transverse series of four quadrate spots, two spots beyond on middle of anterior margin, and a series of spots on exterior margin blackish brown, the basal and anal spots being most prominent; the basal interspaces, irregular streaks from abdominal margin, and lunules to exterior spots pale brown.

Exp. $1\frac{1}{2}$ inch.

Hab. Penang. In Coll. Lieut. H. Roberts, R.A.

POLYOMMATUS VARDHANA. (Plate LXVI. fig. 5.)

Male and female. Upperside greyish blue, with a pinkish gloss; veins exteriorly and marginal line black; a narrow black discocellular streak very prominent on fore wing; a broad band of dark bluish purple along anterior and exterior margins of fore wing and anterior margin of hind wing: cilia white alternating with black, on fore wing.

Female with the disk of fore wing pale bluish white, and indistinct dusky spots on margin of hind wing.

Underside bluish white : fore wing with a prominent black discocellular streak and a curved discal series of spots, the upper spots small and disposed obliquely before the apex, the three lower spots large : hind wing slightly powdered with blue at the base ; a discal series of black dots, a dot within the cell, and a more prominent spot near base of anterior margin ; a small black lunule on anal margin.

Exp. ♂ $1\frac{4}{8}$, ♀ $1\frac{3}{8}$ inch.

Hab. Jako, valley of Rupin river, in Busahir (*Capt. H. B. Hellard*).

POLYOMMATUS OMPHISA. (Plate LXVI. fig. 2.)

Allied to *P. galathea*, Blanchard, Jacq. Voy.

Male. Upperside very dark purple, the base only suffused with blue.

Female. Glossy vinous purple, with indistinct dull orange marginal spots on both wings : cilia white, with brown inner line, on upperside of both wings.

Underside : fore wing pale greyish fawn-colour, disk suffused with fuliginous ; a prominent discocellular white-bordered black streak and transverse discal row of six spots : hind wing metallic golden green, a distinct white discocellular spot and angular discal series of white spots.

Exp. ♂ $1\frac{3}{8}$, ♀ $1\frac{2}{8}$ inch.

Hab. Dras valley, Ladak (*Capt. H. B. Hellard*).

POLYOMMATUS DEVANICA. (Plate LXVI. fig. 4.)

Allied to *P. alexis*.

Male. Upperside dark purplish blue, basally dashed with clear blue ; discocellular black spot of underside visible above ; cilia white alternating with brown.

Underside pale fawn-colour : fore wing with a white-bordered prominent black discocellular spot and a transverse discal row of five spots ; a marginal row of white rings with dark centres, the space between which and the discal spots clouded with black : hind wing with four prominent white-bordered black subbasal spots and a discal series of seven spots, the five lower spots being disposed in a straight row, the two upper spots proceeding at right angles to anterior margin ; a marginal row of pale-bordered dark spots surmounted by a submarginal black lunular line, the lower marginal spots slightly bordered with orange and speckled with metallic green ; a triangular discocellular white spot centred with a slight black dentate mark ; space between discal and submarginal spots streaked with white.

Exp. ♂ $1\frac{1}{4}$, ♀ 1 inch.

Hab. Dras valley, Ladak (*Capt. H. B. Hellard*).

POLYOMMATUS JALOKA. (Plate LXVI. fig. 3.)

Male. Upperside shining greenish blue basally, outer margin

bluish purple; both wings with a distinct black pale-bordered discocellular spot and a transverse discal row of pale bluish white spots. *Female* dark purplish brown, glossed with greenish blue; discocellular spot larger and very prominent, discal spots whiter; cilia white, with inner black line on fore wing and black dentate spots on hind wing.

Underside. *Male*: fore wing pale grey, with indistinct pale-bordered discocellular spot and a transverse discal row of blackish spots: hind wing white, the base powdered with metallic blue; a broad irregular discal pale brown band enclosing a discocellular and two upper white patches. *Female*: fore wing pale fawn-colour; spots prominent; a blackish streak outside the discal spots; irregular discal band on hind wing tinged with yellow.

Exp. 1 inch.

Hab. Rajdiangan Pass, Sursungar and Stakpila Passes, and Baitul, Cashmere (*Capt. H. B. Hellard*).

POLYOMMATUS SAMUDRA. (Plate LXVII. fig. 2.)

Male. Upperside pale lavender-blue, exterior margins and end of veins of both wings and anterior border of hind wing slightly fuliginous; costal edge white; cilia white, slightly brown at end of veins; abdominal margin greyish white; antennæ black, ringed with white. Underside greyish white, slightly greenish at base of hind wings: fore wing with a discal transverse recurved row of black spots, each with a white border; a narrow white-bordered black streak at end of the cell, and a submarginal series of blackish lunules: hind wing with a series of eight small white-bordered black spots, two being near anterior margin towards the base, five on the disk, and one on abdominal margin; a pale-bordered short black streak at end and a dot within the cell; a submarginal series of narrow black lunules with inner white borders and a marginal row of small metallic silvery spots which are slightly bordered within with red.

Female differs above in having the wings anteriorly and the veins broadly fuliginous, and beneath in the partial absence of the discal series of spots on the hind wing.

Exp. ♂ $1\frac{1}{8}$, ♀ $1\frac{2}{8}$ inch.

Hab. Gol and Skardo, Baltistan (*Capt. H. B. Hellard*).

LYCÆNA ARDATES. (Plate LXVII. fig. 1.)

Male. Upperside bluish purple; exterior marginal line and a short tail on hind wing black; cilia greyish, with dark inner line.

Underside dark fawn-colour: fore wing with two pale-bordered brown spots within and one below the cell, an irregular discal series, and a submarginal row of dentate lunules: hind wing with an irregular subbasal and discal pale-bordered brown band, a submarginal row of dentate lunules and contiguous marginal spots, a prominent subanal round black spot speckled with metallic green scales.

Exp. 1 inch.

Hab. Parl and Pooneh, Cashmere (*Capt. H. B. Hellard*).

DIPSAS ICANA. (Plate LXVII. fig. 3.)

Male. Upperside dark brown: fore wing with the interior portion purplish green, metallic only in certain lights, and traversed by the dark brown veins: hind wing slightly sprinkled with metallic green scales.

Underside pale sap-brown: fore wing with a dark brown broad spot at end of the cell; a transverse discal band decreasing in width and terminating one third from the posterior angle, being bordered outwardly by a narrow pale line; a narrow paler brown submarginal fascia and outer border: hind wing with a dark brown broad median transverse band including a discocellular spot, the band pale-bordered on both sides and terminating above anal angle in a zigzag line; a paler brown lunular submarginal fascia and outer band; a black-bordered orange patch at anal angle containing two black spots joined by a blue streak.

Exp. $1\frac{4}{10}$ inch.

Hab. N.W. Himalaya (*Dr. Bayne Reed*). In Coll. F. Moore and Netley-Hospital Museum.

Fam. PAPILIONIDÆ.**PAPILIO LIOMEDON.**

Upperside fuliginous black: fore wing with a submarginal linear series of circular pale yellow spots, which decrease in size to the apex: hind wing with a rather broad pale yellow median transverse band, a submarginal series of four yellow lunules and a fifth orange-yellow lunule enclosing a black spot at anal angle; indentations of wing each with a narrow yellow lunule.

Underside fuliginous brown, greyish at the base; the submarginal series of spots and median band as above, the fore wing having four narrow greyish-white longitudinal lines within the cell: hind wing with the disk beyond the band dusky yellow; the outer margin of the wing and tail bordered with black; between each vein and touching the median band is a lengthened black spot, the central ones conical, the two upper quadrate, and the one at the anal margin broken, its lower part forming a round spot, each of these spots is crossed by a row of pale purple speckles; the yellow space at the anterior and anal angles tinged with orange.

Exp. $3\frac{1}{4}$ inches.

Hab. Calicut, Malabar coast of S. India (*S. N. Ward*).

Allied to *P. demolion*, of which it is the South-Indian form, differing from that species in the linear series of spots on the fore wing being smaller and placed nearer the margin, the median band of the hind wing narrower and further from the base, with its outer margin beyond the cell.

Fam. HESPERIDÆ.**ISMENE MAHINTHA.** (Plate LXVII. fig. 4.)

Upperside dark glossy olive-brown; base of fore wing and middle of the hind wing with abdominal margin densely clothed with long

ferruginous hairs : fore wing in male with a small yellow discal spot and a black oblique square patch below the cell ; female with two yellow obliquely disposed discal spots : cilia of fore wing yellowish, of hind wing ochrey red.

Underside dark bluish fawn-colour, spots on fore wing as above. Body clothed with yellowish ferruginous hairs.

Exp. $1\frac{3}{4}$ inch.

Hab. Burmah. In Coll. F. Moore.

PYRGUS DRAVIRA. (Plate LXVII. fig. 5.)

Allied to *P. marrubi*.

Female. Upperside dark greyish sap-brown, streaked with black between the veins. Cilia alternated with white : fore wing with a median triangular series of three diaphanous white spots, one being disposed at end of the cell and two on the disk ; a geminated series of three smaller spots before the apex : hind wing with a prominent yellowish white spot at end of the cell, and two smaller spots below it.

Underside paler : fore wing with markings as above : hind wing with greyish white subbasal and discal spots, a streak from end of cell to outer margin, and band along abdominal margin.

Exp. $1\frac{2}{8}$ inch.

Hab. Cashmere (*Capt. H. B. Hellard*).

PAMPHILA DIMILA.

Allied to *P. comma*.

Male and female. Upperside testaceous ; exterior border broadly fuliginous brown ; apex of fore wing brownish testaceous. Cilia whitish testaceous : fore wing with a series of small yellow apical spots ; male with an oblique silvery-lined black streak below the cell : hind wing with a yellow spot within the cell, and a curved discal series of four quadrate spots.

Underside : fore wing pale testaceous ; apical spots as above : hind wing with basal portion greenish brown ; three prominent white subbasal spots disposed above, below, and at end of the cell ; a curved discal series of six quadrate white spots.

Exp. ♂ $1\frac{2}{8}$, ♀ $1\frac{3}{8}$ inch.

Hab. Runang Pass, Busahir (S.E. side, about 13,000 ft.) (*Capt. H. B. Hellard*).

HESPERIA KARSANA. (Plate LXVII. fig. 6.)

Upperside pale olive-brown. Cilia pale fawn-colour. *Male*—fore wing with minute oblique subapical pale yellow spots. *Female* with the subapical spots more distinct, below which is a discal row of four somewhat quadrate spots, the third spot smallest.

Underside much paler, marked as above ; space from abdominal margin to middle of wing pale brownish white.

Exp. $1\frac{1}{8}$ inch.

Hab. Rawul Pindi, N. Punjab (*Capt. H. B. Hellard*).

SPHINGES.

PERGESA DOLICHOIDES, Felder, MS.

Female. Brownish fawn-colour. Fore wing with four oblique transverse, straight, brown lines, with pale, glossy, chalybeate inner borders; exterior border with a submarginal lunular line, with pale inner border; a brown discal spot between second and third lines, and an indistinct lunular line between third and fourth. Hind wing dark brown. Abdomen with a pale dorsal line.

Exp. $3\frac{1}{2}$ inches.

Hab. Sikkim. In Coll. Capt. Lang and F. Moore.

BOMBYCES.

Fam. CHALCOSIIDÆ.

Gen. nov. ATOSSA.

Fore wing elongated, trigonate; costa somewhat straight; apex produced; exterior margin oblique and slightly convex; hind margin straight. Hind wing with the costa extending beyond fore wing, arched in middle; apex produced to a pointed angle in the male; exterior and anal margins convex. Antennæ short, minutely serrated in female. Body slender, short. Palpi short, slender, not extending beyond the head, pilose; proboscis moderate. Legs slender, short, squamous; hind tibiæ with four rather short spurs. Fore wing with four superior veins, the first arising from half the length of the cell, second before the end of the cell and having two short branches ascending from half its length, third starting from end of cell, fourth proceeding from one third the length of the third; a straight discoidal vein from near inward angle of the discocellular vein; three inferior veins, first and second contiguous at end of cell. Hind wing with two superior, a discoidal, and three inferior veins.

ATOSSA NELCINNA. (Plate LXVII. fig. 7.)

Male and female. Upperside greenish fuliginous; veins and a longitudinal streak in cell of fore wing black: fore wing with the interspaces between the veins from base to disk greenish yellowish white; a transverse discal row of yellowish-white lunules, and a marginal row of small spots: hind wing with yellowish-white spaces between the veins at the base, a discal transverse row of conical spots and a marginal row of quadrate spots, both series partly confluent at anal angle. Underside paler and more greenish-tinged, markings as above, but more confluent. Antennæ and head black; thorax and abdomen black above, yellow beneath; abdomen with narrow yellow dorsal edges and two lateral rows of black spots. Legs black.

Exp. ♂ $2\frac{3}{4}$, ♀ 3 inches.

Hab. Gurhwal, N.W. Himalaya. In Coll. Capt. A. M. Lang and F. Moore.

Note.—Has very much the outward appearance of a species of *Pieris*. According to Capt. Lang's "Notes," it is a day-flier, and

found during July flying heavily amongst high horse-chestnut trees (*Pavia indica*), just as *P. eucharis* might about a mango-grove.

EPICOPEIA MENCIA. (Plate LXVII. fig. 8.)

Male. Dark fuliginous black; veins black: hind wing short, with a long broad spatulate tail; a series of five crimson lunules transversely from anal angle straight across to outer margin; three similar lunules on posterior margin. Two crimson spots on thorax. Abdomen with crimson bands and lateral stripes.

Exp. $3\frac{5}{8}$ inches.

Hab. Shanghai, N. China. In Coll. F. Moore.

Note.—"Full-grown larva $2\frac{1}{2}$ inches long, perfectly white, and profusely covered with fine white powder, which comes off from the body at the slightest touch of the hand, leaving the dark skin underneath. Found in October; changed to a pupa same month. Collects two or three leaves together, and forms a kind of envelope of the powder. Imago makes its appearance in June of following year."
—*E. Holdsworth.*

Fam. SATURNIDÆ.

ANTHERÆA CONFUCI.

Male. Greenish buff colour: fore wing with the base of costal margin purple-grey, and two short subbasal pinkish transverse lines, and two outer submarginal, transverse, parallel, pinkish lines; a dusky fascia from costa to hind margin passing outside the ocellus; ocelli of both wings small, oval, grey within, outer ring pink internally and black externally; inner ring white and yellow; central spot minute, half diaphanous, and yellow: hind wing with fainter pinkish subbasal line and two submarginal lines.

Exp. $5\frac{1}{4}$ inches.

Hab. Hills in neighbourhood of Shanghai, N. China. In Coll. E. Holdsworth.

Allied to *A. pernyi*, from which it differs in colour and in the distinct double submarginal lines.

NOCTUES.

Fam. NOCTUIDÆ.

EUPLEXIA CUPREA, n. sp.

Male and female. Upperside cupreous brown: fore wing with a broad transverse median black band enclosing a dull-coloured orbicular spot and a yellow-bordered pale brown reniform spot; some blackish pale-bordered transverse streaks at base of wing and across exterior margin; four small yellow dots on costal margin near the apex: hind wing fawn-colour at base; a pale wavy submarginal line from anal angle. Underside paler; fore wing with a pale yellowish streak enclosing a small blackish spot at end of the cell; costal spots near apex, and wavy submarginal line; a prominent black spot on middle of hind wing.

Exp. $1\frac{1}{4}$ inch.

Hab. Simla, N.W. Himalaya. In Coll. F. Moore.

EXPLANATION OF THE PLATES.

PLATE LXVI.

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| Fig. 1. <i>Chrysophanus aditya</i> , p. 571. | Fig. 7. <i>Hipparchia cadesia</i> , p. 565. |
| 2. <i>Polyommatus omphisa</i> , p. 573. | 8. <i>Neptis harita</i> , p. 571. |
| 3. — <i>jaloka</i> ♂, p. 573. | 9. <i>Symbrenthia cotanda</i> , p. 569. |
| 4. — <i>devanica</i> , p. 573. | 10. — <i>daruka</i> , p. 570. |
| 5. — <i>vardhana</i> , p. 572. | 11. <i>Argynnis sipora</i> , p. 568. |
| 6. <i>Niphanda tessellata</i> , p. 572. | |

PLATE LXVII.

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|---|--|
| Fig. 1. <i>Lycæna ardates</i> , p. 574. | Fig. 5. <i>Pyrgus dravira</i> ♀, p. 576. |
| 2. <i>Polyommatus samudra</i> , p. 574. | 6. <i>Hesperia karsana</i> ♂, p. 576. |
| 3. <i>Dipsas icana</i> , p. 575. | 7. <i>Atossa nelcinna</i> , p. 577. |
| 4. <i>Ismene mahintha</i> , p. 575. | 8. <i>Epicopeia mencia</i> , p. 578. |

3. Measurements of the Red Corpuscles of the Blood of
Hippopotamus amphibius, *Otaria jubata*, and *Trichechus*
rosmarus. By GEORGE GULLIVER, F.R.S.

[Received August 5, 1874.]

Having on the 22nd of July, 1874, procured some blood from the first two of these animals and quickly thereafter made many careful measurements of the red corpuscles, I beg leave to submit a summary of the results, together with those concerning *Trichechus*, to the Society. Through the kind and judicious care of Mr. Bartlett and his son, and the skilful management of the keepers, no difficulty whatever was experienced in making a small puncture in the ear of the Hippopotamus and in the foot of the *Otaria*, from which in each case a drop of pure blood flowed and was well collected, apparently without the animal being at all sensible of this very slight operation.

Hippopotamus amphibius, a female, reported to be twenty-one years of age.—The average diameter of the red corpuscles proved to be $\frac{1}{3429}$ of an English inch. This is very slightly smaller than the same corpuscles of human blood, and somewhat larger than those of the Rhinoceros or of any other Pachyderm in which I have examined them, except the two Elephants and the *Hyrax*. In the African Elephant Mandl discovered that the corpuscles are the largest known of Mammalia; and my observations soon afterwards proved that the Indian Elephant has also corpuscles of similar magnitude; and, as I discovered, they are of about the same size in *Myrmecophaga* and *Orycteropus* (Proc. Zool. Soc. Jan. 24, 1854, and Feb. 10, 1870). In these two Edentates the red corpuscles of the blood have a mean diameter of $\frac{1}{2769}$ of an inch, in the Rhinoceros $\frac{1}{3765}$, in *Hyrax* $\frac{1}{3308}$. The exceptionally large size of the red blood-corpuscles of such a small species as *Hyrax* would be alone sufficient to indicate that it is not a regular member of the order Pachydermata.

Otaria jubata, a female.—The mean diameter of the red blood-corpuscles proved to be $\frac{1}{3000}$ of an inch; while those of man measure, on the average, $\frac{1}{3200}$. Thus in *Otaria* these corpuscles are larger than those of any of the Carnivora recorded in my Tables appended to the Sydenham Society's edition of Hewson's works. In







Moore, Frederic. 1874. "Descriptions of New Asiatic Lepidoptera." *Proceedings of the Zoological Society of London* 1874, 565–579.

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